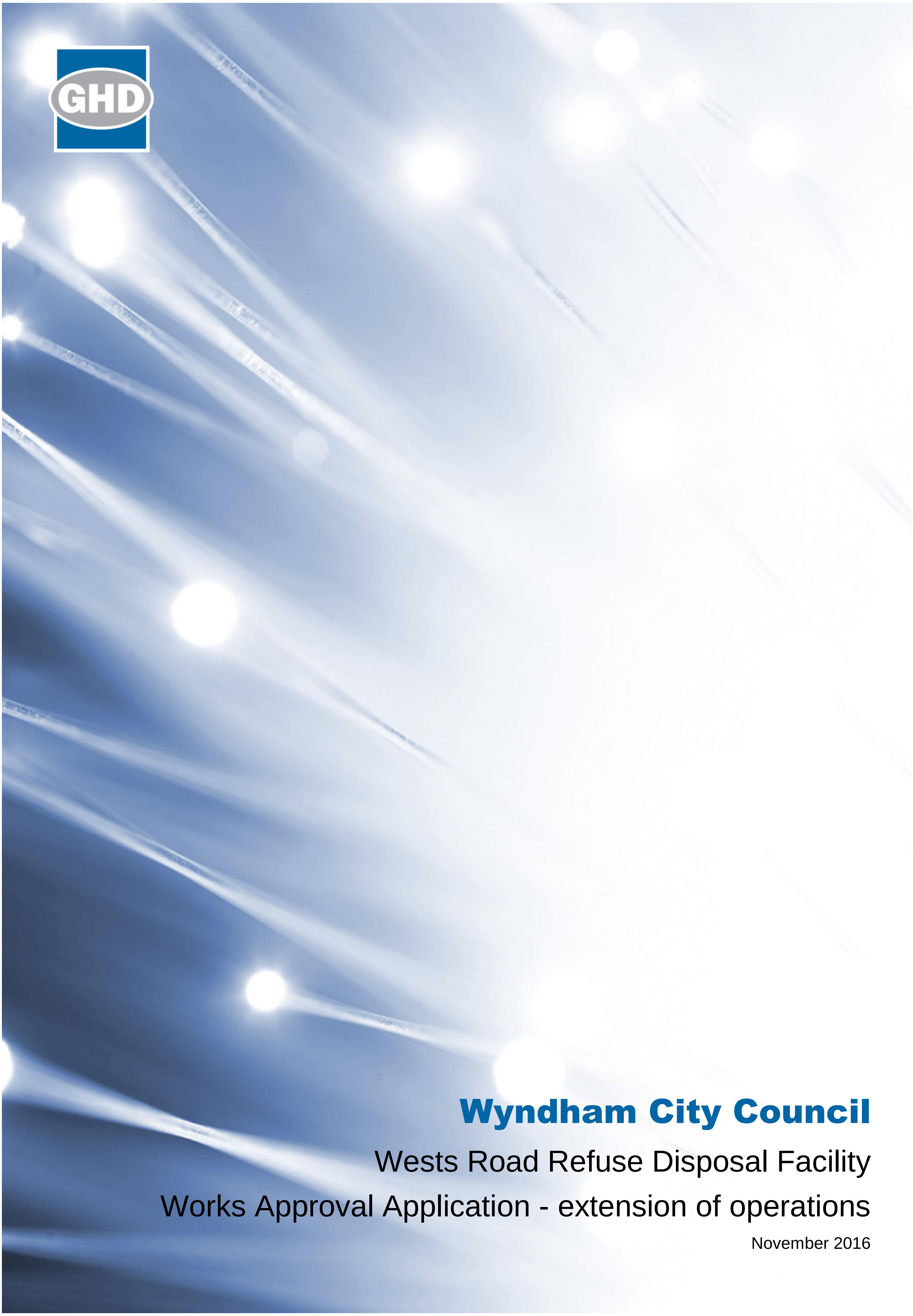

Wyndham City Council

Wests Road Refuse Disposal Facility

Works Approval Application - extension of operations

November 2016

WATER | ENERGY & RESOURCES | ENVIRONMENT | PROPERTY & BUILDINGS | TRANSPORTATION

Executive summary

Wyndham City Council (Council) is seeking a works approval to extend operations of the West Road Refuse Disposal Facility (RDF) at 470 West Road, Werribee. The RDF consists of three main operations: Landfill, Transfer Station and Green Waste Processing Facility. The RDF holds EPA licence 12483 for the disposal of putrescible and solid inert waste.

This report provides information about the current activities conducted at the site and provides background environmental information to support a works approval application to extend operations at the RDF. This report is subject to, and must be read in conjunction with, the limitations set out in Section 1.5 and the assumptions and qualifications contained throughout the Report.

The West Road RDF is a scheduled premises, category A05, as specified in the *Environment Protection (Scheduled Premises and Exemptions) Regulations 2007* as it serves a population greater than 500 people. The continuation of waste disposal beyond that envisaged when Cell 4C was approved will result in an increase in the total quantity of waste landfilled at the site and therefore this works approval application has been prepared in order for Council to obtain the necessary approval to extend the landfill across the site (new Cells 5, 6, 7, 8 and top of previously landfilled Cells 1B, 2 and 3) to the approved height of 44 mAHD.

The cells would be progressively developed as a series of sub-cells, with each sub-cell designed and constructed to provide about two years of airspace for the projected quantity of waste anticipated to be deposited within the landfill during that period. Council will follow the new cell approval procedure for each subsequent sub-cell as described in the most recent version of the *Landfill Licensing Guidelines*, EPA Publication 1323.3. This process ensures that future cells are designed and constructed to the standards applicable at that time.

No new landfill sites are listed in the Landfill Schedule of the Metropolitan Waste and Resource Recovery Strategic Plan. Site closures are reducing the number of landfills available as predicted within the Landfill Schedule and the ongoing important role of the West Road RDF landfill site to accept residual waste is recognised within the Landfill Schedule. With approximately two years of available airspace currently approved at the Wests Road RDF, there is a clear need for the landfill site to continue to accept waste for the foreseeable future.

The nearest sensitive use, a residential dwelling, encroaches within the recommended 500 metre buffer distance from future Cell 7. Council has recently purchased this property from its owner. Under the sale agreement the resident will be allowed to remain in his home for the immediate future. The closest future landfill operations to his home will be when Cell 7 is developed and filled. Cell 7 has not yet been quarried and it may be a further 15 to 20 years before landfilling commences in that area. Council, as the owner of the closest residential property, therefore, has the capacity to manage occupancy of the house in order to satisfy the requirements of the buffer separation.

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1. Introduction

1.1 Project background

Wyndham City Council (Council) operates the West Road Refuse Disposal Facility (RDF) at 470 West Road, Werribee (refer Figure 1). The RDF consists of three main operations: Landfill, Transfer Station and Green Waste Processing Facility. The RDF holds EPA licence 12483 for the disposal of putrescible and solid inert waste. This includes domestic and commercial waste, supermarket processing and food waste, garden waste, demolition material, concrete, bricks, timber, plastic, glass, metals, bitumen, trees, uncontaminated fill and shredded tyres. The RDF is not licensed to accept contaminated soil, asbestos or other prescribed industrial wastes.

The site was originally commissioned as a landfill in 1976 under EPA Landfill Licence ES400. Landfilling has followed the quarry activity on the site. After areas have been quarried, the quarry holes have been progressively filled with waste. The quantities of waste deposited at the Wests Road RDF have increased as it began servicing various municipalities on both the east and west sides of the Melbourne metropolitan area and more recently municipalities in regional Victoria. The Wests Road RDF has become one of the four major Melbourne regional waste facilities.

In 2015/16 approximately 61,000 residential vehicles used the Transfer Station and Recycling facility whilst 54,000 commercial trucks brought waste into the landfill. The total amount of waste put into landfill was 515,000 tonnes, with 13,250 tonnes coming from residents via the transfer station and the remainder from Wyndham's own kerbside waste collection, other councils and commercial waste collection companies. Major customers of the RDF include:

- City of Hobsons Bay
- City of Maribyrnong
- City of Melbourne
- City of Port Phillip
- City of Yarra
- City of Monash
- City of Whitehorse
- City of Boroondara
- City of Stonnington
- City of Greater Geelong
- Citywide

In June 2014, EPA granted Works Approval no. 104203 to allow the construction of Cell 4C. This followed the granting of a planning permit in April 2014 (WYP1221/07.03) through VCAT for the use of the land and associated works for the expansion of an existing RDF into Cell 4, 5, 6, 7 and 8.

Cell 4C provides about two years of landfill disposal capacity. In order to provide certainty in regard to waste management services and to align the works approvals and planning permits, Council seeks to obtain a works approval to extend the landfill across the site (Cell 5, 6, 7, 8 and top of Cell 1B, 2 and 3) to the approved maximum height (i.e. top of cap) of 44 mAHD.

Under Section 19A of the *Environment Protection Act 1970*, the occupier of a scheduled premises must not do any act or thing, including the commencement of any construction, installation or modification of plant, equipment or process which is likely to cause an increase or alteration in the waste discharged or emitted from, deposited to, or produced at, the premises without obtaining a works approval or a licence or other statutory notice.

1.2 Description of the proposal

The West Road RDF is a scheduled premises, category A05, as specified in the *Environment Protection (Scheduled Premises and Exemptions) Regulations 2007* as it serves a population greater than 500 people. The continuation of waste disposal beyond that envisaged when Cell 4C was approved will result in an increase in the total quantity of waste landfilled at the site and therefore this works approval application has been prepared in order for Council to obtain the necessary approval to extend the landfill across the site (new Cells 5, 6, 7, 8 and top of previously landfilled Cells 1B, 2 and 3) to the approved height of 44 mAHD. To achieve this, the pre-settlement top of waste contours and final surface (i.e. top of final cap) contours for the site will need to be amended. No part of the final surface will exceed the maximum height of 44 mAHD specified in the site's planning permit.

1.3 RDF strategic plan

In March 2016 Wyndham City Council formally adopted a strategic plan for the RDF. The vision outlined in this plan is for the RDF to become the centre of a precinct focussed on resource recovery, with only residual waste going to landfill by 2040.

Nine strategic themes were identified that need to be implemented in order to achieve that vision. These are:

Table 1 RDF strategic themes

Theme	Key Actions
Developing the Future Vision	• Implementing appropriate planning controls to protect the RDF • Appropriate land acquisition • An economic development strategy to develop the RDF as a hub for growth and employment
Integrated Strategic Direction	• Completing an opportunity analysis • Completion of Council's Waste and Litter Strategy (completed) • Revision of the dividend policy on how profit from the RDF is used by Council
Better understanding of Financials	• Updating the long term financial plan • Completion of market analysis
Operational Security	• Works Approval for the site • Upgrading site infrastructure • Review ISO certification
Visual Amenity	• Landscape plans implemented • Site appearance improved
Towards Serious Resource Recovery	• Review and implement Transfer Station masterplan • Evaluate recovery options for the incoming waste stream
Governance	• Update governance arrangements for the RDF Management Committee
Communications & Engagement	• Develop and implement community engagement and communications plans to develop the education precinct
Secure External Funding	• Advocate to State Government for funding support to develop alternatives to landfill

A supporting action plan was developed by Council and is being progressively implemented to achieve the 2040 vision.

1.4 Objectives and scope

The objective of this document is to address EPA requirements for the works approval application for extension of the landfill site as per EPA Publications 1307.10 and 375.16.

The scope of the document is as per the table of contents generated via EPA’s website and as agreed in the approvals pathway meeting held between EPA, Council and GHD on 30 September 2015.

1.5 Assumptions and limitations

This report has been prepared by GHD for Wyndham City Council and may only be used and relied on by Wyndham City Council for the purpose agreed between GHD and the Wyndham City Council as set out in section 1 of this report.

GHD otherwise disclaims responsibility to any person other than Wyndham City Council arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Wyndham City Council and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

2. General information

2.1 Company legal entity

2.1.1 Company details

Individual/Company name (Legal)	Wyndham City Council
ABN/ACN	38 393 903 860
Registered Office address	45 Princes Highway, Werribee Victoria 3030
Billing address	PO Box 197, Werribee Victoria 3030
Relevant current EPA Approval / licence number*	12483

Wyndham City has one of the fastest growth rates in Melbourne and Victoria. It is one of six Local Government Areas containing designated growth areas identified in the Melbourne 2030 Plan and its successor statement Melbourne @ 5 million.

2.1.2 Company contact details

Company details	
CEO name	Kelly Grigsby
CEO phone	03 9741 6237
CEO email	mail@wyndham.vic.gov.au
Contact name	Simon Clay
Contact position	Manager Refuse Disposal Facility
Contact phone	03 9742 1870
Contact email	simon.clay@wyndham.vic.gov.au
Contact postal address	45 Princes Hwy (PO Box 197) Werribee, Victoria 3030

2.1.3 Consultant contact details

Consultant details	
Consultant name	Mark Koller
Consultant position	Principal Environmental Engineer
Consultant phone	03 8687 8310
Consultant email	mark.koller@ghd.com
Consultant postal address	Level 7, 180 Lonsdale Street, Melbourne 3000

2.2 Application fee

The estimated cost to carry out works is greater than $6.2 million. The application fee is the greater of:

- one percent of the estimated cost ($); or
- 81.83 fee units ($1140.71)

The maximum fee payable is 4500 fee units ($62,730).

The application fee is therefore $62,730.

2.3 Land use

2.3.1 Planning and other approvals

The Wests Road RDF is located in Werribee, to the west of Melbourne. It has a licensed area encompassing approximately 212 ha. The premises is bounded by Wests Road to the south and west of the site, the Melbourne to Geelong railway line to the north and farmland to the east.

The RDF is within a Special Use Zone located within the Urban Growth Boundary. The land zoning surrounding the RDF is summarised in Table 2. A map showing the planning zones is contained in Figure 2.

Table 2 Planning zones

Direction	Zone
North	Immediately north of the site is the Melbourne-Geelong railway. Beyond this is a Farming Zone, and a Special Use Zone designated for extractive industry. To the northwest is a Rural Conservation Zone which contains the Western Grassland Reserve.
East	Immediately east of the site is Farming Zone
South	The Special Use Zone which is relevant to the site extends to the south, and beyond this is Farming Zone. Further south, beyond the Princes Freeway, is zoned Public Use Zone 1 (Service & Utility).
West	To the west of the site there is a Public Use Zone (Service & Utility) and a Farming Zone, separated by the continuation of the Melbourne-Geelong railway. Further to the west is a Green Wedge Zone and the Rural Conservation Zone which contains the Western Grassland Reserve.

The RDF and its surrounds are subject to the following overlays:

- Public acquisition overlay (PAO5 and PAO8), relating to the Outer Metropolitan Ring / E6 Transport Corridor and Rail Connections
- Environmental Significance Overlay - Schedule 1 (ESO1)

Council holds Planning Permit WYP1221/07/03 (Amended) issued on 18 June 2014 for the expansion of the existing Refuse Disposal Facility (into Cells 4, 5, 6, 7 and 8), to the maximum height not exceeding 44 mAHD, issued in accordance with an order issued by the Victorian Civil and Administrative Tribunal (VCAT).

As such, Council does not require any additional planning permit for activities proposed in this Works Approval application.

2.4 Environmental track record

The Wests Road landfill commenced accepting waste around 1972 and was first licensed by EPA in 1976. It holds EPA Licence 12483 (Appendix B) permitting the disposal of putrescible waste, solid inert waste and tyres shredded with pieces less than 250 mm to be deposited to land. As a requirement of the licence, an Annual Performance Statement (APS) is completed every year to assess compliance with licence conditions.

The APS' for the past three years have been considered in Table 3, Table 4 and Table 5. It is noted that Council has taken action to rectify non-compliances.

With regard to the recent non-compliances it is noted:

- Subsurface landfill gas and groundwater contamination most likely emanate from the old unlined leachate pond, since decommissioned, or the unlined landfill cell or from historic poor leachate extraction from older cells.
- The impacts on groundwater are relatively minor and mainly confined to the site boundaries, with only slightly elevated levels of alkalinity and total nitrogen detected at the site boundaries. The current risks associated with the identified contamination are considered to be low. Further discussion on groundwater is contained in section 4.4.1.
- The identified exceedances of the BPEM[1] Action Levels for the landfill gas for the subsurface geology and surface emissions constitute a non-compliance with the landfill licence condition LI_L5. Many of the exceedance of the Action Levels in on-site monitoring bores were located near the older landfill cells. A number of remedial activities have been taken to reduce landfill gas emissions and minimise the potential for gas migration off-site. These include ongoing balancing of the gas extraction system, installation of gas extraction wells and upgrades and repairs to wells and pumps. The identified exceedances have not adversely impacted on the immediate environment and no immediate receptors have been identified in the vicinity of the subsurface gas migration impacts and the underground services. Current environmental impacts are therefore considered to be low.

Table 3 2012-2013 APS

2012-2013	
Description of non-compliance	Actions taken by Council to rectify breach
Breached Licence Condition LI_WA1: *Only wastes listed in Schedule 2 may be accepted at the premises.*	
EPA advised that contaminated soil had been misrepresented as clean fill and accepted at the landfill.	Acceptance of all clean fill halted other than clay obtained from the adjoining quarry while new fill material acceptance procedures were developed. The new procedures were subsequently reviewed and approved by an environmental auditor.
Breached Licence Condition LI_WM3: *You must ensure that litter is not deposited beyond the boundaries of the premises.*	

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[1] EPA Victoria 2015, Best Practice Environmental Management, Siting, Design, Operation and Rehabilitation of Landfills, EPA Publication 788.3

2012-2013	
Description of non-compliance	Actions taken by Council to rectify breach
Litter was observed along West Road.	While the litter was suspected to be from an uncovered waste load entering the premises, the following actions were taken: • Increase off-site litter patrols (on windy days); • Improve education material about securing your load; and • Improve on-site litter management.
Breached Licence Condition LI_L3: *By the end of each day's operations waste must be covered with a layer of soil at least 0.3 metres thick or using another method of cover approved by EPA.*	
Wastes were exposed on the northern side of Cell 4A.	Uncovered wastes were covered. Size of tipping faced reduced to make it easier to cover. Second compactor purchased to ensure adequate plant available to move earth.
Breached Licence Condition LI_L5: *You must prevent emissions of landfill gas from exceeding the investigation levels specified in Best Practice Environmental Management, Siting, Design, Operation and Rehabilitation of Landfills (EPA Publication 788)*	
Landfill gas concentrations found above BPEM action levels identified during monitoring for landfill gas in the subsurface (bores), surface (above the landfill) and in nearby subsurface utilities pits.	Repaired existing gas collection system in Cells 1B, 2A, 2B and 3 (delivered 40% increase of gas collected). Placed additional soil over old cells where high surface emissions levels found. Investigated the sources of gas within underground utility pits and developed a plan to reduce gas levels.
Breached Licence Condition LI_L6: *You must progressively rehabilitate landfill cells in accordance with Best Practice Environmental Management, Siting. Design, Operation and Rehabilitation of landfills (EPA Publication 788).*	
EPA advised that Cells 1A, 1B, 2A, 2B, 3 and 4A not rehabilitated according to BPEM	Additional soil cover placed over Cells 1A, 1B, 2A, 2B and 3. Additional landfilling may occur, subject to a future works approval, over some of these cells. Funds to rehabilitate Cell 4A allocated in the next year budget.
Breached Licence Condition LI_DL1: *You must not contaminate land or groundwater.*	
Minor leachate impacts to groundwater include elevated levels of ammonia, bicarbonate, Total Organic Carbon, iron and manganese have been noted in groundwater monitoring bores.	Newer cells are composite lined making older cells the likely source of contamination. Leachate dam will be upgraded and lined to same standard as new landfill cells.

Table 4 2013-2014 APS

2013-2014	
Description of non-compliance	Actions taken by Council to rectify breach
Breached Licence Condition LI_A1: *Offensive odours must not be discharged beyond the boundaries of the premises.*	
Odours were observed beyond the premises boundary on one occasion as result of works to extend the gas extraction system.	Issue rectified same day odour notification received. Improved management practices developed for future gas extraction projects.
Breached Licence Condition LI_WM3: *You must ensure that litter is not deposited beyond the boundaries of the premises.*	
Litter was in farmland to the east of the premises.	• Increased off-site litter patrols (on windy days). • Litter fence repaired and extended along eastern boundary. • Daily checklist completed of the adequacy of cover material available at tipping face.
Breached Licence Condition LI_L5: *You must prevent emissions of landfill gas from exceeding the investigation levels specified in Best Practice Environmental Management, Siting, Design, Operation and Rehabilitation of Landfills (EPA Publication 788)*	
Landfill gas concentrations found above BPEM Action Levels identified during monitoring for landfill gas in the subsurface (bores), surface (above the landfill) and in nearby subsurface utilities pits.	• Significant extension of the gas extraction network to include 28 new gas extraction wells. • Connection of 11 leachate sumps to gas extraction system. • Reconnection of 15 gas extraction wells in Cell 1A. • Installation of a third flare in onsite power station to increase capacity to treat extracted gas. • Repair underground pits.
Breached Licence Condition LI_L6: *You must progressively rehabilitate landfill cells in accordance with Best Practice Environmental Management, Siting. Design, Operation and Rehabilitation of landfills (EPA Publication 788).*	
EPA advised that Cells 1A, 1B, 2A, 2B, 3 and 4A not rehabilitated according to BPEM.	A progressive rehabilitation plan has been prepared. Remedial action plans for the existing final cap on Cell 1A and upgrade to interim capping on Cells 1B, 2A, 2B and 3 completed. Additional landfilling may occur, subject to a future works approval, over some of these cells. Funds to rehabilitate Cell 4A allocated in the budget.
Breached Licence Condition LI_DL1: *You must not contaminate land or groundwater.*	
Minor leachate impacts to groundwater with elevated levels of ammonia, bicarbonate, Total Organic Carbon, iron and manganese noted in groundwater monitoring bores.	Newer cells are composite lined making older cells the likely source of contamination. An improved management program for leachate has been prepared including determining the future leachate storage requirements.

Table 5 2014-2015 APS

2014-2015	
Description of Breach	Actions to Rectify Breach
Breached Licence Condition LI_G2: *You must immediately notify EPA of non-compliance with any condition of this licence*	
EPA was not immediately notified of some odour and noise complaints received by the Council.	Complaints were dealt with through the Community Group and directly with residents. Management procedures have since been altered within the Council to promptly inform EPA of complaints.
Breached Licence Condition LI_A1: *Offensive odours must not be discharged beyond the boundaries of the premises.*	
Odours were attributed to the commencing of a new leachate pond and as a result of landfill excavation by the Victorian Police.	An Odour Management Plan was prepared. Leachate pond chemically treated to reduce odours. The excavation of Cell 4B by Victoria Police was immediately recovered after excavations works ceased.
Breached License Condition LI_A2: *Unacceptable noise (including vibration) must not be emitted beyond the boundaries of the premises.*	
Noise detected off-site due to compactor operating on Cell 4B.	Reversing beepers on on-site plant replaced with low frequency tones. Noise emissions subsequently measured and complied with the EPA standard.
Breached Licence Condition LI_WM3: *You must ensure that litter is not deposited beyond the boundaries of the premises.*	
Litter was in farmland to the east of the premises.	• Increased off-site litter patrols (on windy days). • New litter fence built around the new leachate pond. • Daily checklist completed of the adequacy of cover material available at tipping face.
Breached Licence Condition LI_WM4: *You must ensure that waste does not burn at the premises.*	
A small area of the tipping face caught fire due to flammable material or hot ashes in the waste stream.	On-site water tanker used to promptly extinguish the fire.
Breached Licence Condition LI_L3: *By the end of each days operations waste must be covered with a layer of soil at least 0.3 metres thick or using another method of cover approved by EPA.*	
Inspection by EPA on 25 November 2014 identified exposed wastes on the batter of Cell 4A.	The exposed waste was attributed to erosion caused by constructing a nearby access road. The area was repaired immediately with cover placed over the area.
Breached Licence Condition LI_L5: *You must prevent emissions of landfill gas from exceeding the investigation levels specified in Best Practice Environmental Management, Siting, Design, Operation and Rehabilitation of Landfills (EPA Publication 788)*	

2014-2015	
Description of Breach	**Actions to Rectify Breach**
Landfill gas concentrations found above BPEM Action Levels identified during monitoring for landfill gas in the subsurface (bores) and surface areas above the landfill.	• Ongoing balancing and monitoring of the existing landfill gas extraction system. • 19 new gas extraction wells installed. • Continuation of the remediation works as specified in the Landfill Gas Remediation Action Plan.
Breached Licence Condition LI_DL1: *You must not contaminate land or groundwater.*	
Minor leachate impacts to groundwater include elevated levels of ammonia, bicarbonate, Total Organic Carbon, iron and manganese have been noted in groundwater monitoring bores.	Newer cells are composite lined making older cells the likely source of contamination. Hydrogeological Assessment completed for cell 1A. Leachate sumps have been repaired and fitted with automatic pumps. Construction of a second leachate pond completed with plans for a third pond to be constructed.

2.4.1 EPA inspections and enforcement

EPA enforcement actions since 2014 are summarised in Table 6.

Table 6 EPA enforcement actions since 2014

Date	Activity Type	Details
26/6/14	Pollution Abatement Notice (PAN)	PAN 90004992 requiring reduction in leachate levels in Cells 1B to 4A and hydrogeological assessment (HA) of Cell 1A to determine appropriate leachate levels. See section 4.7.6 for further information regarding leachate management. PAN was amended on 28/10/14 to allow 1 additional month for the HA to be completed. The HA was submitted to EPA in November 2014. A new leachate storage pond was constructed and commissioned in late 2014. This PAN was revoked on 2/6/16 by EPA.
26/6/14	PAN	PAN 90004991 requiring improvements to landfill gas management in Cells 1A to 4A and development of a progressive rehabilitation plan. Works undertaken to address the PAN included installation of additional gas extraction wells, connection of leachate sumps to the gas extraction system and application of additional interim cover to Cells 1B-3. Additional capping material was applied to Cell1A. A Rehabilitation Management Plan for Cells 1B-3 was submitted to EPA in September 2014. This notice was revoked on 26/9/2015
25/11/14	Inspection	Inspection to assess progress in meeting PANs 4491 and 4492. Observed improvements included: • Blockages in Cell 1A gas extractions system fixed • Improvements to interim cover on Cells 1B, 2A and 3
8/2/15	Inspection	Uncovered waste observed that was not part of the active tipping face. Noted that: • Steep batters on Cell 4A makes it very difficult to compact cover • No aerators or sprays being used on leachate pond to increase evaporation

Date	Activity Type	Details
11/6/15	Penalty Infringement Notice (PIN)	$7,381 infringement notice issued for non-compliance with licence condition regarding cover. PIN confirmed following Council request for a review.
7/7/15	Inspection	Identified Cell 3 and 4A still not compliant with required levels for surface gas emission.
21/7/15	Letter to CEO	Letter highlighting inspection of 7/7/15 indicated Condition 3.2 of PAN 90004491 had not been complied with.
14/9/15	PIN	$7,584 infringement notice issued for non-compliance with clause 3.2 of PAN 90004491 relating to landfill gas management.
24/9/15	Revocation of PAN	PAN 90004991 was revoked as it had been amended and PIN subsequently issued. Indicated a new PAN would be issued.
2/2/16	Inspection	Inspection of Cell 4A to review proposed reprofiling work to reduce steepness of batters and allow proper intermediate cover to be applied. Noted elevated methane emissions still occurring on Cell 4A.
11/3/16	PAN issued	PAN 90006742 requires filling of haul road voids in Cell 4A, application of intermediate cover, reprofiling to achieve 1V:3H batters and installation of additional gas bores. The PAN was amended on 29/6/16 to allow an additional 3 months for the works to be completed .
15/8/16	Inspection	Inspection to review works being undertaken to reprofile Cell 4A and place additional intermediate capping in accordance with PAN 90006742. Review of progress with leachate management and inspection of waste disposal in Cell 4C.

2.4.2 Complaints

Complaints received by Council since 2014 in relation to the RDF are summarised in Table 7.

Table 7 2014-15 complaints summary

Date	Complainant (site)	Details	Actions
17/07/2014	Complainant A (site 1)	Noise from large machine operating at night.	Met with resident at their house. Operations audit recommended acoustic study which was undertaken, acoustic Consultant engaged to identify noise source and recommend noise abatement measures if necessary. This assessment indicated no nuisance noise levels. Despite outcomes of the noise assessment machinery noise (reverse beeping noise) level was reduced.
18/07/2014	Complainant A (site 1)	Source believed to be compactor operating on tip face.	As above

Date	Complainant (site)	Details	Actions
27/08/2014	Complainant A (site 1)	Machine noise causing disturbance at night.	As above
29/08/2014	Complainant B (site 1)	Strong tip odour detected in the morning.	Investigated, nuisance odour was not identified.
5/09/2014	Complainant B (site 1)	Bad smell past two mornings.	Due to police investigation – involving excavation in waste mass.
29/09/2014	Complainant A (site 1)	Machinery noise causing sleep disturbance.	Same action as complaint logged in July and August 2014.
1/10/2014	Complainant A (site 1)	Machinery noise causing sleep disturbance.	As above
2/10/2014	Complainant B (site 1)	Bad smell during the morning.	Odour believed to from pumping leachate from cells into the new leachate pond. Investigate chemical dosing of the leachate to reduce odours.
3/10/2014	Complainant B (site 1)	Bad smell during the morning.	As above
7/10/2014	Complainant A (site 1)	Machinery noise causing sleep disturbance.	Same action as complaint logged in July and August 2014.
8/10/2014	Complainant B (site 1)	Bad smell during the morning.	Commenced chemical treatment of leachate pond.
22/10/14	Complainant A (site 1)	Machinery noise causing sleep disturbance.	Same action as complaint logged in July and August 2014.
23/10/2014	Complainant A (site 1)	Machinery noise causing sleep disturbance.	Same action as complaint logged in July and August 2014.
27/10/2014	Complainant A (site 1)	Machinery noise causing sleep disturbance.	Same action as complaint logged in July and August 2014.
07/11/2014	Complainant A (site 1)	Machinery noise causing sleep disturbance.	Same action as complaint logged in July and August 2014.
18/11/14	Complainant B (site 1)	Bad smell during the morning.	Investigated, nuisance odour was not identified.
25/11/14	Complainant B (site 1)	Offensive odour from tip all day today.	Odours not noticed during site walkover. Unusual odour source investigated but could not be identified.
16/12/14	Complainant B (site 1)	Bad smell during the morning.	Investigated, nuisance odour was not identified.
19/12/14	Complainant B (site 1)	Strong odour from tip.	Inspection identified source of higher than normal odours.

Date	Complainant (site)	Details	Actions
03/01/15	Complainant B (site 1)	Litter caught on fence and trees. Strong odour noticed on afternoon of 29/12/14.	Litter crews sent to remove accumulated litter. Odours may be originating from the leachate pond.
07/01/15	Complainant B (site 1)	Strong odour last night.	No odour identified by the litter patrols or the RDF staff on Wednesday the 6th or in the morning of the Thursday the 7th. Bureau of Meteorology data indicate odour not from landfill as wind from wrong direction.
8/1/15	Complainant C (Site 2)	Bad smell from the tip.	Smell due to excavation by the Police.
09/01/15	Complainant B (site 1)	Bad odour on the evening of 6/1/15 and the next morning.	As above
14/01/15	Complainant B (site 1)	Odour bad during the morning.	As above
14/01/15	Complainant B (site 1)	Strong odour.	Police excavations concluded. Council is filling and covering exposed wastes.
23/2/15	Complainant B (site 1)	Strong odours on 20/2 /15 at 7.30 am and again on 23/2/15 at 9.00 am.	investigate to check for odour source.
9/03/15	Complainant B (site 1)	Strong odour in morning and then through the afternoon.	
15/05/15	Complainant B (site 1)	Strong odours on 13/5/15 and 15/5/15.	Police again excavated parts of the landfill over the past two weeks.
25/6/15	Complainant B (site 1)	Odour noticed most of 19/6/15.	Investigated but wind direction not aligned with tip as odour source.
29/06/15		Odours noticed on 28/6/15 during the day.	As above

Table 8 2015-16 complaints summary

Date	Complainant	Location	Details	Actions
13/8/15		Site 1	Odour noticed mid-morning	Wind direction indicates RDF as possible source. Source could not be identified.
17/8/15		Site 1	Odour all morning	Wind direction indicates RDF as possible source. Source could not be identified.
26/8/15		Site 11	Very strong odour around 5.10 pm	Prevailing wind direction indicates RDF was not the source
1/12/15		Site 1	Odour noticed at 2.30 pm	Wind direction indicates RDF as possible source. Source could not be identified.
2/12/15		Site 1	Odour all morning	Wind direction indicates RDF as possible source. Source could not be identified.
3/12/15		Site 1	Odour all morning	Wind direction indicates RDF as possible source. Source could not be identified.
10/12/15		Site 1	Odour at 7.30 am	Wind direction from onsite weather station supports RDF as potential source. Investigation unable to confirm any cause at the RDF
18/12/15		Site 1	Odour with strong chemical characteristic at 6.30-7 am	Wind direction indicates RDF as possible source. Source could not be identified.
24/12/15		Site 1	Odour at 6.15 am	Wind direction from onsite weather station supports RDF as potential source. Investigation unable to confirm any cause at the RDF
29/12/15		Site 1	Odour at around 7 am	Wind direction data from on-site weather stations indicates RDF is not the source.
29/1/16		Site 1	Odour at around 8.40 am	Wind direction from onsite weather station supports RDF as potential source. Investigation unable to confirm any cause at the RDF
15/2/16		Site 1	Odour at 10 pm	Wind direction from onsite weather station supports RDF as potential source. Investigation unable to confirm any cause at the RDF
25/2/16		Site 1	Odour all day but particularly strong at 4 pm	Wind direction from onsite weather station supports RDF as potential source. Investigation unable to confirm any cause at the RDF
26/2/16		Site 1	Odour at 9-9.30 am	Investigated immediately but odour could not be confirmed by Council staff.

Date	Complainant	Location	Details	Actions
22/3/16		Prices Freeway	Odour when driving along freeway near RDF	Wind direction from on-site weather stations indicates RDF was not the source.
7/4/16		Site 1	Odour all day, stronger in the afternoon	Wind direction from onsite weather station supports RDF as potential source. Investigation unable to confirm any cause at the RDF
11/4/16		Site 1	Odour over last 5 days	Wind direction over the period 7-11 April indicate RDF could be possible source
21/4/16		Site 1 & Bulban Rd	Odour on and off most of the day	Wind direction indicates RDF as possible source. Source could not be identified.
10/5/16		Site 1	Odour in morning	Confirmed by Council staff as originating from the RDF. Likely cause temporary shutdown of a number of gas wells due to reprofiling work on Cell 4A. Reported to EPA as a breach of licence.

Note: the complaints from 13/8/15 to 3/12/15 were not received until mid-December 2015 meaning the potential causes of the odour were unable to be investigated.

2.5 Community engagement

The Wests Road Refuse Disposal Facility & Waste Management Community Reference Group (CRG) was established and met for the first time on 10 December 2013. The objectives of the group are to:

- Provide for information exchange between residents, community groups, government agencies, Council and other stakeholders in relation to the RDF and waste management and resource recovery generally.
- Facilitate community awareness of the strategic planning, operations, environmental performance and short, medium and long-term development of the RDF.
- Foster understanding and cooperation between community members and Council in minimising any impacts of the RDF on the community.
- Provide input into Council's planned community engagement and education activities in relation to the RDF and waste management and resource recovery generally, including recycling and waste diversion.

The group has an independent chairperson and consists of two City of Wyndham Councillors, two Council staff, a representative of the Metropolitan Waste and Resource Recovery Group (MWRRG), and nine community representatives. The CRG has been established as a forum for providing advice and the exchange of information in relation to waste management and resource recovery generally, including the Wests Road RDF. Notes from the meetings are available on the Council's website or from the community representatives. At this point in time the meetings are not open to the public, however, the public are able to raise concerns through the community representatives.

Further ad hoc meetings have and will occurred when needed with interested residents to explain the proposed continued use of the site for landfilling purposes and to provide an avenue for their concerns to be raised.

Ongoing community engagement will occur via the CRG, website information, ad hoc meetings and regular communication to interested parties.

Council held a community information session from 1.30 – 8.00 pm on Thursday 28 July 2016 to present and discuss information about the proposed works approval. The EPA, MWRRG and representatives from the Western Region Environment Centre also were present for the duration of the information session. The session was held as a “drop in” style session. Approximately 40 people attended the session. Based on the feedback gathered the main things that concerned people were:

- The lack of progress on alternatives to landfill, with a lot of interest in waste to energy options for processing waste
- Litter management
- The approved height of the current and future landfill activities and the associated visual amenity impacts
- The need to accelerate the landscaping on and around the RDF to provide better screening and specifically to include detail on this in the works approval application
- How income from the RDF activities is used by council

Broader concerns about waste planning, the closure of landfills in the southeast of Melbourne and the associated movement of increasing quantities of waste to the western side of Melbourne were raised by several of the people attending

Council’s responses that address the community’s concern (that are within Council’s control) are summarised in Table 9.

Table 9 Council comments addressing community feedback

Community comment	Council response
The lack of progress on alternatives to landfill, with a lot of interest in waste to energy options for processing waste	Waste to energy waste processing currently remains financially prohibitive, however Wests Road Landfill contains considerable landfill gas capture and electricity generation infrastructure. This will expand into the extension area, refer to Section 4.7.8 for details.
Litter management	The site operates in accordance with procedures and practices contained in the West Road Refuse Disposal Facility Werribee Operations and Maintenance Procedure Manual (OMPM, which outlines best practice litter management strategies.
The approved height of the current and future landfill activities and the associated visual amenity impacts	The height of the landfill, as outlined in this WAA, will not exceed 44 m AHD as per the planning permit WYP1221/07/03. Further details are included in Section 2.3.1.
The need to accelerate the landscaping on and around the RDF to provide better screening and specifically to include detail on this in the works approval application.	There are landscaping works proposed in this application to soften the visual impact of the RDF. There is a mature tree line along the eastern boundary – on the edge of the road reserve which provides some screening of the site from this direction. Additional landscaping works have been completed or are scheduled for the remaining boundaries, refer to Section 4.11.
How income from the RDF activities is used by council	Income sourced via landfilling operations at the RDF partly funds the Council’s capital works program, and therefore is an essential source of income for the Council and local community.

3. Integrated environmental assessment

3.1 Existing site operations

The RDF is comprised of three main operations: Landfill, Transfer Station and Green Waste Processing Facility. Wyndham City Council holds EPA Waste Discharge Licence No 12483 (Appendix B), which allows for solid inert waste, putrescible waste and shredded tyres to be deposited to land. Council is not licensed to take low level contaminated soil or prescribed waste and this application does not seek to change the types of waste that are landfilled. The Green Waste Processing Facility is operated by Veolia and is not managed by the Council.

Wyndham City is committed to reducing waste and improving resource recovery from its operations and from the community. Wyndham City's *Litter and Waste Management Strategy 2016 – 2040* seeks to achieve the targets set by the Victorian State Government's *Getting full value: the Victorian Waste and Resource Recovery Policy* and the Metropolitan Waste and Resource Recovery Strategic Plan.

Wyndham City will continue to strengthen its existing relationship with the Victorian Government and the Metropolitan Waste Management Group to achieve the goals of sustainable waste management as expressed by the Metropolitan Waste and Resource Recovery Strategic Plan.

3.1.1 Landfill

The site was first developed as a landfill, filling the void space created by basalt extraction, during 1975 and commenced operations in 1976. Cells completed to date are Cells 1A, 1B, 2A, 2B, 3, 4A and 4B with landfilling currently being conducted at Cell 4C. Refer to Figure 1 for the current site layout plan and Figure 8 for the proposed future landfilling area. Details of the landfill cell construction are presented in Table 10.

The term sub-cell is used in this works approval application to refer to a new waste compartment within a new cell which has an approximate filling life of two years as suggested in the landfill BPEM. A cell therefore comprises a combination of sub-cells. The number of sub-cells forming a cell is dependent on the area of the cell (i.e. the number of sub-cells within a cell may vary between cells) and hence the filling life of a cell may vary. For example, a cell with three sub-cells will have a filling life of approximately six years. Again, for the purposes of this works approval application, a new cell is denoted by a number, while a new sub-cell is denoted by a number and a letter. For example, Sub-cell 5A, is the first sub-cell to be developed and filled within new Cell 5. This terminology and notation is not necessarily consistent with that presently used at the site as presented in Table 10. For example, present or recently filled Cells 4A, 4B and 4C would be referred to as sub-cells of Cell 4 under the notation used in this works approval application.

Table 10 Progressive landfill operations

Cell Aspect	Cell 1A	Cell 1B	Cell 2A	Cell 2B	Cell 3	Cell 4A	Cell 4B	Cell 4C
Operational Period	1976 - 1991	1992 – 1998	1998 – 2006	1998 – 2006	2006 - 2010	2010 - 2016	2013 - current	2016 – ~2018
Base liner design	None	1 m thick low permeability compacted clay				1 m thick low permeability compacted clay plus HDPE		1 m thick clay plus HDPE
Leachate collection system	Leachate sumps installed retrospectively in 2013.	Base and pipes graded to sump. In all cells (1B - 4B) automatic pumping to the leachate ponds has been installed.			Base and pipes graded to two sumps.	Drainage layer and pipes graded to two leachate sumps in Cell 4A and to three sumps in Cell 4B.		Grade of cell liner and leachate pipes lead to four sumps
Capping/ rehabilitation	0.25 to 1.8 m compacted clay.	Temporary soil cover, from 0.35 to 1.7 m thick. Evapotranspiration cap trial pad will be constructed to demonstrate performance of the cap.						
Landfill gas management	Active extraction and treatment via electrical power generator and flares.						To be installed following filling	

3.1.2 Transfer station

The RDF includes a recycling facility and waste transfer station which is open to the public. The transfer station allows small vehicles to deposit waste that would not normally be collected at the kerbside. Larger vehicles, such as garbage trucks, deposit their waste directly onto the tipping face at the landfill.

The Transfer Station is open to the public and, at a cost, allows residents to drop off green waste, items for recycling, items for the Resale Shed and waste. Residents are welcome to browse the Resale Shed and purchase second hand goods.

Items that are readily accepted for recycling / reprocessing at the RDF include:

- Car batteries
- Motor oil
- Gas cylinders
- Glass bottles & jars
- Aluminium cans
- Steel – e.g. old car bodies
- Car tyres
- Tree prunings
- White goods
- Fluorescent tubes and CFL's
- Mobile phones
- Unwanted computers, computer accessories, printers, scanners, cables and televisions

- Hard plastics - Types 1-7
- Green Waste – Green waste collected at the RDF is shredded and used for rehabilitation and tree planting
- Paint
- Batteries

The Transfer Station is located on former Cell 1A, along with the weighbridge and a large, roofed push pit where the public deposits waste. After the manual segregation of recyclables by site staff, the remaining waste is deposited at the tipping face. Green waste material is mulched at the site with a portion used for rehabilitation purposes, landscaping and for tree planting with the remainder offered to the public free of charge. The public have access to the Resale Shop to either drop off unwanted items or to purchase an item. A layout plan and image of the transfer station are provided in Figure 3 and Figure 4 respectively.

While not subject to this Works Approval Application, Council has developed a *Refuse Disposal Facility (RDF) Strategic Plan and Vision 2040*, released November 2015 which will see the redevelopment of the Transfer Station by 2020, providing for increased resource recovery. This Strategic Plan draws on the vision for the site to be a precinct focused on resource recovery as described in *Getting Full Value – the Victorian Waste and Resource Recovery Policy* in 2013.

Aligned to the vision for the RDF site, the aim is for more items to be salvaged, repaired and repurposed in order to reduce waste being sent to landfill. The Resale Shed also has the potential to provide local employment (e.g. Social Enterprise arrangement) and also to promote a reuse culture in Wyndham.

The waste industry in Victoria is changing as advances in technology make alternative waste treatment more cost competitive to landfilling. Alternative Waste Technology (AWT) facilities typically treat residual waste using techniques such as composting and mechanical pre-sorting to recover potentially recyclable materials. AWTs are expected to play an increasing role in managing waste and recovering materials in Victoria, but the rate of adoption is closely linked to their costs competitiveness with landfilling.

Landfills will still, however, be required for the foreseeable future to manage the residual waste stream. With the landfill being designed and constructed on a cellular basis, there is the ability to control the size of each cell to manage the anticipated volume of waste requiring disposal within the preferred two-year life of landfill cells as recommended in the landfill BPEM.

3.1.3 Green waste (organics) processing

Veolia operates a green waste transfer depot at the Wyndham site where waste from Green Waste Bin collections is consolidated into bulk haul loads and then transferred to its composting facility at Bulla (refer Figure 5).

3.1.4 Biogas power generation

LMS Energy Pty Ltd (LMS) owns and operates the approved Wyndham Renewable Energy Facility (WREF) within the boundary of the RDF. The WREF was purchased from Energex in 2011. The WREF generates electricity from landfill gas and is connected with the local electricity grid to enable the sale of the electricity produced.

Biogas (landfill gas) power generating operations, while located on the same property as the RDF, are not RDF activities. These operations are not governed by the RDF's EPA licence 12483 and Planning Permit No. WYP1221/07.03. LMS holds EPA Waste Discharge Licence No. 81008 for the operation of a 1.8 MW waste to energy power station, refer to Figure 6. The landfill gas extraction system consists of a network of extraction wells, well stations and a main pipeline. Landfill gas is extracted from wells in Cells 1A, 1B, 2A, 2B, 3 and 4A and then piped to a main line feeding the generator. Landfill gas extraction wells are currently scheduled to be installed in Cell 4B in October 2016. It is anticipated over the next few years that LMS will seek approvals to expand the generating capacity of the power station to about 5 MW.

3.1.5 Quarrying

The existing quarry site is covered by the Department of Economic Development, Jobs, Transport and Resources (Energy and Earth Resource Division) Work Authority WA184 issued under the Extractive Industries Development Act. The owner of the Work Authority is registered as Holcim (Australia) Pty Ltd (Holcim). The Work Authority currently covers an area of 139 hectares and contains conditions relating to specific extractive and rehabilitation techniques (refer Figure 7).

As the quarrying operations progress, completed areas of extraction have been excised from the Work Authority to enable landfill cells to be constructed. Quarrying currently occurs in the north east of the site. Extracted basalt is transported to the Holcim plant located to the south of the site where the material is crushed and blended to produce saleable products.

3.2 Proposed works

Council seeks to obtain a works approval to extend the landfill across the site (Cell 5, 6, 7, 8 and top of Cell 1B, 2 and 3) to the approved maximum height (i.e. top of cap) of 44 mAHD with the cell footprint as shown in Figure 8.

The cells would be progressively developed as a series of sub-cells, with each sub-cell designed and constructed to provide about two years of airspace for the projected quantity of waste anticipated to be deposited within the landfill during that period. An indicative development timeframe for each cell (or sub-cell) is shown in Table 27. The actual timing will be dependent on waste disposal rates which are influenced by the closure of other landfill sites, commercial considerations and waste diversion programs.

Council will follow the new cell approval procedure for each subsequent sub-cell as described in the most recent version of the *Landfill Licensing Guidelines*, EPA Publication 1323.3. This process ensures that future cells are designed and constructed to the standards applicable at that time.

3.3 Consistency of the proposal with strategic waste policies

3.3.1 National Waste Policy

The *National Waste Policy: Less Waste, More Resources*, came into effect in November 2009 and was endorsed by the Council of Australian Governments (COAG) in October of that year. This policy sets a clear direction for Australia as a nation, over a ten-year period to 2020, toward producing less waste for disposal and managing waste as a resource to deliver economic, environmental and social benefits.

The policy encompasses a wide range of waste types, including hazardous wastes and substances. It applies to diverse waste streams, including commercial and industrial, municipal, construction and demolition waste streams.

The aims of the National Waste Policy are to:

- Avoid the generation of waste, reduce the amount of waste (including hazardous waste) for disposal
- Manage waste as a resource
- Ensure that waste treatment, disposal, recovery and re-use is undertaken in a safe, scientific and environmentally sound manner
- Contribute to the reduction in greenhouse gas emissions, energy conservation and production, water efficiency and the productivity of the land

The policy provides the basis for collaboration between the States and Territories to provide a consistent and efficient approach to national waste issues and ensure that waste management remains aligned with Australia's international obligations. State legislation is usually prepared to give effect to decisions endorsed by COAG.

3.3.2 State strategic waste plans

In April 2013, the Victorian Government released *Getting full value: the Victorian Waste and Resource Recovery Policy (Getting full value)*. *Getting full value* sets the framework for a Victorian waste and resource recovery system that meets the aims of the National Waste Policy. It specifies that the Strategic Plan, *Statewide Waste and Resource Recovery Infrastructure Plan (SWRRIP)* and regional waste and resource recovery plans, are the principal planning tools for realising this aim.

The SWRRIP was released on 12 June 2015. It provides the statewide context and long term vision for improving Victoria’s waste and resource recovery infrastructure system. It ensures that the waste and resource recovery services essential to meet the needs of all Victorians are available while supporting innovation and investment in better infrastructure to minimise the impact on the environment and climate change, maximise resources recovered, create jobs and bolster the economy.

Investment in waste and resource recovery infrastructure is generally by local governments, industry, waste and resource recovery groups (WRRGs) and government. The SWRRIP strategic directions will guide decision making to ensure investment in the right infrastructure mix will achieve the four goals:

- **Goal 1:** Landfills will only be for receiving and treating waste streams from which all materials that can be viably recovered have been extracted.
- **Goal 2:** Materials are made available to the resource recovery market through aggregation and consolidation of volumes to create viability in recovering valuable resources from waste.
- **Goal 3:** Waste and resource recovery facilities including landfills are established and managed over their lifetime to provide best economic, community, environment and public health outcomes for local communities and the state and ensure their impacts are not disproportionately felt across communities.
- **Goal 4:** Targeted information provides the evidence base to inform integrated statewide waste and resource recovery infrastructure planning and investment at the state, regional and local levels by industry, local government, waste and resource recovery groups, government agencies and the broader community.

There are nearly 500 major pieces of infrastructure supporting Victoria's waste and resource recovery system. The system consists of a network of 'hubs and spokes', where 'hubs' are facilities or groups of facilities that process or manage waste and material streams. 'Spokes' are the sequence of activities that move materials from waste generators to hubs e.g. for collection, transporting and sorting.

The SWRRIP identifies 23 existing waste and resource recovery hubs of state importance. These have been identified as currently undertaking activities or managing one or more waste and material streams that are significant at the state level. Amongst the 14 hubs identified in the metropolitan region is the Werribee RDF.

An estimated 5,900,000 tonnes of recovered material entered reprocessing facilities in the Metropolitan region in 2011-12[2]. Landfills in the Metropolitan Region received an estimated 2,959,000 tonnes of residual waste in 2011-12.

There are twenty licensed operational landfills in the Metropolitan Region. The Metropolitan Region has two main catchment areas — south east and north west. The West Road RDF landfill is identified as an operating landfill with an anticipated closure date extending beyond 2046.

3.3.3 Metropolitan Waste and Resource Recovery Implementation Plan

The Metropolitan Waste and Resource Recovery Group, (MWRRG) is responsible for municipal solid waste management and planning in metropolitan Melbourne. Under the *Environment Protection Act 1970* (the Act), the MWRRG is required to prepare a Metropolitan Waste and Resource Recovery Implementation Plan (MWRRIP). The approved MWRRIP was released in October 2016. The approved plan continues to be in force until the Minister publishes a notice in the Government Gazette stating that the Minister has endorsed a new MWRRIP.

The *Environment Protection Act 1970* requires the MWRRIP to contain a Landfill Schedule showing, amongst other things, the proposed sequence of filling of available landfill sites for at least the next ten years and to include a program for the replacement and rehabilitation of landfills.

The MWRRIP contains a Landfill Schedule listing available landfill sites for at least the next ten years, specifies the proposed sequence for filling these sites and includes a program for replacing and rehabilitating existing landfill sites. The West Road RDF landfill is listed in the Landfill Schedule with a nominal closure date of post 2046 (refer Appendix C). The Werribee landfill extension is provided for in the MWRRIP as it states:

> *The Werribee landfill has potential capacity to operate beyond 2046. The site also has the potential to accommodate additional and improved resource recovery operations for organic and general waste over the long term. MWRRG will continue to support Wyndham City Council's strategic planning and ongoing community engagement at the site.*
>
> *If this site does not continue its landfill operations in the long term, Melbourne is at risk of having inadequate landfill capacity to manage waste for which there is no current resource recovery capacity in the network.*

An extract from the MWRRIP, Section 6 Part B: Landfills is shown Appendix C.

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[2] Based on VRIAS data which does not include tonnes of materials entering plastic reprocessors as the Plastics and Chemicals Industries Association do not participate in the VRIAS.

In response to a specific request to the MWRRG regarding its view about a works approval application to extend the areas of the site approved for future landfilling, it provided the following response:

“The Werribee Landfill is 1 of 3 landfill sites in the metropolitan area that has a life expectancy beyond 30 years. The site is therefore considered by MWRRG to be strategically important for the disposal of waste to landfill but also as a potential site to accommodate resource recovery operations over the long term, in line with the directions of the metropolitan Implementation Plan.

MWRRG has an existing contract with Wyndham City Council for the disposal of waste from participating councils. The approval of the new cells will provide certainty for the participating councils and any additional councils that may request to join during the expected contract life that extends to 2021”.

A full copy of that letter is provided in Appendix D.

In summary, the extension of the West Road RDF landfill to allow landfilling to occur in Cells 5, 6, 7, 8 and top of cells 1B, 2 and 3 is consistent with the Landfill Schedule contained in the MWRRIP. The extension is also consistent with the with 2013 Statewide Plan, *Getting full value: the Victorian Waste and Resource Recovery Policy (Getting full value)* and is supported in the draft plans prepared by the MWRRG.

3.3.4 State waste management policy

In December 2004, the Victorian Government gazetted Waste Management Policy (Siting, Design and Management of Landfills), No. S 264. The Landfill WMP applies to all landfills in Victoria receiving solid non-prescribed waste and/or Category C prescribed industrial waste. It clarifies and strengthens the existing framework through promoting best practice and continuous improvement in the way landfills in Victoria are planned, sited, designed and managed. Discussion of compliance of the proposed extension of the Wests Road landfill with relevant clauses of the Landfill WMP is provided below.

Clause 13(3)

This clause prohibits new landfill sites being established or extended into any areas where an aquifer contains Segment A groundwater unless otherwise approved by EPA. As discussed in Section 4.4.1, groundwater in the vicinity of the RDF is classed as Segment C. The proposed landfill extension therefore complies with this clause.

Clause 16(2)

All new landfills must deposit waste at least two metres above the long term undisturbed depth to groundwater, unless the landfill operator satisfies EPA that sufficient additional design and management practices will be implemented and EPA determines that regional circumstances exist that warrant the new landfill.

Analysis of historical groundwater standing water levels for the site (refer Section 4.4.2) indicates that the base of the cell in each new landfill cell must not be lower than the following levels to be compliant with Clause 16(2) of the Landfill WMP:

- Cell 5 – 12.80 mAHD
- Cell 6 – 11.53 mAHD
- Sub-cell 7A – 11.40 mAHD
- Sub-cell 7B – 11.30 m AHD
- Sub-cell 7C – 11.00 m AHD
- Cell 8 – 11.08 mAHD

Detailed design of proposed cells will take account of these levels. If necessary, the sub-base of the sub-cell would be thickened to ensure the required separation. Alternatively, additional design measures could be incorporated in the leachate sump for that sub-cell similar to that utilised in Cell 4C. Refer Section 4.7.2 for further discussion of this matter.

The piggyback liners installed above previously landfilled Cells 1B, 2 and 3 will be well above the historical groundwater standing water levels below those cells and therefore compliance with Clause 16(2) of the Landfill WMP will be achieved.

Climate change impact predictions are for reduced rainfall across the south west of Victoria and for higher evaporation rates. This is expected to reduce groundwater levels as rainfall levels are known to influence groundwater levels.

Schedule A

Schedule A of the Landfill WMP lists areas where landfills must not be established or extended into. Table 11 lists the areas where landfills must not be established or extended and how the proposed landfill extension complies.

Table 11 Waste Management Policy exclusion areas for landfills

Description of Exclusion Area	Response
(a) high value wetlands including wetlands of international importance listed under the convention on wetlands (Ramsar, Iran 1971) and listed in a directory of important wetlands in Australia (Environment Australia 2001);	The closest listed Ramsar site is the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula. The site is not within this designated area.
(b) areas of significance for spawning, nursery, breeding, roosting and feeding areas of aquatic species, and fauna listed under the China—Australia Migratory Bird Agreement and Japan—Australia Migratory Bird Agreement, the Convention on Migratory Species of Wild Animals (Bonn, Germany, 1979) and under the **Flora and Fauna Guarantee Act 1988**;	The site is not a significant spawning, nursery, breeding, roosting and feeding areas as per the meeting of the Flora and Fauna Guarantee Act.
(c) marine and coastal reserves listed in the **National Parks Act 1975**;	The site is over six kilometres from the coast. It is not within a marine or coastal reserve.
(d) water supply catchments proclaimed under the **Catchment and Land Protection Act 1994**, unless otherwise approved by the Authority;	The site is not within a declared catchment within the Port Phillip Region
(e) state wildlife reserves listed under the **Wildlife Act 1975**;	The site is not within a reserve listed under the Wildlife Act 1975
(f) critical habitats of taxa and communities of flora and fauna listed under the **Flora and Fauna Guarantee Act 1988**;	The site is not a critical habitat of taxa and communities listed under the Flora and Fauna Guarantee Act.
(g) areas identified by the **Water Act 1989** as water supply protection areas, unless otherwise approved by the Authority;	The site is not within a **Water Supply Protection Area** declared under the **Water** Act 1989 to **protect** the groundwater or surface **water.**
(h) groundwater protection zones prescribed in Schedule A of the State environment protection policy (Groundwaters of Victoria) 1997;	The site is not within a groundwater protection zone.

Description of Exclusion Area	Response
(i) matters of national environmental significance as identified in the **Environment Protection and Biodiversity Conservation Act 1999** (Cth); and	The site is not within an area identified as national environmental significance as per the Environment Protection and Biodiversity Conservation Act.
(j) surface waters.	The landfill will not be located within surface waters (refer Section 4.6 for further discussion)

The landfill will not be extended into any of these prohibited areas and therefore satisfies the siting criteria specified in the Landfill WMP.

3.4 Needs analysis

In accordance with broad policy intent of the *Waste Management Policy (Siting, Design and Management of Landfills),* works approvals and licences allowing the development of new landfills (or new cells of existing landfills) should not be granted until the closure or imminent closure of existing operating landfills in their relevant sub-region has created a demonstrable need for new landfill space.

An assessment of demonstrable need does not require the same evaluation as that conducted by the MWRRG during the development of its MWRRIP (said assessment is undertaken when the MWRRIP and Landfill Schedule are approved) but rather where the landfill sits within this strategy by way of:

- Sequencing of landfill developments in the relevant category over time
- Rates of filling and closure of landfills in the relevant category
- Whether anticipated sequencing was occurring on schedule

The importance of four key landfills, including the Werribee landfill, is recognised in the MWRRIP where it states:

The metropolitan Melbourne region will not have sufficient landfilling capacity if any of the landfills, listed below, do not operate in accordance with this sequence. Significant landfills are those in a designated hub of state importance, and are:

- *SUEZ Hallam and SUEZ Lyndhurst*
- *Cleanaway MRL Ravenhall*
- *Hanson Landfill Wollert*
- *Werribee Landfill*

The Landfill Schedule anticipates that a number of existing sites will close during the period of the MWRRIP. The Landfill Schedule does not include any new putrescible landfill. The Landfill Schedule lists a number of putrescible landfill sites that have closed or are expected to close during the period of the MWRRIP. The following putrescible landfill sites have closed or are expected to close during the period of the MWRRIP:

Site	Closure date (based on 2016 Plan	Status
Cleanaway – Deals Road	2017	2017[1]
Clayton Regional Landfill	2016	Closed
Cleanaway - Fraser Road	2017	Mid 2017[1]
Rye Landfill	2018	Expected closure date June 2018

Notes: 1. Cleanaway has indicated that current landfill activities will be largely completed by 2017 (Cleanaway web site Clayton landfill status January 2016)

The Clayton Regional Landfill ceased waste disposal in January 2016. Cleanaway has advised that its sites will be largely completed by 2017. Mornington Peninsula Shire Council made a formal decision at a council meeting in September 2015 that the Rye landfill will close no later than 30 June 2018.

The timing for the closure of these sites aligns with that shown in the Landfill Schedule.

4. Background environmental condition and siting consideration

4.1 Climate

Based on the Laverton RAAF Bureau of Meteorology monitoring site (087031), the Werribee region generally has warm summers (mean maximum temperature in January of 25.7°C) and cool winters (mean maximum temperature in July of 13.7°C) with typically low rainfall throughout the year (mean monthly rainfall range between 35.3 mm in March and 56.9 mm in October).

The climate affords the ability to manage leachate by evaporative means as the mean water evaporation rate of 1569 mm/year considerably exceeds the mean annual rainfall of only 536.5 mm (refer to Table 12).

Table 12 Monthly climate statistics for Laverton RAAF [087031][3]

Statistic Element	Data Period	January	February	March	April	May	June	July	August	September	October	November	December	Annual
Mean maximum temperature (Degrees C)	1943 - 2016	25.7	25.5	23.7	20.2	16.9	14.2	13.7	14.9	17	19.3	21.5	23.8	19.7
Highest temperature (Degrees C)	1943 - 2016	45	47.5	41.4	35.5	27.3	24.3	23.5	26.8	31.2	37.2	40.3	44.3	47.5
Mean number of days >= 30 Degrees C	1943 - 2016	6.8	6	4.5	0.6	0	0	0	0	0.1	0.9	2.7	5	26.6
Mean minimum temperature (Degrees C)	1943 - 2016	13.8	14.3	12.5	9.9	7.8	5.8	5	5.5	6.7	8.3	10.2	12	9.3
Lowest temperature (Degrees C)	1943 - 2016	5.2	5	2.7	0.3	-0.9	-3.3	-4.4	-3.7	-1.7	-1	0.8	3.6	-4.4
Mean rainfall (mm)	1941 - 2016	39.4	46.2	34.9	45.2	46	38.7	38.5	44.1	49	55.5	52.9	45.7	536.5
Highest rainfall (mm)	1941 - 2016	140.8	271.5	140.2	199.8	122.9	96.8	112	88.8	127.6	165.4	138.5	114.6	809.4
Lowest rainfall (mm)	1941 - 2016	0.2	0	4.2	7.8	5.4	9.7	9.6	10.5	14.4	5.2	4.2	1.6	294.6
Date of Lowest rainfall	1941 - 2016	2009	1991	1945	1976	1984	1969	1979	1944	1981	2006	1967	1972	1967
Decile 1 monthly rainfall (mm)	1941 - 2016	9.2	5.1	9.3	11.8	15.8	18	17.9	20	23.9	19.9	22.6	15.9	369.9
Decile 5 (median) monthly rainfall (mm)	1941 - 2016	34	30.4	29.8	38.2	42.8	34.8	36	42.4	43.2	52.5	47.2	39.4	536.2
Decile 9 monthly rainfall (mm)	1941 - 2016	65.4	104.9	69.8	73.8	82.1	63.2	67.1	65.5	78.2	91.6	103	90.8	711.3
Highest daily rainfall (mm)	1941 - 2016	90.2	117.8	92	188	47.8	30.2	40.2	39.6	37	58.4	59.7	55.6	188
Mean daily wind run (km)	1997 - 2016	384	366	348	316	318	322	347	374	387	382	374	382	358
Maximum wind gust speed (km/h)	1941 - 2016	154	130	115	109	117	102	104	124	122	131	122	111	154
Mean daily sunshine (hours)	1967 - 2016	8.5	8.3	6.7	5.7	4.3	4.1	4.5	5.2	5.7	6.8	7.4	8	6.3
Mean daily solar exposure (MJ/(m*m))	1990 - 2016	24.5	21.3	16.7	11.3	7.7	6.2	6.9	10	13.7	18	21.5	24	15.2
Mean number of clear days	1946 - 2010	5.7	5.6	5.2	4.3	2.8	2.9	2.9	2.7	3.2	3.3	3	4	45.6
Mean daily evaporation (mm)	1976 - 1999	7.5	7.2	5.3	3.7	2.3	1.6	1.8	2.5	3.2	4.6	5.7	6.7	4.3

The climate at Wyndham Vale is classified as temperate with no dry season (warm summer) under the Australian objective classification system set out by the Bureau of Meteorology (BoM) Australia[4]. Such a classification indicates four distinct seasons with regard to temperature variation and rainfall events throughout the entire year.

The local wind climate impacts the location of off-site odour for landfill activities. The general wind climate at a site is most readily displayed by means of wind rose plots, giving the incidence of winds from different directions for various wind speed ranges. The areas of particular interest are:

- The prevailing wind directions
- The relative incidence of more stable light wind conditions

The EPA approved meteorological dataset for Point Cook for the year 1995 is presented in Figure 9. From this figure it is seen that the least common wind direction is easterly. With the nearest residents being located on the western side of the site, wind directions favouring odour propagation to the west are not common.

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[3] Information provided by the Bureau of Meteorology

[4] http://www.bom.gov.au/climate/environ/other/koppen_explain.shtml

4.2 Regional geology

The geology of the region generally comprises the following units from oldest to youngest (refer Figure 10):

- Palaeozoic Bedrock
- Werribee Formation
- Fyansford Formation / Batesford Limestone (Torquay Group)
- Moorabool Viaduct Formation (Brighton Group)
- Newer Volcanics Basalt

The oldest formations, the Palaeozoic aged bedrock, formed between 570 million and 230 million years ago, consists of sandstone, siltstone, mudstone and shale.

Overlying the Bedrock is the Lower Tertiary aged Werribee Formation. This unit consists of coarse to fine, pyritic angular sand and silty sand, with coal seams, minor clay and occasional lenses of gravel and conglomerate *(Leonard, 1979*[5]). The thickness of the Werribee Formation ranges from approximately 80 to 200 metres and lies between 150 to 250 metres below ground level.

The Werribee Formation is overlain by the marine carbonate sediments of the Upper Mid Tertiary aged Fyansford Formation and Batesford Limestone (Torquay Group). This formation consists of glauconitic silt, calcareous silt, grey / green clay and minor limestone lenses (*Leonard, 1978*). This unit ranges in thickness from approximately 60 to 130 metres.

Overlying the Fyansford Formation is the Upper Tertiary aged Moorabool Viaduct Formation (Brighton Group). This formation ranges from quartzose calcareous sandy clay to coarse grained quartz sandstone. This formation is of limited thickness (<35 metres).

The youngest of the sediments deposited in the study area is the Quaternary aged Newer Volcanics Basalt. The basalts are variable in thickness, ranging from 50 to 125 m.

The landfill site is located within the basalts of the Tertiary/Quaternary age Newer Volcanics group that dominate the surface geology of the western region of Melbourne. The Newer Volcanics consist of an extensive layers of basalt covering approximately 15,000 square kilometres, extending from Melbourne towards South Australia - refer Figure 11. The basalts often exceed 150 m in thickness along pre-basaltic drainage lines but are thinner, around 40 m, over the higher areas between the earlier drainage liners (interfluves). The basalts are generally thinner towards the Port Philip Bay. On average, the basalts are approximately 50 m thick.

In the Melbourne area, volcanic flows commenced some 4.6 million years ago and continued to occur at various intervals until the most recent flow found at Fairfield about 800,000 years ago (Dahlhaus, O’Rourke 1992[6]). Younger volcanic activity occurred in the Mount Gambier province with flows as recent as 4,300 years. Pre-existing topography of the western Melbourne region was smothered by the basaltic flows resulting in a generally planer surface, known locally as the Werribee plain, which generally overlies flat lying Tertiary age sediments of the Brighton Group (sand, silt, clay, and gravels).

Generally, the volcanic activity associated with the Newer Volcanics was in the form of numerous, short lived eruptions resulting in extensive basalt units consisting of overlapping lava flows. The flows are typically thin, generally ranging between 0.5 to 5 metres thick.

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[5] LEONARD J. G.1979. Preliminary assessment of the groundwater resources in the Port Phillip Region. Report of the Geological Survey of Victoria 66.

[6] DAHLHAUS P. G. & O’ ROURKE M. 1992. Newer Volcanics. In:Peck W. A.,Neilson J. L., Olds R. J. & Seddon K. D. eds. Engineering Geology of Melbourne, pp. 205–212. A. A. Balkema, Rotterdam.

The time between various lava flows allowed geomorphic processes to change the shape and nature of the ground surface through weathering of the volcanic material to form rocks and soil and through the deposition of sediments. Due to the absence of quartz in the basalt, the weathering of the Newer Volcanics usually produced base rich, grey, heavy soil of high plasticity. The clay often restricts drainage and retains water, which forms reducing conditions that further promotes weathering. These layers (palaeosols) commonly separate basaltic rocks throughout the Newer Volcanics area.

4.3 Local geology

The local geology is broadly consistent with the regional geology described above. The main geological units which outcrop at, or in the vicinity of, the site include newer Volcanics Basalts, the Werribee Delta alluvial sediments and the Devonian granites of the You Yangs (refer to Figure 11).

Excavations at the site quarry has exposed the basalt rock which shows signs of two main flow events separated by soil. The quarry has only exposed the upper half of the basalt with little incentive to quarry at greater depths due to the inflow of groundwater and the lower quality of basalt at this depth. As a consequence, the quarry floor upon which future cells would be constructed will not require significant quantities of fill to ensure adequate separation between placed waste and groundwater.

The soil formed on top of the basalt comprises remnant basalt rock within largely a clay matrix. This soil has been stripped from quarry areas and formed in “overburden” stockpiles at the quarry site. This material is used by the landfill as daily cover and to backfill areas within the future landfill area where the base of the landfill had to be raised to be above the watertable.

During the Quaternary period, approximately 2.6 million years ago to today, sediment formed around the outlet of the Werribee River forming the Werribee Delta. The Werribee Delta sediments consist of gravel and sand lenses within sandy loam and clay.

4.4 Groundwater

Groundwater flows in the Newer Volcanics generally occurs in a number of superposed basalt flows that are often separated by clay and silt aquitards. The groundwater occurs in fractures, joints, vesicular openings and in the contact zone between flows. The uppermost aquifer is unconfined with a shallow water table whilst deeper aquifers are confined to semi- confined. The shallow aquifer across the region is formed by fractured basalt.

Typically, the fractured basalt aquifer system is segregated into two distinct aquifers, a shallow aquifer or water table aquifer and a deep aquifer. The unconfined shallow aquifer generally extends between 8 to 18 m below the surface whilst the confined deep aquifer occupies a typical range of 25 to 60 m. The regional basaltic aquifer system has a combined aquifer thickness ranging between 40 to 50 m. A leaky, sandy clay aquitard, typically at a depth of 18 to 25 m below the surface, retards but does not fully prevent flow between the shallow and deep aquifers. The spatial extent of this clay aquitard is discontinuous, thus the extent of hydraulic connection varies spatially.

Below the basaltic aquifer system lies the more permeable unconsolidated sediments of the Brighton Group formation and/or the Werribee formation. The extent of hydraulic connection between the Newer Volcanics and underlying sedimentary formations is not fully known. Thus, on a regional scale groundwater from the Newer Volcanics is thought to discharge into the underlying sediments.

The hydrogeologic system is recharged naturally by infiltration of rainfall (precipitation) and discharge from surface streams. While the quarry previously held an EPA licence to pump out groundwater, this practiced ceased in the late 1990s. The quality of the basalt deteriorates within the water table at the site, so there is little economic incentive to quarry the remaining portions of the site to below groundwater levels. Past practices at the site affected groundwater levels and quality at the site.

Evapotranspiration effects due to vegetation are considered to be negligible due to the lack of significant vegetation in the area. The recorded surface evaporation rates are substantially higher than rainfall in this area suggesting that there may be limited net recharge to the system. Groundwater from the region travels down gradient eventually discharging into surface streams, other drainage features and Port Phillip Bay.

4.4.1 Local groundwater quality

Under the *Environment Protection Act 1970* and upon the recommendation of the EPA, the State of Victoria enacted the *State Environment Protection Policy (Groundwater's of Victoria).* The policy (herein referred to as the Groundwater SEPP) categorises groundwater into various segments based on salinity as measured by total dissolved solids (TDS) with each segment having a particular identified beneficial use. Water of higher quality (lower salinity) has more beneficial uses than low quality (more saline) groundwater. Beneficial uses to be protected for each segment are marked in Table 13.

Table 13 Groundwater beneficial uses

Beneficial Uses	Segments (mg/L Total Dissolved Solids)				
	A1 (0-500)	A2 (501-1000)	B (1001-3500)	C (3501-13,000)	D (> 13,000)
Maintenance of Ecosystems	✓	✓	✓	✓	✓
Potable Water Supply					
Desirable	✓				
Acceptable		✓			
Potable Mineral Water Supply	✓	✓	✓		
Agriculture, Parks and Gardens	✓	✓	✓		
Stock Watering	✓	✓	✓	✓	
Industrial Water Use	✓	✓	✓	✓	✓
Primary Contact Recreation	✓	✓	✓	✓	
Buildings and Structures	✓	✓	✓	✓	✓

The EPA may determine that these beneficial uses do not apply to groundwater where:

- There is insufficient yield
- The background level of a water quality indicator other than TDS, may be detrimental to the beneficial use
- The soil characteristics preclude a beneficial use; or
- A groundwater quality restricted use zone has been declared

Groundwater monitoring has been conducted by the Council in groundwater monitoring bores both on and off-site for a number of years. An extract from the Annual Licence Compliance Report 2014 – 2015 is contained in Appendix E describing the groundwater monitoring program and provides a tabulation of the analytical results for each monitoring well.

The monitoring information is reviewed by the Environmental Auditor who stated in the 2014 Environmental Audit Report for the Wests Road RDF in regard to establishing the background groundwater quality for the purposes of classifying the groundwater that:

Well S13 has been established as the bore which is most representative of hydraulically up gradient conditions. The Auditor notes that this bore will be compromised as a background well when Cell 6 commences. A relatively extensive data set is available for S13 and there is a high level of confidence regarding the background groundwater quality

Background water quality, as determined by groundwater monitoring bore S13, is summarised in Table 14.

Table 14 Groundwater quality

Parameter	Range
Total Dissolved Solids, mg/litre	8400-10.000
Total Organic Carbon. Mg/litre	1.4 – 7.0
Alkalinity, mg/l	230-420
Ammonia, mg/l	0 – 0.2
Total Nitrogen, mg/l	2.8-3.3
Iron, mg/l	0.01-0.03
Manganese, mg/l	0.001 – 0.025

Based on the background ground water quality represented by monitoring bore S13 the groundwater would be classed as Segment C. Information from the Department of Environment and Primary Industries, a State Groundwater Report for the area, confirms that the local groundwater quality falls within the Segment C range with a TDS of greater than 3,500 mg/L.

The relevant beneficial uses to be protected, as indicated in Table 13, are stock watering, industrial water use, primary contact recreation, buildings and structures and ecosystem protection.

Groundwater monitoring has shown some changes in the quality of the underlying groundwater compared to background levels (mainly for Total Organic Carbon (TOC), ammonia, bicarbonate, manganese and iron), which appear to be associated with the operations of the landfill.

The extent of the groundwater impacts and their likely future behaviour has been assessed via a fate and transport assessment for the main identified contaminants by Compass Environmental in 2013. The assessment involved interpretation of the likely contaminant sources, groundwater geochemistry, behaviour of the contaminants and processes governing their migration, including the groundwater flow velocity. The assessment, supported by groundwater monitoring data, concluded that the elevated levels of ammonia, bicarbonate, TOC, iron and manganese are mostly confined to the site boundaries.

The significance of the elevated concentrations of some of the groundwater quality parameters has been assessed by the site's Environmental Auditor in the context of the potential impact on the existing and potential beneficial uses of the groundwater in its immediate vicinity.

No existing beneficial uses of groundwater have been identified within 700 m from the site, with the nearest potential surface water body that may be receiving the groundwater being the Port Phillip Bay, located approximately 7 km from the site. The Environmental Auditor concluded that at present there was a negligible risk to the ecosystems of Port Philip Bay (mainly due to the large distance to the surface water and the low contaminate concentrations at the down gradient site boundary).

With respect to other potential beneficial uses of groundwater (such as stock watering and primary contact recreation), the Environmental Auditor concluded the following:

- TDS concentrations of groundwater, which are indicated to be consistent with natural background levels, could potentially affect the use of groundwater for stock watering; however, the absence of the stock watering groundwater use in the vicinity of the site suggested that this was not a significant issue. It is further noted that there was no evidence that the landfill has contributed to the TDS concentrations.
- As the contaminant concentrations in wells along the hydraulically downgradient boundaries of the premises were below the respective criteria for the primary contact recreation use, the Environmental Auditor considered that it was reasonable to assume that risks to recreational users of Port Phillip Bay were also negligible. The Environmental Auditor also considered that it was reasonable to assume that there were no unacceptable risks associated with off-site properties extracting groundwater for the purposes of filling a swimming pool.

In summary, it can be concluded that the risk associated with the presence of groundwater pollution on and off-site is low under the existing conditions.

Council is implementing a number of actions to reduce future risks to the groundwater, consistent with the Environmental Auditor recommendations made in the 2013/14 Audit report. These actions include:

- Ongoing monitoring of groundwater conditions at the site, with a number of changes to the Monitoring Program being implemented, as per Environmental Auditor recommendations. An assessment of hydraulic properties of the aquifer formation to obtain a greater understanding on the likely future behaviour of the identified contaminants has also been completed.
- Develop a Leachate Management Plan, to assist in the coordination of current leachate management system improvements. A leachate Management Plan dated July 2015 was developed for Council (refer to Appendix F). Council is implementing this Plan as the design of the second leachate pond to replace the old unlined pond (now decommissioned) has been completed (refer to Figure 8).
- The leachate related management actions included:
  - Refurbishment of leachate sumps and installation of automated pumping system for the leachate to allow better management of leachate heads within the landfill mass.
  - Design and construct a new leachate pond as recommended in the Leachate Management Plan.

As indicated in Table 10, the earlier cells were constructed to the standards that applied at the time but were not to the higher standard as the current cells (Cells 4A, 4B and 4C). The existing groundwater contamination is most likely due to historical leachate management practices, particularly relating to the use of an unlined pond for leachate storage. This unlined pond was decommissioned in February 2016. A fully lined pond was also built and commissioned in late 2014. Due to the very high level of containment provided by a landfill constructed to BPEM standards, the new cells are not expected to have a detrimental impact on groundwater quality.

4.4.2 Groundwater depth

Groundwater levels have been monitored from the network of 16 onsite groundwater monitoring bores since September 2008. The data indicates that the ground water level falls from around 10 m AHD in the northeast corner of the site to 7.5-9.0 m AHD in the southwest boundary of the site. Groundwater contours for the period October 2014 to July 2015 are shown in Figure 12. The historical standing water levels are shown in Figure 13. Overall the data indicates a significant recharge of groundwater occurred between August 2010 and March 2011. This would appear to follow the significant rainfall in late 2010 and early 2011[7].

The maximum groundwater level recorded for the site was 10.8 m AHD in bore S13 in June 2011. The highest standing water level (SWL) recorded in each bore in the vicinity of proposed cells are summarised in Table 15.

Table 15 Groundwater bore maximum recorded SWL

Bore	Maximum recorded SWL	Comment
S13	10.79 m AHD	Located at the northern end of proposed Sub-cell 5A
S7	9.37 m AHD	Located on western edge of proposed Sub-cell 6A/6B
S10/10A	9.53 m AHD	Located near southern end of proposed Sub-cell 6C
S6	9.4 m AHD	Located at northern end of proposed Sub-cell 7A
S11	9.24 m AHD	Eastern edge of proposed Sub-cell 7B
S14	9.30 m AHD	Near western boundary of proposed Sub-cell 7B
S5	9.00 m AHD	Near eastern boundary of proposed Sub-cell 7C
S15	8.77 m AHD	Near southern edge of proposed Sub-cell 8A
S16	8.93 m AHD	Near southern boundary of proposed Sub-cell 8B

The data on standing water levels indicates the minimum base of sub-cell level for each sub-cell should be:

- Sub-cell 5A – 5C: 12.80 m AHD
- Sub-cell 6A – 6C: 11.53 m AH
- Sub-cell 7A: 11.40 m AHD
- Sub-cell 7B: 11.30 m AHD
- Sub-cell 7C: 11.00 m AHD
- Sub-cell 8A-B: 11.08 m AHD

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[7] Bureau of Meteorology rainfall data for Little River http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p_nccObsCode=139&p_display_type=dataFile&p_stn_num=087033

4.4.3 Long term undisturbed groundwater levels

The groundwater levels at the RDF were historically affected by dewatering activities at the quarry. The groundwater level was historically kept at an elevation of approximately 4 mAHD until 1992 when pumping ceased and the quarry was converted to the landfill. A rapid recovery in groundwater levels following cessation of dewatering was reported, with the groundwater levels stabilising at 7.5 to 9 mAHD. Post 1993, limited dewatering operations were undertaken to maintain groundwater levels within the quarried areas at 7.5 to 8 mAHD. This dewatering is reported to have ceased in December 1996.

As no dewatering has occurred at the site since 1996 the only cause of varying recharge in the aquifer is likely due to fluctuations in rainfall. Recent data from 2008 (refer below) indicates an increase in groundwater elevations from August 2010, with the most significant rise of approximately 1.0 m observed between December 2010 and March 2011. This is consistent with the significant increase in rainfall levels and therefore likely higher recharge in the aquifer. An overview of available rainfall data for the nearby Bureau of Meteorology Little River Weather Station (Station ID 87033) for between 1907 and 2015 is detailed below.

Statistics	Annual Rainfall (mm)
Mean	485.6
Lowest	247.6
5th percentile	279.1
10th percentile	326.7
Median	471.8
90th percentile	657.8
95th percentile	686.5

The rainfall data from 2008 for the nearby Bureau of Meteorology Little River Weather Station is detailed below.

Year	Annual Rainfall (mm)
2008	318.6
2009	400.0
2010	585.4
2011	**701.0**
2012	523.8
2013	454.0
2014	-*
2015	373.8

Notes:

* Yearly rainfall data not available

Bold: above the 95th percentile average annual rainfall between 1907 and 2015

The rainfall data shows very low annual rainfall in 2008 and 2009 below the median rainfall level over the last 100 years. In 2010, and especially in 2011, there was a significant increase in rainfall levels, with the 2011 annual rainfall level of 701.0 mm above the 95th percentile (between 1907 and 2015) indicating that the groundwater level during this period is likely to be elevated above average levels.

Initially, Council will adopt the maximum SWL, which was recorded in 2011 when rainfall was above the 95th average since records began in 1907. As the average SWL is likely to be lower during average rainfall periods, Council is ensuring that the future cells/sub-cells will be constructed to maintain a 2.0 m separation between the groundwater and waste even during periods of unusually high rainfall. The adopted levels may be raised or lowered for future cells based on further groundwater monitoring and confirmation from the auditor during the new cell approval process that the two metre separation from the long term groundwater level will be met.

Cross sections through the site showing the maximum SWL in relation to the anticipated base levels of the quarry holes in order to maintain 2.0 m separation between the groundwater and waste is shown in Figure 14.

4.5 Surface water

Surface water from the Wests Road RDF flows towards the surrounding properties or the active quarry void. The site is flanked by two ephemeral streams, Cherry Tree Creek to the west and Cherry Tree Creek Tributary to the east. Both streams drain surface run off from the basalt plains (refer to Figure 15). These surface water features are relatively shallow with invert levels ranging between 11.42 and 14.32 m AHD. The Cherry Tree Creek catchment discharges to the Melbourne Water Treatment Facility.

On the eastern boundary of the site a drainage channel allows surface water to be collected and drained into the Cherry Tree Creek tributary. There is a low ridge located adjacent in the north of the site which directs runoff to the western and eastern boundaries. There is also a bund wall, approximately 4 m in height, running along the northern, southern and eastern boundaries. A small water retention pond, near the entrance of the site, mainly collects run-off from the nearby wheel wash area (Environ, 2008). This water is held on-site.

Werribee River is located approximately 5 km to the east of the site.

A Surface Water Management Plan has been prepared for the site and is contained in Appendix G. Further discussion of this plan is provided in Section 4.7.7.

Cherry Tree Creek flows through the south western corner of the site through an area that has not been quarried. Holcim will quarry to 20 m of the site boundary except in the area around Cherry Tree Creek which is protected and will have a buffer of approximately 100 metres. A buffer of 100 metres will therefore be maintained from Cherry Tree Creek and future landfilling activities.

4.6 Separation (buffer) distances

EPA has published specific guidance for licensed landfills, namely the *Best Practice Environmental Management (Siting, Design, Operation and Rehabilitation of Landfills), EPA Publication 788.3* (BPEM). The BPEM advocates buffer distances that should be maintained between the landfill and various receptors in order to provide some level of protection from potential impacts that may arise during the life of the landfill and even after its closure. Table 16 contains the recommended buffer distances specified in the BPEM.

Table 16 Landfill siting buffer criteria for Type 2 Landfill

BPEM Criteria	
Receptor	Distance (m)
Surface waters	100
Fault line displaced in the Holocene period	100
Buildings and Structures	500
Aerodrome for piston engine propeller aircraft	1,500
Aerodrome for jet aircraft	3,000

The BPEM requires that landfills accepting putrescible waste (Type 2 landfill) provide a minimum 500 metre buffer distance to the nearest building or structure (including houses). The buffer provides a level of protection to sensitive uses from any impacts resulting from a failure of landfill design, management or abnormal weather conditions. Buffer areas are not an alternative to providing appropriate management practices, but provide for contingencies that may arise with typical management practices. Buffers are measured from areas within the landfill site that can give rise to off-site impacts such as landfill cells (both open and closed) and leachate ponds.

The land surrounding the RDF is predominantly farmland used for grazing; however, there are a number of isolated rural residences in the vicinity of the site. The nearest identified residence in Gavan Road is approximately 180 m to the west of the future Cell 7. As such, the BPEM's siting criterion in relation to buildings or structures is not quite fully met.

Other residents are all located more than 500 metres, most over a kilometre, from areas where landfill activity will occur. The residential area of Werribee is located approximately 2.5 km northeast of the site. Table 17 tabulates the separation distance between the landfill and the new landfill cells proposed to be developed at the premises with Figure 16 identifying the location of sensitive uses.

Table 17 Closest sensitive uses

Receptor	Buffer Distance (m)	Image
1	Cell 5 1.1 km	
	Cell 6 850 m	
	Cell 7 180 m	
	Cell 8 650 m	

Receptor	Buffer Distance (m)	Image
2	Cell 5 1.5 km	
	Cell 6 1.8 km	
	Cell 7 1.3 km	
	Cell 8 1.0 km (or) 590 m	
3	Cell 5 1.3 km	
	Cell 6 980 m	
	Cell 7 550 m	
	Cell 8 1.1 km	
4	Cell 5 1.6 km	
	Cell 6 1.3 km	
	Cell 7 1.1 km	
	Cell 8 1.7 km	

Receptor	Buffer Distance (m)	Image
5	Cell 5 800 m	
	Cell 6 950 m	
	Cell 7 1.5 km	
	Cell 8 1.1 km	
6	Cell 5 1.2 km	
	Cell 6 1.5 km	
	Cell 7 1.5 km	
	Cell 8 1.0 km	

As mentioned previously, the nearest sensitive use, a residential dwelling (labelled as R1 on Figure 16), encroaches within the recommended 500 metre buffer distance from future Cell 7. Council has recently purchased this property from its owner. Under the sale agreement the resident will be allowed to remain in his home for the immediate future. The closest future landfill operations to his home will be when Cell 7 is developed and filled. Cell 7 has not yet been quarried and it may be a further 15 to 20 years before landfilling commences in that area. Council, as the owner of the closest residential property, therefore, has the capacity to manage occupancy of the house in order to satisfy the requirements of the buffer separation.

However, to reduce the potential odour impact from the operating landfill cell (i.e. cell being landfilled), a horizontal gas collection system comprising perforated HDPE pipes spaced at 30 to 40 metre centres will be progressively placed across the cell. The perforation will typically consist of 4 x 10 mm drilled holes at approximately 100 mm offset centres. The perforated section of pipe will commence 20 metres in from the external batter to avoid drawing air into the waste mass. The lateral gas collection lines will be trenched in the daily cover material with the collection pipe surrounded by aggregate filling the trench. As the cell is filled, a new horizontal collection system will be installed for every 10 metres vertical increase in waste height. The horizontal collection pipes will be connected to a gas header line and then to the main gas extraction system.

In January 2016, an Environmental Auditor assessed the design of a horizontal gas collection system in Cell 4C. The Auditor concluded that the proposed design was appropriate to prevent offensive landfill odours from being discharged off-site. The design assessed is the same design proposed to be incorporated into Cell 5 and all future cells at the RDF.

LMS, the company operating the landfill gas power station at the site, has advised that it has installed lateral lines using a similar design at other landfills sites in Australia located close to residential and industrial buildings and found the system to be effective in reducing off-site odours.

As is now standard best practice at the RDF a network of vertical gas extraction wells will be drilled into the landfill cells upon completion of filling and placement of the 500 mm interim capping, with wells connected to the gas extraction system.

4.6.1 Existing buffer

The current recommended separation distances for landfills make no differentiation between the size of the landfill only the type of landfill (i.e. whether it a solid inert or putrescible landfill). The 500 metre recommended buffer distance for putrescible landfills is largely satisfied for the RDF. As noted above, the exception is one residence which is located within the 500 metre buffer in land now owned by the Council for a part of the site not likely to landfilled for at least another decade (the area has not been extracted yet).

Using a risk mitigation approach, Council will continue its recent practice of installing a horizontal gas collection system every 10 metres of waste lift in the current operating cells. This measure will reduce the odour footprint from the active cells and hence reduce the likelihood of odours impacting beyond the 500 metre buffer. However, it is noted that the main source of odour is the tipping face.

When the buffer study was undertaken, there was no active landfill gas extraction from the operating landfill cell. The tipping face, the area of the landfill where waste is deposited each day, was also larger during the period when odour measurements were taken which were used in the odour modelling to determine buffer distances. A smaller tipping face, around 25 m x 25 m, is now used which means less waste is uncovered during the day and should result in less off-site odour.

4.6.2 Wyndham Vale Buffer Study

The Wyndham Vale Buffer Study, was commissioned by Council in 2012 to inform the future planning of land included in the Urban Growth Boundary (UGB) along the municipality’s western growth front, and has been completed and accepted by EPA. The study was conducted as an environmental audit under Section 53V of the Environment Protection Act 1970. It will be used to determine appropriate separation distances around existing and proposed quarries, landfill and organic treatment sites located along the municipality’s western UGB. Of particular interest to this works approval application is the separation distance that applies to the Wests Road RDF.

The potential for odour impact arising from landfill operations is the most important consideration for setting buffer distances to sites. Closer to the sites, there is also potential for impact from landfill gas, dust and noise/vibration.

Separation distances are designed to minimise odour impact in the event of a process or operational upset, and the extent of the impact can therefore only be modelled for defined plausible upset scenarios. The buffer study identified several such scenarios for the RDF which were subsequently modelled to establish the consequent odour impact. The results were passed through an odour environmental risk assessment (OERA) to identify the separation distance needed to obtain low risk at the buffer envelope.

The key outcome of the buffer study was to define buffer distances based on an evaluation of risk. The following general conclusions were drawn from the buffer study:

- Odour levels resulting from landfill operations in defined areas that are more distant from the landfill have a Low to Negligible risk of odour impact, and areas that are closer have a Medium to High risk of odour impact. Within the Medium to High risk areas, in addition to odour impact, there is potential for impact from landfill gas, dust and noise/vibration. Assuming that the buffer distance should be set on the basis of avoiding sensitive land uses within the areas assessed as having a Medium to High risk of odour impact, Figure 17 defines the predicted extent of the Medium to High risk area, where sensitive land uses should be avoided. As discussed in Section 4.6.3, as an additional precautionary measure, Council is in the process of amending planning controls within the medium risk area to prevent sensitive development within that area and in effect maintain a buffer distance greater than the BPEM 500 m distance with regard to further encroachment.
- As noted in Section 4.6.3, the medium risk area (Figure 17) was based on a worst case (upset) scenario that takes into consideration a larger than normal tipping face (50 x 50 m) and projected throughput of 600,000 tonnes per annum. The medium risk contour has been applied to the envelope of all future landfill cells.
- The findings of the audit report justify the recommendation of the Logical Inclusion Advisory Committee that future zoning of land around the RDF should be employment-industrial up to the alignment of the future Ison Road/Westbrook Drive road reservation; and to the edge of the current employment-industrial zone proposed on the northern side of the Geelong-Melbourne rail line as shown in the West Growth Corridor Plan.

The application of the EPA buffer distance of 500 m has been considered as part of this works approval application; the BPEM buffer distance for buildings and structures is broadly similar to and falls within the extent of medium to high risk of odour assessed by modelling.

4.6.3 Planning controls

The RDF will not be able to continue to meet expectations of planning and environmental authorities for environmental management if encroachment of urban areas is allowed with provision for the establishment of sensitive uses. If planning authorities allow urban encroachment without due consideration of the RDF’s need to protect its buffers, its operations and future expansion opportunities will be compromised. Equally, the establishment of sensitive uses within the buffer areas would expose sensitive uses to higher risk.

EPA is able to control and manage impacts on sensitive uses from a landfill through its licence and works approval process. However, EPA, is unable to directly control encroachment of sensitive uses towards existing landfills, and this is considered to be best managed through the planning process. It is considered necessary therefore to more clearly define a buffer for the RDF in the Wyndham Planning Scheme, to assist decision makers in land use planning for urban growth and ongoing management of development. There is substantial strategic planning support for the implementation of a buffer within the Wyndham Planning Scheme, as contained in the State Planning Policy Framework and Plan Melbourne.

Separation to urban residential encroachment can be achieved in two ways. Firstly, through strategic land zoning, and secondly, by the introduction of an appropriate planning overlay. Regarding zoning, Council will be seeking that the future Precinct Structure Plans for PSP 1208 Werribee Junction (Logical Inclusion Area), PSP 1093.2 Mambourin East, and PSP 1093.1 Bayview, adopt the employment-industrial land use zones contained in the West Growth Corridor Plan and recommended by the Logical Inclusions Advisory Committee.

Council is currently finalising reports for an ESO to be implemented and will shortly be presented to Council for authorisation. The ESO is an appropriate tool to manage both use (indirectly) and development within the buffer areas, as has been demonstrated on numerous other sites around Victoria. By triggering a planning permit for development associated with a sensitive use, the shortcomings of existing zones, where sensitive uses may establish without a permit, are overcome. The extent of the ESO would take in both the 500 m buffer required by the BPEM for landfill gas migration and the extent of the yellow medium risk contour line contained in “Figure 20: Site A - Risk of Odour Impact for Sensitivity Analysis” from the Audit Report[8] (reproduced in Figure 17). This scenario is an unlikely worst case (upset) scenario that takes into consideration a larger than normal tipping face (50 x 50 m) and projected throughput of 600,000 tonnes per annum. The medium risk contour has been applied to the envelope of all future landfill cells. Once the ESO is accepted, Council will seek to implement it via a planning scheme amendment. Council envisages this process will be complete by the end of 2016.

By applying the ESO, existing landholders, prospective purchasers of land and developers of land within the Buffer Areas are alerted to the potential risks associated with the RDF, and planning authorities and the RDF operators can ensure that risk are addressed.

Further, separate correspondence has been received from the EPA to advise that it supports the provision for an amenity buffer of greater than 500 m for sensitive uses that may be impacted by odour from the RDF facility; and provision for a 500 m buffer for uses, development and works that may be impacted by landfill gas migration, in accordance with the BPEM. The EPA is also supportive of the application of an amenity buffer as proposed, and implementation into the planning scheme via an ESO.

In conclusion, in relation to this works approval application 500 m is the statutory buffer distance that must be complied with. However, Council as a matter of precaution has selected to apply planning controls to manage further encroachment of sensitive land use within a broader buffer distance (i.e. greater than the statutory 500 m).

4.6.4 Airports

The nearest airports are at Avalon and at Point Cook which are both located approximately 13 kilometres from the landfill. The Mt Duneed airport used by small piston engine aircraft is about 40 kilometres from the landfill site. The landfill site therefore satisfies the buffer requirements for various types of aircraft.

4.6.5 Surface water

The proposed landfill site is not located:

- In high-value wetlands, including wetlands of international significance listed under the convention on wetlands (Ramsar, Iran 1971) and listed in a directory of important wetlands in Australia (Environmental Australia, 2001)
- In marine and coastal reserves listed in the *National Parks Act 1975*
- In areas identified by the *Water Act 1989* as water supply protection areas
- In water supply catchments proclaimed under the *Catchment and Land Protection Act 1994*; or
- On land liable to flooding (i.e. above the 1 in 100 year flood level)

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[8] GHD Audit report for Wyndham City Council – Wyndham Vale Buffer Study CARMS 69507-1, Environmental Audit Report, May 2015

The site lies within the Cherry Tree Creek catchment which extends approximately 11 kilometres north of the RDF. The site is flanked by two ephemeral streams, namely Cherry Tree Creek, which runs north west to south east through the south western corner of the site (100 metres from the edge of cells 7 and 8), and Cherry Tree Creek Tributary, which runs approximately north east to south west adjacent to the eastern boundary of the site. The two creeks converge approximately 1.5 km south of the site. Cherry Tree Creek merges with Lollypop Creek, approximately 3 km south of the site and Lollypop Creek runs down from the north east and travels south approximately 7 km to Port Phillip Bay.

A railway embankment along the northern boundary of the site acts as a barrier to drainage flows into site, however an offsite culvert under the railway line channels stormwater towards an existing swale on the northern boundary of Cell 2B.

The following surface water management features will be used where necessary to minimise surface water entering the landfill area and contributing to leachate generation, and to reduce the potential for erosion of the landfill area and surrounding areas, consistent with the Landfill BPEM required outcomes and suggested measures:

- Drainage channel to prevent run-off from entering the site or landfill cells.
- Bunding, approximately 4 m high, around the northern, eastern and southern boundaries of the site, which would control offsite discharge of surface water. Run off from the site is predominantly shed to the site low points/roads, or active quarry voids, and evaporates.
- Stormwater from the final and temporary cap will be managed by way of collection drains around the perimeter of the cell which will divert water shed from the caps to a sediment control pond prior to any potential discharge off the site.
- Rainwater tanks collect rainwater from the roofs of buildings within the Transfer Station for reuse onsite wherever practicable.

4.6.6 Fault line

To safeguard against the risk of liner or cap failure after the unlikely event of an earthquake, the BPEM also has siting criteria for landfills. The BPEM recommends that new landfills are sited more than 100 metres from any fault lines displaced in the Holocene geological period (that period being the previous 10,000 years). Figure 11 indicates that there are no known fault lines within the vicinity of the landfill. As such the BPEM’s siting criteria in relation to fault lines is met.

4.7 Best Practice Design

4.7.1 Site layout

The appropriate siting of a landfill is the primary environmental control. Although the site is an existing landfill, its location meets the Landfill BPEM “Screening for potential landfill sites” required outcomes including:

- Future landfilling site is listed in the landfill schedule in the regional waste management plan.
- Geotechnical considerations indicate the site is suitable to be developed as a landfill.
- It is not located within areas listed in Schedule A of the Landfill WMP where landfills must not be established or extended into.
- Landfilling is to occur in areas that have been subject to previous quarrying and so will not pose an unacceptable risk to flora and fauna on the site.

- A buffer of 500 m is currently in place and planning controls are being introduced as a result of the Wyndham Vale Buffer Study discussed in Section 4.6.1.
- Council is considering the acquisition of additional land to further guarantee control over development within the vicinity of the site.
- The site is located on a gently undulating plain ranging in elevation from 15 to 20 mAHD along the southern and eastern boundaries rising to 30 metres to the north of the site. The height of the current landfill is limited by the site's planning permit to 44 mAHD. While this application is to extend the area where landfilling will occur, it is not proposed to raise the height of the final landfill above 44 mAHD.

The existing landfilling operations at the site have been established to:

- Provide a safe disposal facility for residents and small vehicles avoiding the need to directly deposit waste at the tip face
- Provide recycling options for waste
- Encourage the reuse of items through the on-site Resale Goods Shop

Landfilling will occur in those areas where quarrying has extracted the natural rock. This method of landfilling is referred to as the "area method", which is the preferred landfilling method identified in the Landfill BPEM.

Four new areas, referred to as Cells 5, 6, 7 and 8, would be progressively developed for landfill operations. Waste would also be placed in specially constructed "piggy back" cells on top of Cells 1B, 2 and 3 which were previously landfilled (refer to Figure 8). A piggy back liner is required to landfill municipal waste on these old cells because, as presented in Table 10, they are lined with a one metre thick compacted clay liner, which does not comply with present cell lining standards as per the Landfill BPEM.

The first new areas to be developed will be the areas referred to as Cells 5 and 6 located in the north east corner of the site and north of the current tipping area in Cell 4. Basalt extraction is almost completed in these areas and as landfilling commences in these areas, basalt extraction will move to the western (Cell 7) and southern (Cell 8) areas of the site. Extraction has left the quarry floor in Cells 5 and 6 at a height of about 10 mAHD. These areas will be filled with compacted earth (subgrade) prior to construction of the basal liner to ensure the two metre separation between ground water and waste disposal occurs.

As discussed in Section 3.1.1, each cell will be developed and filled as a series of sub-cells with individual leachate sumps. The size, and therefore the number of sub-cells developed in each of these areas, will be based on achieving a two-year cell life for each newly developed sub-cell. The size of individual sub cells may therefore increase or decrease based on the anticipated quantity of waste that will require disposal during that period. Future Cell 5A, being the first sub-cell to be developed and filled in Cell 5, will be located immediately north of active Cell 4C. The location, dimensions, volume and planned life of each sub-cell will be approved by EPA as part of the landfill cell notification process described in EPA Publication 1323.3, *Landfill Licensing Guidelines*.

4.7.2 Lining concept

The design objective of the liner and leachate collection system is to protect the beneficial uses of all groundwater, including that directly beneath the landfill. Modern landfills using composite liners constructed under a rigorous construction quality assurance system have a seepage rate less than the maximum design seepage rate prescribed in the BPEM.

Council will follow the procedures for each new landfill sub-cell as described in the most recent version of the now *Landfill Licensing Guidelines*, EPA Publication 1323.3. In this case, however, a formal notification of the need for the first new sub-cell will not be provided but a detailed cell design, technical specifications and a construction quality assurance plan (CQA) will be prepared. These plans and reports will be reviewed by an environmental auditor to assess the completeness of the specifications (including basic cap design) and CQA plan with reference to the BPEM, applicable state environment protection policies (SEPPs) and other relevant standards. EPA has also indicated its intention to make this a standard licence condition for all landfill licence holders.

Once the technical specifications and CQA plan are acceptable to the environmental auditor, the new sub-cell design and auditor's report will be submitted to EPA. Before construction can commence, EPA must approve the plans and specifications. Subsequent to EPA approval and prior to constructing the new cell, an environmental auditor will be engaged to conduct a section 53V environmental audit of compliance of construction with the requirements of the EPA-approved technical specifications and CQA plan.

Table 18 outlines the proposed liner profile for the first new sub-cell in Cell 5 (Cell 5A). This profile is consistent with Table 6.1 BPEM indicative liner design for a Type 2 landfill. A typical lining profile is also depicted in Figure 18. It is possible that landfill cell design standards may change during the life of this landfill. The design of subsequent sub-cells will follow the procedures prescribed by EPA in regard to cell design, construction and approval process thereby meaning any changes to EPA standards will reflected in future cell design and construction.

Each proposed sub-cell will be provided with at least one dedicated leachate collection sump. The sump location will be determined during detailed design of the sub-cell, however, typically they would be located at the lowest groundwater level point per sub-cell and therefore be located in the vicinity of the southern end of the sub-cells. The indicative sump location is shown in Figure 19. Should the required 2 m separation distance above the long term undisturbed depth to groundwater not be achieved for a sub-cell then additional design measures, similar to that adopted for Cell 4C, will be incorporated in sump for that sub-cell. This included a double HDPE liner in the area around each sump and a GCL sandwiched between the two HDPE membranes.

Table 18 Indicative cell liner design specifications

Liner Element	Design Attribute	Details
Sub-base	Position	Base of the landfill cell (quarry floor). Sub-base will be shaped to facilitate drainage of leachate in the constructed cell towards the leachate sump.
	Materials	Fill material will be spread and compacted in layers of uniform quality and thickness to provide at least 2 metre separation between groundwater and wastes within the cell. All fill earthworks will be compacted to 95% of Standard Dry Density or 95% HILF density.
	Quality Assurance	Survey top of sub-base and inspection, with proof rolling if necessary of filled areas to confirm stability of subbase.
	Position	Immediately above sub-base and sides of the cell.

Liner Element	Design Attribute	Details
Clay basal and side liner		Final surface will be shaped to facilitate drainage of leachate towards leachate collection pipes and the leachate sump.
	Materials	Clay rich material with the following specifications: • no rock or soil clumps > 50 mm in any direction • more than 70% passing through a 19 mm sieve • more than 30% passing through a 0.075 mm sieve • more than 15% passing through a 0.002 mm sieve • have a plasticity index (PI) as per AS1289 of at least 10% • have a cation exchange capacity (CEC) of more than 10 mEq/100g • have a permeability of not more than 1 x 10^{-9} m/s in both fresh water and in 50,000 ppm salt solution To be constructed in a series of lifts to achieve a uniform thickness of not less than 1 metre.
	Quality Assurance	Testing conducted of clay to assess suitability of use as liner. Testing of the properties of the placed clay as well as field testing of the moisture content and density of compacted clay. Final surface of the clay will be surveyed and inspected by the Environmental Auditor.
	Position	Placed directly on the top of the clay base and side liners.
Geomembrane liner	Materials	The geomembrane will be a 2 mm thick High Density Polyethylene (HDPE) liner. The physical, chemical and mechanical properties of the material must satisfy the standards specified in Appendix D of the landfill BPEM.
	Quality Assurance	Review of Manufacturer Test Data for supplied membrane. Independent testing will be conducted to confirm the quality of the material used as the liner. Testing will be undertaken to confirm the integrity and strength of welds as per Appendix D of the Landfill BPEM. The final surface will be inspected by an Environmental Auditor. An electronic leak detection survey will be performed over the completed liner.
	Position	Placed over the geomembrane.

Liner Element	Design Attribute	Details
“Cushion” geotextile	Materials	Non-woven needle punched geotextile (100% polyester or polypropylene) geotextile. The cushion geotextile chosen will be based on what surface mass of geotextile is necessary to protect the geomembrane from point loads with allowance for a safety factor.
	Quality Assurance	Review of Manufacturer Test Data for supplied geotextile. Independent testing will be conducted to confirm the quality of the material used as the geotextile.
	Position	Laid over the basal liner and containing suitable sized and spaced pipes. Base of the drainage layer to be shaped to drain leachate into the leachate collection pipes which are graded to flow towards the header pipe which drains into the sump.
Drainage layer	Materials	Drainage layer to comprise of a minimum 0.3 m thick aggregate layer comprising: • coarse diameter (20 mm to 50 mm) gravels, • fines content < 1%; • no limestone or calcareous materials; • Interconnected series of leachate collection pipes placed on the floor of the waste cell, spaced not more than 25 m apart that drain to a leachate sump. These pipes will consist of nominal: – lateral leachate collection pipes – perforated HDPE Ø 110 mm (PN10, PE100) at a maximum spacing of 25 m – header leachate collection pipes – perforated HDPE Ø 200 mm (PN10, PE100) – leachate riser pipe: HDPE Ø 560 mm (PN 10, PE100).
	Quality Assurance	Testing to confirm aggregate meets specifications. • Inspection of the material and as placed.
	Position	On top of the drainage layer.
Separation geotextile	Material	Non-woven needle punched geotextile (100% polyester or polypropylene) geotextile.
	Quality Assurance	Review of Manufacturer Test Data for supplied geotextile. Independent testing will be conducted to confirm the quality of the material used as the separation geotextile.

4.7.3 Piggyback cells

It is proposed that some waste would also be placed in lined cells in areas of the site where waste has already been deposited and covered. This landfill practice, commonly referred to as a “piggyback landfill” or alternatively as a “vertical expansion” is not intended to raise the final contours of any part of the cap to above 44 mAHD, but to allow for a final surface contour plan providing for the whole area that has, is or will be landfilled.

Piggyback landfills have been used in Victoria and elsewhere in the world particularly where there was a need to improve lining standards to comply with current standards for waste to be accepted in older landfills. It is not uncommon for new landfill cells abutting older cells that have not been constructed with a composite liner system to have a side liner so that all waste placed within the new cell is encapsulated within a modern composite lined landfill cell.

New cells are proposed to be constructed across existing Cells 1B, 2A, 2B and 3. As these cells were not constructed to the current BPEM standard, the new cells (Piggyback Cell A and B) will have a modern basal liner system and be capped in compliance with the BPEM.

One of the advantages of a piggyback landfill is that it can provide a very effective cap over an older portion of the site minimising the formation of leachate in that area.

During the detailed design phase for any area of landfill expansion that involves a piggyback landfill construction, the following issues will be considered:

- An assessment of the ground or foundations conditions and what level of settlement can be expected in the older waste
- Selection of appropriate lining materials, e.g. Low Linear Density Polypropylene and a geosynthetic clay liner
- An assessment of slope stability examining the interface friction between the various components which will make up the liner
- The effect of a vertical expansion on the leachate and gas extraction systems as well as and impacts on potential liner integrity in the older cells

A landfill is subject to long-term settlement, as waste decomposes and consolidates. This settlement has significant impacts on the final surface profile, the landfill cap and potential after uses for the site.

As identified in the BPEM, the rate and degree of settlement are dependent upon:

- Proportion of putrescible wastes
- Thickness of the landfill
- Period over which wastes were placed in cell
- The degree of compaction
- The moisture content of the wastes
- The degree of surcharging or loading placed on the cap

Long-term settlement for well-compacted landfills vary significantly and can range from 10 to 30 per cent. Most of the settlement occurs within the first few years of the cell closure, the result of waste compressing under its own weight and the weight of the cap. After this initial compression, settlement will continue for many years as a result of consolidation and biodegradation processes within the waste.

Unless a landfill liner is designed with sufficient strength or reinforcement, landfill settlement may impose stresses on the landfill liner beyond its rated strength. Where stress loads are within the allowable range for the selected liner material, then the integrity of the liner is preserved.

Two piggyback cells, Piggyback A and Piggyback B, are proposed to be constructed across older cells 1B, 2A, 2B and 3. As shown in Table 10, these cells were filled between 1992 to 2010. The anticipated timeframe for the construction of these piggyback cells, as shown in Table 27, is 2038 to 2043. While some settlement of the older cells is still expected, even after a thirty-year period since waste was last placed in them, the anticipated settlement should not be such that a composite liner system could not be successfully placed across these older cells.

As the piggyback cells are not proposed to be constructed for another twenty years, detailed design and calculations to support that design are not provided. Detailed design, however, will be undertaken prior to cell construction under the regulatory framework applicable at that time. The risk of the piggyback lining becoming unstable or being subject to uplift due to the pressure of landfill gas within the older cell will also be assessed during the detailed design.

The detailed design will also consider slope stability issues such as the angle at which slippage may occur between the different components of the liner system. Existing surface gradients over the batter area of the older cells are generally flatter than 1 (V):5(H) so are within the range that have been commonly constructed up landfill side slopes. There will be some degree of settlement which may further serve to flatten gradients and there may be additional interim capping material placed on these cells. A slope stability analysis is therefore only proposed to be undertaken during the detailed design phase for the piggyback cells.

A composite liner, as described in Table 18 or an equivalent performance liner, would be used with the detailed assessment considering what, if any, additional measures may be necessary to ensure the long term integrity of the liner system. If the detailed design should indicate that the stresses potentially imposed exceed the specifications of the liner materials, then there are a range of management options that could be implemented:

- Utilise a more flexible linear low density polyethylene liner (LLDPE) rather than the more rigid HDPE membrane
- Use a textured membrane to reduce the risk of surface interface slippages
- Utilise a higher strength membrane
- Install a Geogrid to reinforce the sublayer beneath the composite liner

Figure 20 indicates how some of these measures could potentially be incorporated into the design of the piggyback liner. It is also possible that Council may adopt an approach of surcharging the old cells with fill material stockpiled on top of the cells to accelerate the settlement of the cells and hence reduce the risk of further settlement after the piggyback landfill is constructed. This measure may be considered if settlement monitoring indicates that significant settlement is still occurring and sufficient quantities of soil can be obtained.

The older cells were constructed with a clay liner and a leachate drainage system. The leachate collection system comprises Class 12 PVC pipes embedded in a 300 mm thick aggregate layer. Placing additional waste on top of the old cells will increase the weight bearing down on the leachate collection pipes. During the detailed design phase, the effect of the additional weight on these pipes will be examined. The aggregate drainage layers would not be crushed by the piggyback cells and would continue to provide a pathway for leachate draining from the old cells. If necessary, additional drainage points could be installed to regulate the leachate head on the liner of the old cells.

4.7.4 Other liner design considerations

The following section lists considerations that will be addressed during the detailed of cell liners and piggyback liners within the extension area:

- Cell geometry
- Assessments to inform selection of lining materials:
    - Geotechnical and interface friction stability assessment
    - Geotechnical assessment of soils
    - Seepage performance
- Stormwater management, including drain sizing
- Sizing of leachate collection pipes and layout
- Sizing of anchor trenches for geosynthetic materials
- Bund walls (if required)
- Landfill gas collection (for piggy back lining areas)
- Preparation of Technical Specifications as per the requirements of Landfill BPEM
- Preparation of Construction Quality Assurance Plans (CQAPs) as per the requirements of Landfill BPEM
- Verification the design documents have been prepared in accordance with Landfill BPEM by an EPA appointed environmental auditor

4.7.5 Capping concept

As discussed in Section 1.2, a revised final surface profile will be required to extend the landfill both laterally and in height across the site as proposed by this works approval application. The proposed pre-settlement top of waste contours are shown in Figure 21. They will ensure that:

- In accordance with the Landfill BPEM, the slope of the cap is not steeper than 1V:5H (20%). There are two areas where the slope of the cap is flatter than the Landfill BPEM recommended minimum slope of 1V:20H (5%) - the ridgeline located in the north eastern part of the site and the central high point of the cap. The need for additional drainage measures to promote runoff and thereby avoid stormwater ponding will be considered during detailed design of the cap.
- The maximum capped height of the landfill will be 44 mAHD (approximately 29 metres above prevailing ground level on the southern boundary of the site), consistent with Cells 4A, 4B and 4C and the requirements of the site's planning permit (Appendix A).
- The final landfill cap of the proposed landfill cells will be designed and constructed so that any anticipated seepage of water through the cap does not exceed the Landfill BPEM design standard of 75% of the anticipated seepage through the liner. To achieve this it is proposed that the final cap design will be either a Type 2 landfill cap in accordance with the Landfill BPEM (refer to Table 19) or a phytocap designed and constructed to achieve the annualised seepage rate for a Type 2 landfill cap expressed in the Landfill BPEM.
- The landfill will be shaped such that the final surface will be suitable for the intended site after use(s) and for ease of cap maintenance. The completed landfill surface will not contain any water features, such as dams, and will be graded so that it sheds water without eroding the cap or contributing to the erosion of adjoining properties. To reduce the potential for leachate generation within the landfill, each landfill cell and sub cell will be progressively rehabilitated.

- A landfill gas layer has not been specified as the existing landfill gas collection system is currently in place on completed cells. This system will continue to be progressively installed across the site as cells are completed. As such, a gas collection layer is not required.
- As for the lining of cells, it is possible that landfill cap design standards may change during the life of this landfill. The design of future subsequent caps will follow the procedures prescribed by EPA in regard to cap design, construction and approval process.

Table 19 Indicative cap design specifications – Type 2 Landfill Cap

Cap Design Element	Design Attribute	Details
Foundation layer	Position	Comprises daily cover and interim cover material so that no wastes are exposed and to provide a suitable base upon which the clay liner will be constructed. Final surface will be shaped to achieve the cap approved cap profile.
	Materials	Earth material will be spread and compacted so that wastes are covered and to reduce the escape of landfill gas.
	Layer Thickness	Landfill BPEM specifies 300 mm, however, EPA now specifies the following – as per proposed new licence condition: *“You must place intermediate cover on all cells within one month of the date that the cell became full. The intermediate cover must comprise a minimum of 500 mm of compacted clay or alternative cover approved by EPA in writing”.*
	Quality Assurance	Survey and inspection of the top of foundation layer to confirm stability for supporting construction of the clay cap.
Clay barrier layer	Position	Immediately above earth foundation (intermediate cap) layer. Final surface will be shaped to facilitate drainage of stormwater off the surface of the landfill.
	Materials	Clay rich material with the following specifications: • no rock or soil clumps > 50 mm in any direction • more than 70% passing through a 19 mm sieve • more than 30% passing through a 0.075 mm sieve • more than 15% passing through a 0.002 mm sieve • have a plasticity index (PI) as per AS1289 of at least 10% • have a cation exchange capacity (CEC) of more than 10 mEq/100g • have a permeability of not more than 1 x 10^{-9} m/s in both fresh water and in 50,000 ppm salt solution Be constructed in a series of lifts.
	Layer Thickness	At least 600 mm
	Quality Assurance	Testing conducted of clay to determine suitability of use as cap. Testing of the properties of the placed clay as well as field testing of the moisture content and density of compacted clay.

Cap Design Element	Design Attribute	Details
		Final surface of the clay will be surveyed and inspected by the Environmental Auditor.
Geomembrane liner	Position	Placed directly on the top of the clay cap.
	Materials	The geomembrane will be a Linear Low Density Polyethylene (LLDPE) liner. The physical, chemical and mechanical properties of the material must satisfy the (whichever is stricter) the standards specified in Appendix D of the landfill BPEM or Geosynthetic Research Institute Test Method GM17.
	Layer Thickness	Minimum of 1 mm
	Quality Assurance	Review of Manufacturer Test Data for supplied membrane. Independent testing will be conducted to confirm the quality of the material used as the liner. Testing will be undertaken to confirm the integrity and strength of welds as per Appendix D of the Landfill BPEM. The final surface will be inspected by an Environmental Auditor.
Geocomposite Drainage Layer	Position	On top of the LLDPE liner.
	Materials	The drainage geocomposite shall comprise of a high profile mesh structure made from three sets of overlaid intersecting high density polyethylene strands (geonet) with 100% polyester or a non-woven needle-punched polypropylene geotextile heat bonded to both sides.
	Layer Thickness	Dependent on material used
	Quality Assurance	Review of Manufacturer Test Data for supplied material. Inspection of completed layer.
Sub soil	Position	Above the drainage layer.
	Materials	The Soil Sub-base layer of the cap shall be constructed using a loam soil (i.e. sandy clay loam, clay loam, sandy loam or loam) in accordance with the USDA ‘Soil Texture Triangle’ (refer Appendix B). The soil sub-base material shall not contain any of the following: • Foreign matter • High plasticity clays • Organic clays and silts
	Layer Thickness	At least 1,000 mm
	Quality Assurance	Testing conducted of material to determine suitability of use as cap sub soil. Testing of the properties of the placed soil. Survey of surface to establish thickness.
Top soil	Position	Above the sub soil layer.
	Materials	This material should comprise a free-draining soil material with sufficient nutrients for the establishment and continued growth of vegetation. The topsoil will comply with AS 4419 for ‘organic soil’ and be free from clay lumps, stones over 25 mm diameter, weeds, tree roots, sticks, rubbish, material toxic to plants and Fire Ant infestation.

Cap Design Element	Design Attribute	Details
	Layer Thickness	About 300 mm
	Quality Assurance	Testing conducted of material to determine suitability of use as Top Soil for cap. Final surface of the cap will be surveyed.

The final cap design will be vegetated to minimise erosion with stormwater swales to direct stormwater away from the cap to minimise pooling and/or erosion of the cap.

4.7.6 Leachate management

Tonkin Consulting was engaged by Wyndham City Council to prepare a leachate model (for existing cells only) and management plan for the Wests Road RDF. The plan is being used by the Council to reduce leachate levels within Cells 1A, 1B, 2A, 2B, 3, 4A and 4B. A copy of this plan is provided in Appendix F.

Leachate has been removed from Cells 1B to 4B and pumping is continuing. To improve leachate extraction from these cells, automatic pumps were installed replacing the sucker truck that had been previously used. A new (lined) leachate pond (8 ML) was commissioned in 2014 and construction of a second leachate pond of approximately 1 hectare in size (approx. 12 ML capacity) is due to begin late 2016. This will significantly increase the capacity of the RDF to manage leachate through storage and evaporation.

Leachate management methods for extension area

Expected leachate generation volumes and rates as well as the corresponding leachate pond dimensions necessary for adequate on-site leachate storage were estimated through a desktop model water balance. The water balance involved the use of established leachate generation modelling software (Hydrologic Evaluation of Landfill Performance, HELP). The water balance considered leachate generation from the operational phase within the extension area that is likely to generate the greatest amount of leachate, that being Cells 4A to 4C, 5A and 6A to 6C closed with a final cap, Cell 5C closed with an interim cap and Cell 5B active. The remaining, existing cells at the site have not been incorporated into the model.

Table 20 summarises the other key inputs, modelled cell operational phases and leachate pond volumes.

Table 20 HELP model inputs and scenarios

<table>
<tr><th colspan="6">Climate (Rainfall, Evapotranspiration, Temperature)</th></tr>
<tr><td colspan="6">BOM weather station: Laverton RAAF (station number: 87031) for rainfall and temperature. Melbourne Regional Office 86071 for Evaporation data.
Year 1 – 3: 3 consecutive 50th percentile annual rainfall years (1951-1953: 618 mm/year, 737 mm/year, 524 mm/year), Year 4 and 5: 2 consecutive 90th percentile annual rainfall years (1992 and 1993: 661 m/year and 628 mm/year).</td></tr>
<tr><th colspan="6">Cell Profiles</th></tr>
<tr><td colspan="6">The cell development scenario aims to emulate the stage at which the most leachate is likely to be generated to be used to size an adequate leachate pond.
Due to limitations in the HELP model software the cell profiles below could not be directly modelled. As such the cell profiles in the output files may appear different to what is outlined below. However, the profiles in HELP were developed such that they adequately reflect the cell development below so that the most accurate leachate generation modelling was undertaken.
The remaining, existing cells at the site were not incorporated into the water balance modelling. These cells will be rehabilitated with a Type 2 Landfill BPEM final cap prior to placement of waste within the landfill cell, which will include a geomembrane layer. Rainfall infiltration through a geomembrane layer is minimal to none when modelled in HELP. As such inclusion of the remaining, existing landfill cells are not expected to impact leachate generated volumes in the water balance and hence were excluded.</td></tr>
<tr><td colspan="2">Closed cells – 4A, 4B, 4C, 5A, 6A, 6B, 6C
Cell Profile [1]
• 300 mm topsoil
• 1,000 mm subsoil
• 1.5 mm HDPE geomembrane
• 600 mm clay
• 30 m MSW waste
• Separation geotextile
• 300 mm leachate collection layer
• Cushion geotextile
• 1.5 mm HDPE geomembrane
• 1 m Clay
Slopes[2]:
• Plateau – 5%
• Batters – 20%
Plan Area:
• Plateau – 254,000 m^2
• Batters – 108,800 m^2</td><td colspan="2">Interim capped cell – 5C
Cell Profile[1]
• Min. 500 mm of clay or other suitable soil (interim cover)
• 30 m MSW waste
• Separation geotextile
• 300 mm leachate collection layer
• Cushion geotextile
• 1.5 mm HDPE geomembrane
• 1 m Clay
Slopes[2]:
• Plateau – 5%
• Batters – 20%
Plan Area:
• Plateau – 63,500 m^2
• Batters – 27,200 m^2</td><td colspan="2">Active cell – 5B
Cell Profile[1]
• Min. 500 mm of clay or other suitable soil (interim cover)
• 30 m MSW waste
• Separation geotextile
• 300 mm leachate collection layer
• Cushion geotextile
• 1.5 mm HDPE geomembrane
• 1 m Clay
Slopes[2]:
• Plateau – 5%
• Batters – 20%
Plan Area:
• Plateau – 63,500 m^2
• Batters – 27,200 m^2</td></tr>
<tr><th colspan="6">Waste – soil characteristics</th></tr>
<tr><td colspan="6">Default HELP soil used: 18 – Municipal Waste</td></tr>
<tr><td colspan="3">Total Porosity: 0.67 vol/vol
Field Capacity: 0.29 vol/vol
Wilting Point: 0.077 vol/vol</td><td colspan="3">Initial soil water content: 0.29 vol/vol
Effective saturated hydraulic conductivity: 10^{-2} m/s</td></tr>
</table>

1. *Ordered from top to bottom*
2. *Slopes for batters and plateau areas in accordance with the Landfill BPEM have been used.*

A preliminary water balance indicates a leachate pond with an operational capacity of approximately 285 ML is required to manage leachate from the extension area, without the need for off-site disposal, in the climate scenario modelled (refer to Figure 22) over the five year period. However, this would require an unreasonable on-site pond volume and pond footprint.

As such, a second water balance scenario using a maximum pond size of 26 ML was modelled. A pond of this size provides six months' storage allowing ample time for the leachate to be treated through techniques such as aeration in order to comply with trade waste acceptance criteria. The results of this scenario are provided in Figure 23; pond dimensions are outlined in Table 21.

The modelling has shown that off-site disposal of leachate is required. The quantity of leachate to be disposed off-site has been calculated such that as the leachate accumulation reaches operational capacity of the pond, the pond is fully drained. The modelling results predict the leachate volume requiring off-site disposal may be up to a total of 184 ML (over the five-year model period). The use of the HELP model is primarily for comparative analysis to enable different landfill designs to be compared. A detailed water balance incorporate field data will be produced during the detailed design.

Two potential sites for an additional leachate pond are shown on Figure 8. The pond would have a capacity of 26 ML with the approximate dimensions shown in Table 21. The pond would be a composite liner constructed using 2 mm HDPE with anchor trenches and batters in accordance with that shown in Figure 24. Properties of the HDPE and clay will be the same as those described in Table 18.

As a longer term strategy for leachate management, Council has had a preliminary discussion with City West Water regarding connection to sewer. Currently the closest sewer connection is approximately 5 km away. The connection to sewer will require installation of a pumping station at the RDF and leachate pre-treatment, most likely in the form of aeration. Council has generated a brief cost comparison which indicates that the cost for sewer connection is similar to the construction of an additional on-site leachate pond and connection to sewer will therefore be investigated further by Council.

There is also the potential to cart leachate off-site to either a waste treatment company or discharge into a trade waste sewer connection. In both of these cases, the site for off-site disposal must be licensed by EPA to accept the liquid waste.

Council could also construct more leachate ponds on the site to manage leachate if required. EPA has indicated that a new works approval would be required to install additional leachate ponds that are not provided for in this application.

Table 21 Indicative pond dimension details

Pond capacity details	
Pond dimensions	*Pond Capacity*
• Length: 100 m • Width: 100 m • Depth total: 4 m • Freeboard: 0.5 m • Sideslopes: 1(V):3(H)	• Operational capacity (depth at 4.5 m allowing 0.5 m freeboard): 26,320 m^3 • Emergency capacity (full depth, no freeboard): 31,170 m^3

4.7.7 Water management

The site is flanked by two ephemeral streams, Cherry Tree Creek to the west and a tributary of Cherry Tree Creek to the east. Both streams drain surface run off from the basalt plains. Surface water from the Wests Road RDF generally flows in a southerly direction towards low lying areas within site. Some surface water is discharged from site via the eastern boundary drain to the Wests Road swale and then to the Cherry Tree Creek Tributary. The Cherry Tree Creek catchment discharges to the Melbourne Water Treatment Facility.

There is a bund wall, approximately 4 m in height, running along the northern, southern and eastern boundaries. A small elevated water pond, near the entrance of the site, mainly collects run-off from the nearby wheel wash area (Environ, 2008). Works are currently scheduled to redirect the water from this area to the leachate management system.

A Surface Water Management Plan has been prepared for the site and is contained in Appendix G. The plan reviews existing stormwater management at the site and provides concept design details, including calculations of catchment areas and sizing of proposed drains and ponds to accommodate current conditions.

The plan identifies that as filling progresses into Cells 4 to 6, greater reliance will be placed on the eastern boundary swale to collect runoff from capped eastern cell catchment. It therefore recommends that future cell development should allow for adequate space at the eastern boundary for an open drain. The plan also identifies the likely need for a new stormwater pond for Cell 6.

4.7.8 Landfill gas management

As a best practice measure suggested in the BPEM, a landfill gas management system will be progressively installed during the operational period of the landfill. It is proposed that the landfill gas extraction system will be installed on a progressive basis as landfilling proceeds within the new cells subject to this works approval application. The proposed system will comprise of both traditional vertical gas extraction wells installed shortly after the completion of filling and application of 500 mm of intermediate cover in each cell and horizontal gas collection pipes installed as filling progresses in each cell.

The current gas extraction system comprises of vertical gas extraction wells installed over cells 1A, 1B, 2A, 2B, 3 and 4A. The wells are connected to a series of manifolds and then to a renewable energy facility via a series of gas mains. The energy facility is owned and operated by LMS Energy under a contract with Wyndham City Council and currently consists of approximately 1.8 MW of installed electricity generation capacity and three flares capable of flaring approximately 1,000 m^3/hr each. The maximum flaring capacity is approximately 220% of the current gas volumes being generated. The LMS facility currently has an inter-connection with the network service provider that is rated at 2 MW. LMS has a current application with the network service provider to upgrade this connection to 4 MW. Further upgrading of the inter-connection capacity and the flare capacity will be made by LMS as additional gas fields are installed.

The operation of this gas recovery facility is a key part of Wyndham’s overall strategy to achieve emission limits for landfill gas. The current system extracts approximately 12 million cubic metres of landfill gas per year.

Monthly data is provided by LMS to Wyndham on the performance of the landfill gas system including performance data for each gas well (vacuum applied, flow rate and gas quality). This data is checked by Wyndham City Council with particular attention to high levels of air ingress (as determined by the high percentage of balance gas (predominately Nitrogen) in the gas stream). Where a high level of air ingress is measured the following steps are taken: (i) reduce the flow rate on the individual well, (ii) evaluate the level of cover and capping near the well, and (iii) assess the well infrastructure for damage and leaks. Additional cover and repairs are undertaken as required. In addition, Wyndham City Council has the appropriate gas measurement equipment to be able to independently measure gas data from each gas well to assess the effectiveness of any of the mitigation measures outlined above.

In August-September 2016 an additional 10 wells were installed on Cell 4A and 32 wells were installed on the recently filled Cell 4B. Gas extracted surplus to the current energy facility capacity will be flared. Expansion of the energy facility is proposed by LMS, subject to sufficient gas reserves, contractual arrangements and development approvals, so that additional gas collected can be used for power generation rather than flared.

The installation of new vertical gas wells in future cells is expected to follow practical completion of filling in each cell. For example, Cell 5A is anticipated to start receiving waste (subject to approvals being granted) in April 2018 and be filled by April 2020. The placement of 500 mm of intermediate cover will be completed within three months of filling of the cell (e.g. by July 2020) and the installation of vertical gas wells in the cell would be completed within three months of application of the intermediate cover (e.g. by October 2020). Therefore, installation of vertical gas wells and associated manifolds, condensate traps, header lines and mains lines in future cells would be completed within six months of the cell being closed and three months of intermediate cover having been applied, subject to delays beyond the control of Wyndham City Council and LMS. The exact number of wells to be installed on each cell would be determined based on cell layout and surface area. Vertical wells would be spaced at approximately 40 m centres across the cell.

The horizontal gas collection system will be installed at a spacing of 10 m vertically and 40 m horizontally, as the cell is filled with waste. The first set of horizontal collection pipes will be installed after 6 m of waste has been placed across the cell. The pipes will consist of perforated HDPE pipes laid horizontally. The pipes will be laid in trenches excavated in the daily cover and, backfilled and covered with gravel. As these landfill gas collection pipes are laid they will be progressively connected to the gas extraction system. It is proposed that the successive horizontal collection lines are aligned with the lower set of lines rather than offset as this will enable the horizontal collection system to be integrated with the vertical well system that will be installed upon completion of filling in each cell.

Aligning the horizontal collection lines, rather than offsetting them will allow the permanent vertical wells to be drilled into the horizontal collection system to aid the horizontal movement of gas into the vertical well system.

The current system of vertical gas wells is balanced monthly. However due to the nature of the horizontal system where gas composition is generally expected to be poorer and may change more rapidly, balancing of the horizontal wells will be undertaken more frequently (weekly upon commissioning moving to fortnightly as they become more stable and mature).

The proposed landfill gas management system will be further developed as part of detailed design stage. The design for Cell 4C, which is indicative of the design for future cells is included in Section 4.7.2.

Further details of landfill gas management are provided in Sections 4.8.3 and 4.12.

4.7.9 Fire control

There was a significant fire at the RDF in January 2012 which was one of three waste facility fires investigated in a report by the Fire Service Commissioner Victoria[9]. This fire involved 14 appliances, six support vehicles and 66 CFA personnel being present at the RDF. The Commissioner's report noted that there was inadequate water available at the site to enable site staff or the initial CFA crews to quickly access water to contain and extinguish the fire.

In response to the 2012 fire incident a number of changes have been made at the site including:

- A dedicated 10,000 litre water tanked is parked at the tip face to immediately respond to any fire at the tip face
- A 24-hour site presence is maintained during the summer fire restriction period
- Daily inspection of the tip face to confirm it has been covered with soil in accordance with EPA requirements
- Preparation of a fire management plan, in conjunction with CFA
- Installation of 100,000 litres of water storage capacity, also to be discussed with CFA

In addition, work has commenced to upgrade the mains water supply into the site and increase the incoming supply from a 50 mm line to a 225 mm line. This will further increase the water availability at the site.

Since 2012 a number of small fires have occurred which have been quickly dealt with using onsite resources including two fires at the tip face in 2016 that resulted from hot material in an incoming waste load and a flare or similar incendiary device igniting after being run over by the landfill plant.

A copy of the Fire Management Plan is included in Appendix K.

4.8 Air quality

The BPEM states that the objectives for air quality management at a landfill are:

- No health, safety or environmental impacts due to landfill gas and dust
- Minimise greenhouse gas emissions
- The prevention of offsite nuisance odours and dust
- Meet the requirements of relevant SEPP and waste management policies

The management of these potential impacts are discussed in the following sections.

4.8.1 Greenhouse gas emissions from fuel and electricity usage

State Environment Protection Policy (Air Quality Management) (SEPP (AQM)), requires that generators of greenhouse gas emissions avoid and minimise emissions in accordance with the waste hierarchy, pursue continuous improvement and apply best practice to the management of emissions. Applicants for a works approval are required to comply with the more detailed requirements contained in the *Protocol for Environmental Management – Greenhouse gas emissions and energy efficiency in industry* (the PEM).

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[9] Fire Services Commissioner Victoria, Towards Improved Fire Management in Landfill Sites, July 2012

The PEM is an incorporated document of the SEPP (AQM). It provides guidance for businesses and requirements for the management of greenhouse gas emissions and energy consumption. The protocol specifies the steps that will need to be taken by businesses to demonstrate compliance with the policy principles and provisions of SEPP (AQM) related to energy efficiency and greenhouse gas emissions, and how EPA will assess compliance.

The PEM outlines the following requirements for applicants applying for works approval:

- Describe the proposed works in relation to energy use and GHG emissions
- Include energy consumption and any non-energy related GHG emissions
- Discuss best practice for energy use and GHG emissions

GHD undertook a review of potential greenhouse gas emission sources at the site associated with the combustion of fossil fuels and consumption of electricity. The review identified fuel usage by haul trucks, landfill compactors and other vehicles and plant used at the site as the primary source of greenhouse emissions, where machinery was refuelled at the site.

Additionally, electricity usage for generators, buildings and other site operations was assessed.

Fuel calculation methodology

Fuel consumption data was requested from Council and sub-contractors. Annual fuel consumption data was provided for the site for Financial Year 2014/15.

Greenhouse gas emissions were then calculated using the methodology described in Division 2.4.2 of the *National Greenhouse and Energy Reporting (Measurement) Determination 2008.*

$$E_{ij} = \frac{Q_i \times EC_i \times EF_{ijoxec}}{1\ 000}$$

where:

E_{ij} is the emissions of gas type (***j***), being carbon dioxide, methane or nitrous oxide, released from the combustion of fuel type (***i***) from the operation of the facility during the year measured in CO_2-e tonnes.

Q_i is the quantity of fuel type (***i***) combusted from the operation of the facility for:

(a) stationary energy purposes; and

(b) transport energy purposes;

during the year measured in kilolitres

EC_i is the energy content factor of fuel type ***(i)***

EF_{ijoxec} is the emission factor for each gas type (***j***) released from the operation of the facility during the year (which includes the effect of an oxidation factor) measured in kilograms CO_2-e per gigajoule of fuel type (***i***)

ECi ***and EFijoxec*** factors were sourced from the latest version of the National Greenhouse Accounts (July 2012).

Data

The fuel consumption data provided by Council is presented in Table 22.

Table 22 Fuel Consumption

Activity	Fuel type	Fuel consumption (l)
On-site Operations	Diesel	570,500

GHG emission calculations

Based on the above fuel consumption data the GHG emissions presented in Table 23 were calculated.

Table 23 GHG Emission Calculation

Fuel Type	Activity Data (kl)	Energy Content Factor (GJ/kL)	Emission factor (kg CO_2-e/GJ)	tCO_2-e
Diesel (On-site operations)	570.5	38.6	70.2	1,546

Electricity calculation methodology

Council provided GHD with electricity consumption data for the West Road site for Financial Year 2014/15.

Greenhouse gas emissions were then calculated using the methodology described in Division 2.3.1 of the *National Greenhouse and Energy Reporting (Measurement) Determination 2008.*

$$Y = Q \times \frac{EF}{1\,000}$$

where:

Y is the scope 2 emissions measured in CO2-e tonnes.

Q is the quantity of electricity purchased (kilowatt hours).

For a company operating an electricity transmission network or distribution network, Q is the quantity of electricity losses for that transmission network or distribution network during the year.

For Q, if the electricity purchased is measured in gigajoules, the quantity of kilowatt hours must be calculated by dividing the amount of gigajoules by 0.0036.

EF is the scope 2 emission factor, for the State, Territory or electricity grid in which the consumption occurs (kg CO2-e per kilowatt hour). If the electricity is not sourced from a listed electricity grid the emission factor can be either provided by the supplier of the electricity or, if that factor is not available, the emission factor for the Northern Territory may be used.

Data

The electricity consumption data provided by Council is presented in Table 24.

Table 24 Electricity consumption

Activity	Type	Consumption (kWh)
On-site Operations	Purchased Electricity from the Grid	174,600

GHG emission calculations

Based on the above electricity consumption data the GHG emissions presented in Table 25 were calculated.

Table 25 GHG emission calculation

Fuel type	Quantity of electricity purchased (kw/h)	Emission factor (kg CO_2-e/GJ Victoria	tCO_2-e
Electricity	174,600	1.13	197

Conclusion

Total calculated annual energy related greenhouse emissions associated with fuel and electricity usage from the operation of the landfill site were 1,743.2 tCO_2-e.

4.8.2 Greenhouse gas emissions from landfill gas

Landfill gas is a mixture of various gases with methane and carbon dioxide comprising the vast majority of the gas produced. Trace concentrations of a variety of other compounds may also be present, including hydrogen sulphide (rotten egg gas) and volatile organic compounds and these gases give the landfill its characteristic smell.

Methane and carbon dioxide are the more common of the various gases identified as “greenhouse gases”. Greenhouse gases differ in their ability to trap heat, as well as in their concentrations in the air. Many of these gases have a far greater warming effect than carbon dioxide for a given mass. Methane is classified as having 25 times the greenhouse warming potential as the same quantity of carbon dioxide. Minimisation of greenhouse emissions from landfills therefore usually focuses on the oxidation of methane, generally through combustion processes, to carbon dioxide thereby reduce the overall impact of greenhouse gases released from the landfill and its operations.

4.8.3 Best practice energy and greenhouse gas management

Where the anticipated level of energy use associated with the application is 500 gigajoules per annum or more (or greater than 100 tonnes of energy-related CO_2 –equivalent emissions per annum), applicants are required to identify and implement best practice with respect to the activities that are the subject of the application.

Future greenhouse gas management – energy related

Fuel combustion is the largest source of energy related greenhouse gas emission sources on the site (see Table 23). Council has implemented a number of practices and management systems to reduce its energy consumption as far as practicable on site by:

- Maintaining equipment to manufacturer specification
- Only using plant and equipment when required with vehicles not left idling
- Considering whole of life costs, including fuel consumption, when purchasing new equipment that consideration be given to fuel efficiency

Future greenhouse gas management – non energy related

LMS Energy Pty Ltd (LMS) owns and operates the Wyndham Renewable Energy Facility (WREF) within the boundary of the RDF. The WREF generates electricity from landfill gas and is connected with the local electricity grid to enable the sale of the electricity produced.

The WREF currently has an installed electricity generating capacity of approximately 1.8 MW, which consists of two Caterpillar engines. WREF produced approximately 14.5 MWh in 2015-16. of renewable electricity which is equivalent to supplying the electricity requirements of approximately 2,600 households. There are significant greenhouse benefits is operating a waste to energy plant fuelled by landfill gas as indicated in Table 26.

LMS proposes to install additional electricity generation capacity at the WREF which will progressively lift the generating capacity to around 5 MW over the next two to three years.

Table 26 Summary of greenhouse gas benefit (1)

Operations	Tonnes of $CO_{2\ \text{equivalent}}$ per year
GHG Emissions from 1.8 MW generation Facility	900
GHG Emissions from the equivalent displaced electricity generated in Victoria (1.8 MW generation capacity)	17,850
Net Greenhouse Gas Benefit from Renewable Energy	16,950

Note 1: Information from Application form for EPA works approval, LMS Energy Pty Ltd, May 2013

Currently, any excess landfill gas collected by the gas extraction system that is unused for electricity production is flared. While flaring landfill gas will convert methane gas to carbon dioxide and thereby reduce greenhouse gas emissions, the energy potential of the gas is not realised. The expansion of the WREF will utilise additional methane in the generation of electrical power. In comparison to flaring only, additional greenhouse gas savings are realised from the displacement of non-renewable fossil fuel generated electricity.

As discussed in Section 4.7.8, a landfill gas management system will be progressively installed during the operational period of the landfill. It is proposed that the landfill gas extraction system will be installed on a progressive basis as landfilling proceeds within the new stages subject to this works approval application.

Ongoing monitoring and maintenance of the landfill gas system, including regular checking of the cap, will ensure the ongoing optimisation of the system and effective landfill gas collection. The minimisation of carbon is also one of the Wyndham City RDF Transfer Station Master Plan objectives.

The design of this system will be completed once landfilling of a cell is completed.

These measures accord with the suggested measures in the BPEM and constitute industry best practice.

4.8.4 Odour and dust

As discussed in Section 4.6, the site has sufficient separation distances to sensitive receptors and Council intends to maintain a medium risk separation distance via application of planning controls. As such, the proposed future landfill activities are unlikely to pose an unacceptable odour or dust impact on the surrounding environment. Environmental monitoring and management controls to be applied with regard to site operations have been considered in the Odour Management Plan prepared by GHD for the landfill in 2015 (refer to Appendix H) and noted in Section 4.10.

As also discussed in Section 4.7.8, to reduce the potential odour impact from the operating landfill cell, a horizontal gas collection system comprising perforated HDPE pipes spaced at 30 to 40 metre centres will be progressively placed across each future cell.

4.9 Noise

The *State environment protection policy (Control of Noise from Commerce, Industry and Trade) No. N-1* (SEPP N-1) identifies beneficial uses as the normal domestic and recreational activities including, in particular, sleep in the night period and defines a 'beneficial use' as:

> *'Means a use of the environment or any element or segment of the environment which is conducive to public benefit, welfare, safety or health and which requires protection from the effects of the emission of noise.'* (Victorian Government, 1989)

The key noise sources located within and under control of the RDF include the open tipping face, transfer station push pit noise and green waste mulching. With the change in leachate management from sucker trucks to pneumatic operated pumps installed and wells and the air supply housed in a building, noise from this operation aspect is not significant.

The following sections outline a number of management options that if considered reasonable and feasible, may be available for the RDF to minimise noise impacts from the site.

Environmental monitoring and management controls to be applied with regard to site operations have been considered in the Acoustic Management Plan prepared by GHD (refer to Appendix I).

4.9.1 Noise impact

Operating hours of the RDF are from 12 am to 5.00 pm Monday to Friday, although public access to the transfer station is limited to 8 am to 4 pm. The tipping face operates from 6 am to 4 pm on Saturday and 8.30 am to 4.00 pm on Sunday and public access is allowed between 8.30 am and 4 pm on both days.

As there are a number of sources onsite that are both within and outside RDF control, such as the quarry operation, understanding the cumulative noise impacts from all existing and future operations within the property boundary is important in assessing whether noise is unreasonably impacting on residents in the vicinity of the site.

A number of noise complaints were received by the Council during August to November 2014. The complaints were from nearby residents and were in relation to a machinery noise at night.

A number of other sources of noise were present in the vicinity of the landfill including the Holcim Quarry, the Princes Freeway and construction sites. To assess whether the landfill was the source of the noise complaints Council completed two assessments including:

- Matrix Acoustics 2014, Review of noise events from Wyndham Landfill
- ERM 2014. Wests Road Refuse Disposal Facility, Noise Complaints Monitoring

The Matrix Acoustics report completed in August 2014 stated that the landfill noise levels were only marginally above other major sources of noise in the area, notably the freeway. The report stated that the reversing beepers on compactors were the main cause of the noise. As such, the Council replaced all compactor mufflers and fitted broad band reversing beepers on the compactors.

Following replacement of mufflers and reverse beepers on the compactors, ERM completed noise monitoring on the site and concluded that noise generated at the landfill is acceptable to offsite receptors and compliant with EPA requirements (refer to Appendix J).

No noise complaints have been received during 2015/2016.

Further noise monitoring was undertaken from April to June 2016 by Compass Environmental which did not identify any noise impacts from the RDF operations during either day or night time operations (refer Appendix I).

4.9.2 Traffic considerations

The landfill site is on the northern side of Princes Highway, north-west of the C109 Geelong Road exit. The Princes Highway is part of the A1 Highway infrastructure that connects all the capital cities on the Australian mainland. Locally it connects south-western Victoria to Melbourne and serves as the main road transport corridor between Melbourne and Geelong.

Trucks from Melbourne access the site via Princes Highway taking the C109 Geelong exit road to West Road. At the exit point, the Princes Highway is a three lane divided carriage way with an overpass which enables traffic traveling from Melbourne and Geelong to easily exit and turn onto West Road.

In 2011, the Princes Highway at Werribee had an average daily flow of 57,100 vehicles per day with heavy vehicles making up 19% of those vehicles. With the expected population growth daily traffic volumes are projected to increase with traffic numbers expected to rise to 83,500 vehicles per day by 2031 with heavy vehicles comprising about 18% of the vehicle count. The number of heavy vehicles using the RDF averages about 170 per week day and about 50 on Saturday.

Trucks hauling waste therefore do not drive through residential areas to enter the landfill site.

The proposed Outer Metropolitan Ring / E6 Reservation allows for a longer term proposal to meet future transport needs from the northern areas of Melbourne. The Outer Metropolitan Ring/E6 reservation will create the opportunity for new road and rail transport links through the Werribee, Melton, Tullamarine, Craigieburn / Mickleham and Epping / Thomastown areas to be provided as transport demand warrants. The Outer Ring Road would link into the Princes Highway to the immediate south west of the RDF site affording the ability for vehicles to connect to the Princes Highway and to then shortly exit at the C109 exit ramp and travel to the RDF site.

Access to the landfill site is via Wests Road and entering traffic passes through the gatehouse and is directed to the tipping face or the Transfer Station, as appropriate. The general public is prohibited to access any area of the site other than the Transfer Station.

All internal roads are constructed and maintained to facilitate the safe passage of multiple vehicles and all weather access to the tipping face. There are various signs, delineators, road markings, safety barriers and guide fencing present onsite.

4.10 Operation and management

4.10.1 Financial assurance

The EPA licence for the site requires Wyndham City Council to maintain a financial assurance calculated in accordance with the method outlined in EPA Publication 1596. EPA allows Wyndham City Council, as a local government operator of the RDF, to provide the financial assurance through adequate internal provisioning of funds to cover decommissioning, rehabilitation and aftercare costs. At the end of the 2015/16 financial year Wyndham had provisioned in excess of $20 million for these costs which is considered adequate to cover both the operational and closure/aftercare requirements outlined in EPA Publication 1596.

4.10.2 Waste minimisation, acceptance, pre-treatment and placement

Council recently commenced allowing residents to place fruit and vegetable scraps into their green waste bin. This initiative will reduce the quantity of putrescible waste that is ultimately disposed to landfill. Kerbside recyclable collection is also conducted in the municipality to divert waste streams from the landfill.

All wastes are accepted, treated and placed at the landfill in accordance with the EPA licence.

4.10.3 Other operational practices

The Wyndham RDF operates in accordance with procedures and practices contained in the West Road Refuse Disposal Facility Werribee Operations and Maintenance Procedure Manual (OMPM) (refer to Appendix L).

The OMPM contains procedures relating to:

- Waste receipt
- Managing non-conforming wastes (as per draft EPA revised Landfill Licensing Guidelines)
- Acceptance of fill material
- Landfill tip face management, including restricting the size of the tip face
- Waste covering
- Leachate and landfill gas management
- Litter control
- Dust and sediment control
- Odour management
- Fire management including hotspot management (as per draft EPA revised Landfill Licensing Guidelines)

4.11 Landscape

Landscaping works are proposed to be carried out around the site to soften the visual impact of the RDF. There is a mature tree line along the eastern boundary – on the edge of the road reserve which provides some screening of the site from this direction.

Additional landscaping works have been completed or are scheduled including:

- Planting at the entrance of the RDF in 2014
- Removal of a large number of skips from a highly visible area near the entrance to the RDF and planting of approximately 450 trees in June 2016

- Planting of shrubs and trees on Wests Road scheduled for October 2016
- Further planting along the eastern boundary of the RDF during 2016-2018
- Landscaping and planting on the batters and top of Cell 1A

4.12 Rehabilitation

As noted in Table 10, Cell 1A has been capped with compacted clay. A Rehabilitation Plan was prepared for Cells 1B, 2A, 2B and 3 by Tonkin Consulting in September 2014 and an evapotranspiration trial cap is planned in the near future. Council is currently developing the tender specification for the design of the cap for Cells 4A, 4B and 4C. The tender, which will be for design, construction QA/QC and environmental auditor approval of both design and construction, is expected to be advertised early in 2017, with the construction tender to follow around mid-2017 and construction to commence in late 2017. The preliminary schedule for cap construction is:

- Cell 4A – commence late 2017
- Cell 4B – commence early 2018
- Cell 4C – commence late 2018 after filling is complete and Cell 5A is constructed and operational.

The future sub-cells / cells subject to this approval will be progressively rehabilitated, in accordance with EPA Publication 788.3 and the concept for capping is as outlined in Section 4.7.3. An indicative sub-cell rehabilitation schedule for the future cells is provided in Table 27 and shown in Figure 25.

Table 27 Indicative Rehabilitation Schedule for New Sub-cells(1)

Sub-cell / Cell	Anticipated Years of Filling	Anticipated Year of Completion of Rehabilitation
5A	2018 - 2020	2022
5B	2020 - 2022	2024
5C	2023 - 2025	2027
6A	2025 - 2027	2029
6B	2027 – 2029	2031
6C	2029 - 2031	2033
7A	2032 - 2034	2036
7B	2034 - 2036	2038
7C	2036 - 2038	2040
Piggyback A	2038-2040	2042
Piggyback B	2041-2043	2044
8A	2044 - 2045	2047
8B	2046 – 2048	2050

Notes:

(1) The number of sub-cells developed per cell and the order of filling sub-cells may vary from that indicated

(2) Filling above piggyback liner

Cells will be progressively rehabilitated as they are filled. Where possible, or where a large area of a cell has been filled, it will be rehabilitated while the remaining section of the cell is filled.

Detailed design of the final cap for each sub-cell will consider stormwater management. It is expected that swale drains and/or berms will be constructed on the final cap to ensure stormwater runoff from the cap surface is effectively collected and diverted to existing boundary swale drains or stormwater ponds. As discussed in Section 4.7.7, a new stormwater pond is likely to be required for Cell 6. In accordance with the landfill BPEM, all new stormwater drains and storage ponds will be designed to contain and control rainfall runoff for a 1-in-20-year storm event. Sediment control measures will also be considered during detailed design of a sub-cell cap.

As discussed in Section 4.7.8, a vertical landfill gas collection system will be installed after the interim cap has been placed, but within six months of a sub-cell being filled. The collection system will comprise of regularly spaced vertical bored gas bores to work with the remaining horizontal pipes.

4.13 Aftercare management

As specified in EPA Publication 788.3, management of the landfill is required post-closure until the waste has sufficiently decomposed or stabilised such that it no longer presents a risk to the environment. The site must be managed to prevent environmental impacts.

As outlined in Section 4.6.3, Council is in the process of applying planning controls in the vicinity of the landfill to maintain an appropriate separation distance in the future.

Key management measures that will be implemented post-closure include:

- Monitoring and maintenance of landfill capping to prevent landfill gas emissions and infiltration of surface water
- Monitoring of groundwater, leachate, surface water and landfill gas to assess the potential for environmental impacts
- Maintenance of the leachate and landfill gas collection and treatment systems

4.14 Environmental monitoring and auditing

4.14.1 Environmental monitoring

An Environmental Monitoring Plan has been developed for the site, to allow Council to assess compliance with the EPA licence (as per EPA Publication 1323.2). The plan has been reviewed and verified by an EPA appointed environmental auditor.

The monitoring network comprises:

- Groundwater monitoring bores
- Surface water sampling locations
- Leachate sumps
- Leachate ponds
- Landfill gas monitoring bores
- Underground service pits
- Existing buildings and structures
- Landfill gas extraction bores

- Monitoring considers the following aspects:
  - Groundwater
  - Leachate (levels within the waste body and quality)
  - Surface Water
  - Landfill gas
  - Noise
  - Dust
  - Odour
  - Litter
  - Application of daily cover
  - Waste height

An annual report is prepared by Council’s consultant, which reviews and analyses the environmental monitoring data obtained during the 12-month period and comments on compliance with monitoring requirements and the EPA licence. The annual report informs Council in preparing their APS for EPA and informs the regular audit (refer Section 4.14.2).

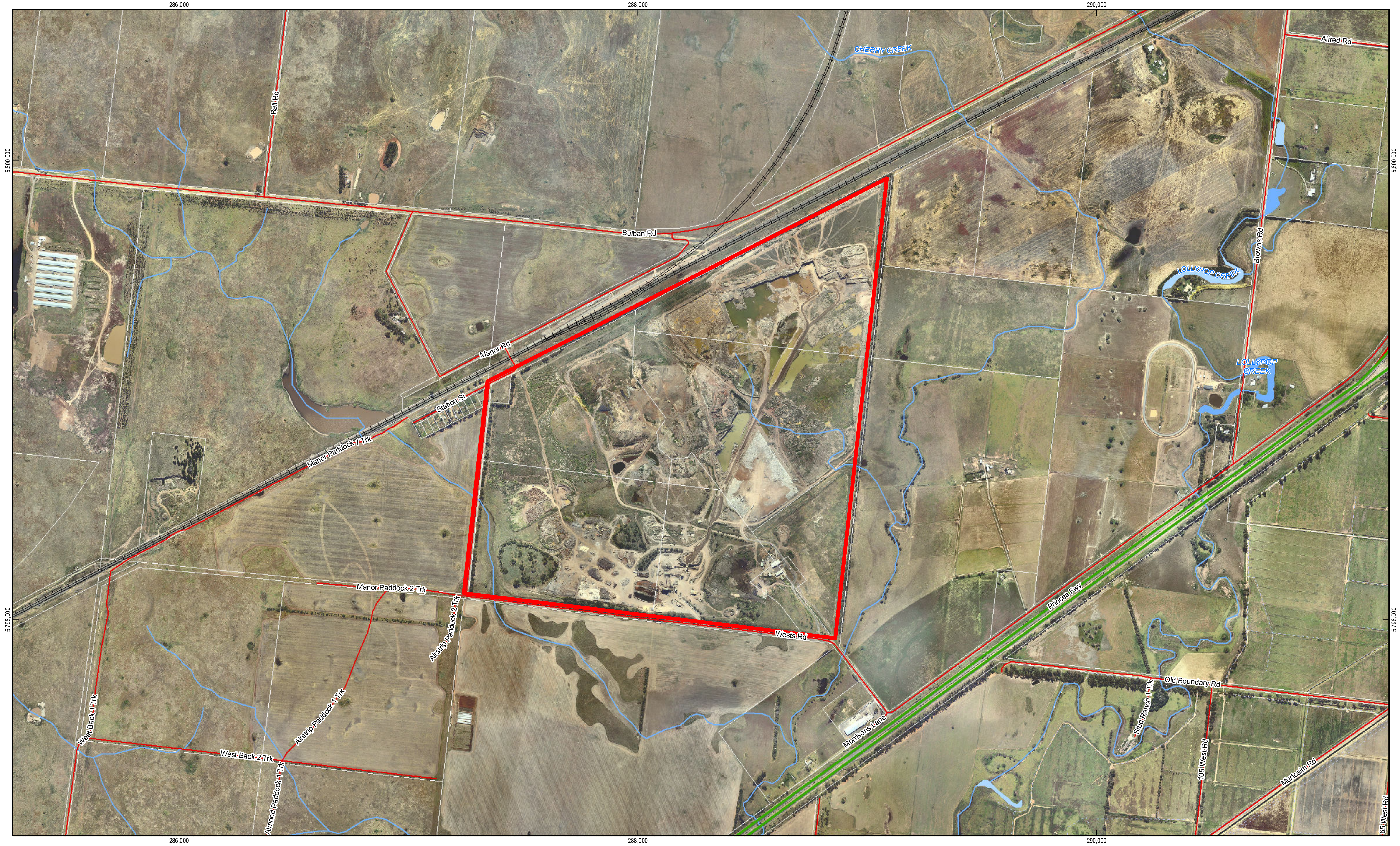
The plan will be progressively revised to consider environmental monitoring required as future cells are developed. Council’s consultant will consider additional monitoring requirements and present proposed augmentations to the monitoring plan to Council’s EPA appointed auditor for review and verification. As new cells are developed the following additional monitoring infrastructure may be installed:

- Groundwater monitoring bores
- Landfill gas monitoring bores
- Leachate observation bores
- Surface water sampling points

4.14.2 Regular auditing

The Environmental Monitoring Plan specifies a two yearly frequency for the statutory S53V audit. This audit is conducted by an auditor accredited by EPA and includes an assessment of the risk to beneficial uses of the environment posed by the landfill activities. The monitoring plan is reviewed in each audit and the auditor recommends changes to be made to the plan to allow Council to assess environmental impacts. The audit also recommends measures to be implemented by Council to prevent environmental impacts.

5. Figures



Paper Size A3

0 75 150 300 450 600

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

LEGEND

🟥	Site Boundary	—	Collector	—	Stream
—	Freeway	┼┼┼	Railway	- - -	Drain/Channel/Other
—	Highway	▨	Watercourse		
—	Arterial	▨	Lake		

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Wests Road RDF -
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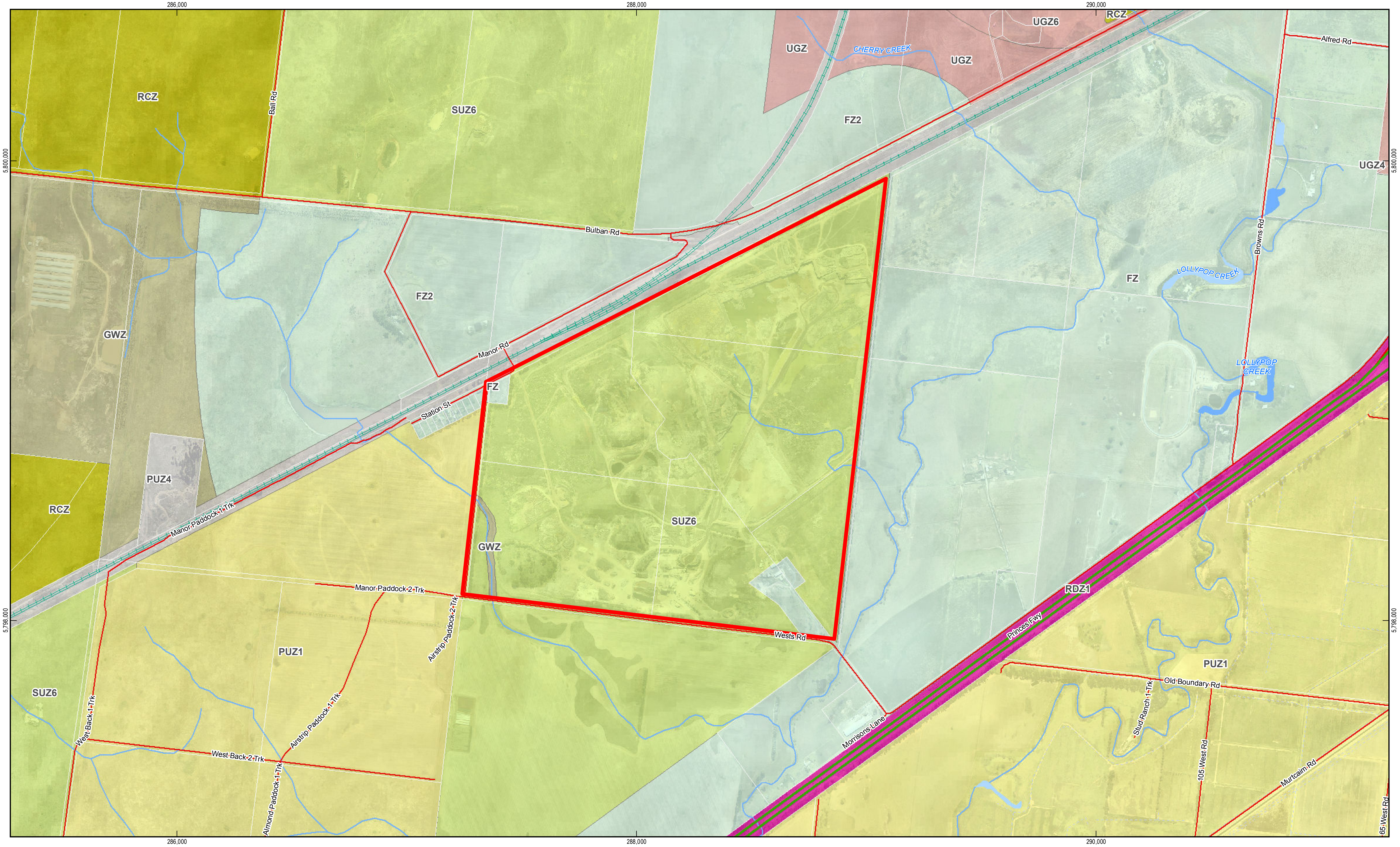
Site Plan

Figure 1

G:\31\33268\GIS\Maps\Working\3133268_Fig1_SitePlan_A3L.mxd

Data source: Imagery, NearMap, extracted 03/03/2016, Image Date 07/04/2011 and VicMap, DELWP (2016). Created by:lrsmith



Paper Size A3

0 75150 300 450 600

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

LEGEND

- 🟥 Site Boundary
- Freeway
- Highway
- Arterial
- Collector
- Railway
- Stream
- Drain/ Channel/ Other

Planning Zones

- Farming
- Green Wedge
- Public Use 1 - Service & Utility
- Public Use 4 - Transport
- Rural Conservation
- Road – Category 1
- Special Use 6 - Earth and Energy Resources Industry
- Urban Growth

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Wests Rd RDF
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Job Number 3-33268
Revision A
Date 11 Mar 20

Planning Zones

Figure 2

G:\31\33268\GIS\Maps\Working\3133268_Fig2_Zoning_A3L.mxd

180 Lonsdale Street Melbourne VIC 3000 Australia T 61 3 8687 8000 F 61 3 8687 8111 E melmail@ghd.com W www.ghd.com

Data source: Imagery, Near Map, extracted 03/03/2016, Image Date 07/04/2011 and VicMap, DELWP (2016). Created by: lrsmith

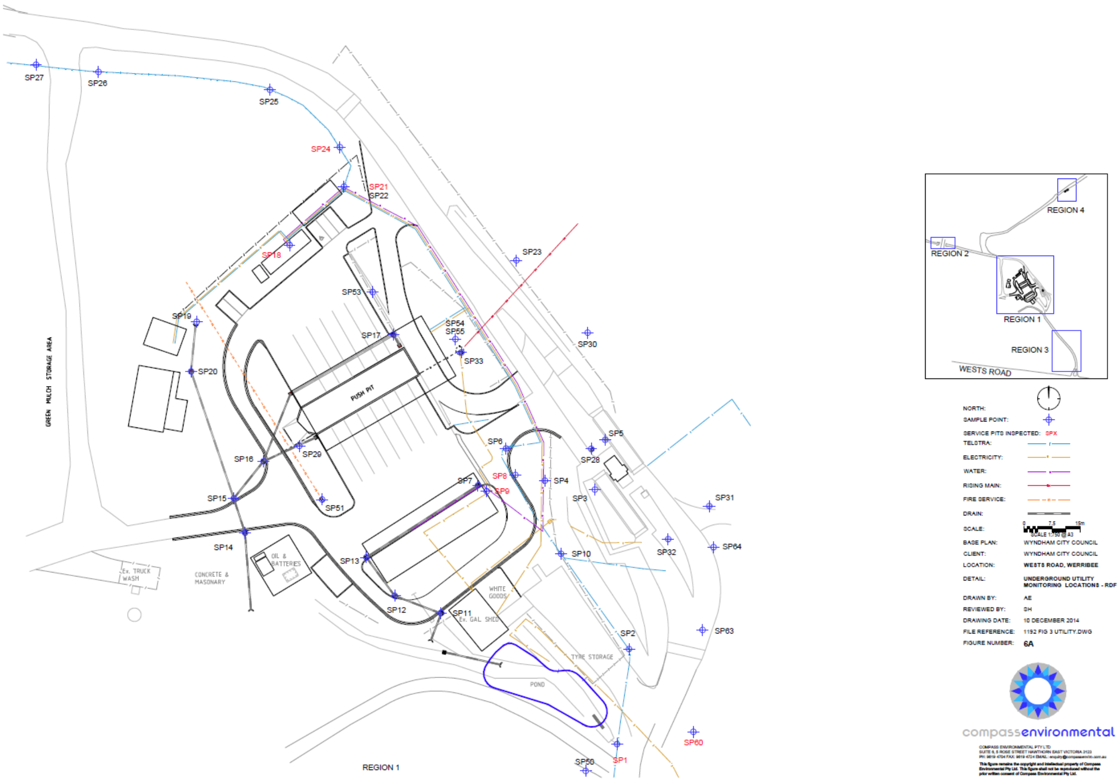

Figure 3 Transfer station layout

Source: Annual Licence Compliance Report 2014-2015, Compass Environmental September 2015

Figure 4 Transfer Station and weighbridge

Source: Wyndham City Council Municipal Refuse Disposal Facility Odour Management Plan, GHD 2015

Figure 5 Current organics transfer station

Source: Wyndham City Council Municipal Refuse Disposal Facility Odour Management Plan, GHD 2015

Figure 6 EDL Wyndham renewable energy facility

Source: www.lms.com.au)

Paper Size A3

0 75 150 300 450 600

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

LEGEND

🟥	Site Boundary	—	Arterial	🟦	Lake
🟩	Extractive Work Authority Areas	—	Collector	—	Stream
—	Freeway	┼┼┼┼	Railway	- - -	Drain/Channel/Other
—	Highway	🟦	Watercourse		

Wests Road RDF -
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Date	11 Mar 2016

Extractive Work Authority Areas

Figure 7

G:\31\33268\GIS\Maps\Working\3133268_Fig7_EWA_Areas_A3L.mxd

Data source: Imagery, NearMap, extracted 03/03/2016, Image Date 07/04/2011 and VicMap, DELWP (2016). Created by:lrsmith

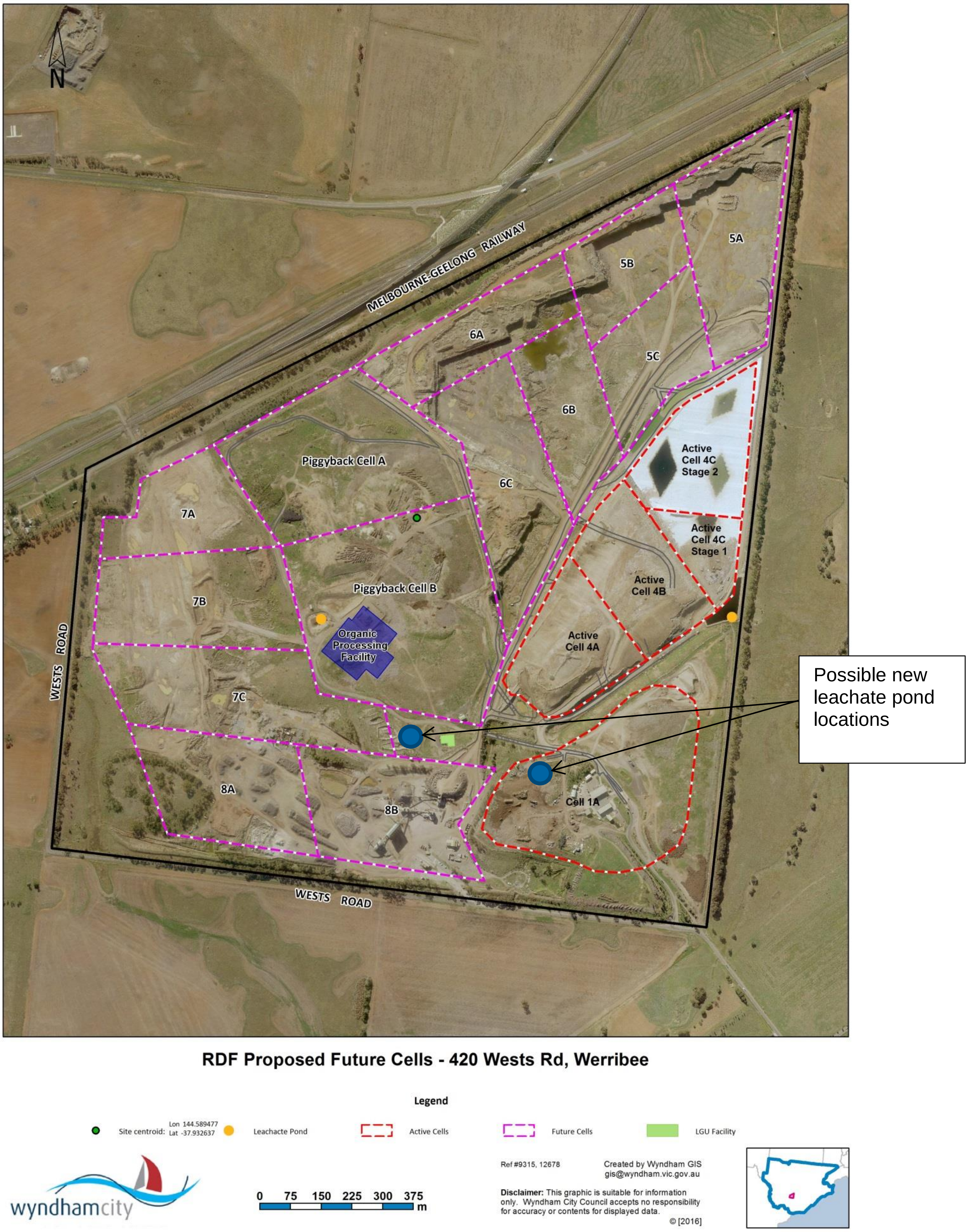
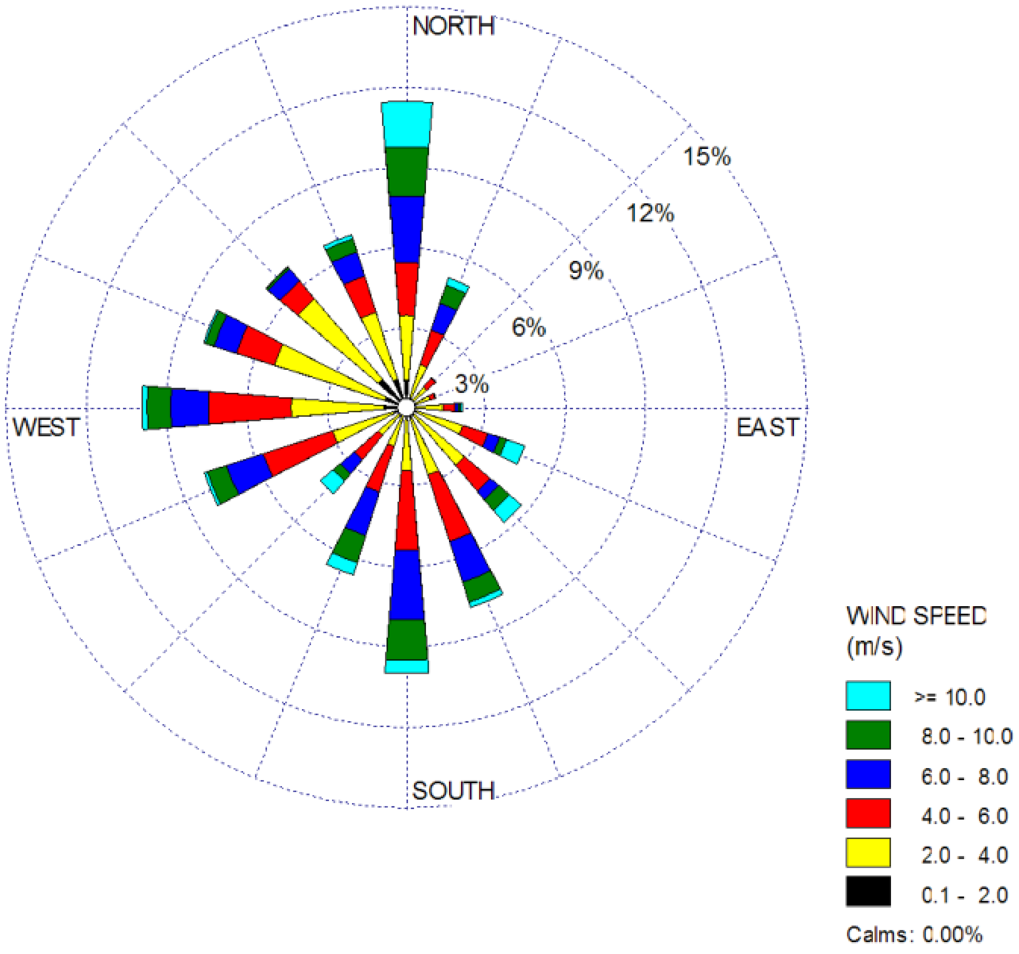
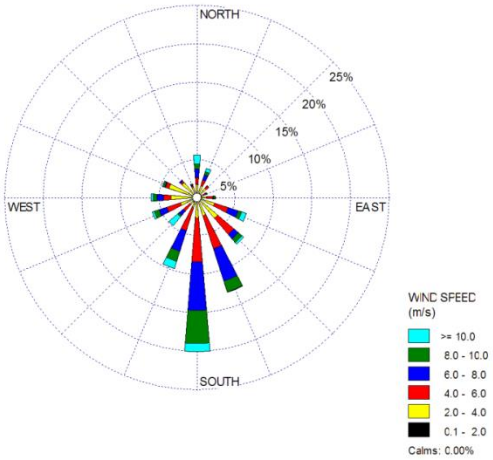


Figure 8 Landfill development plan

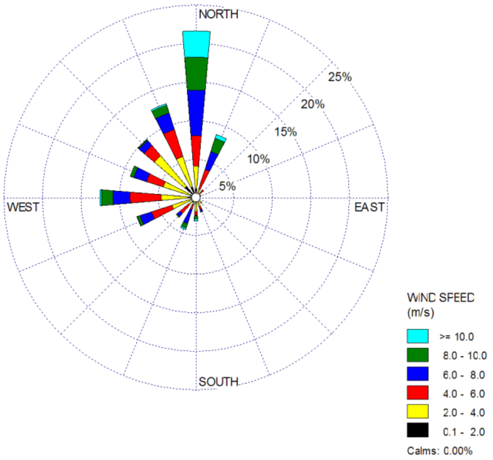
Annual (average speed 4.99 m/s)

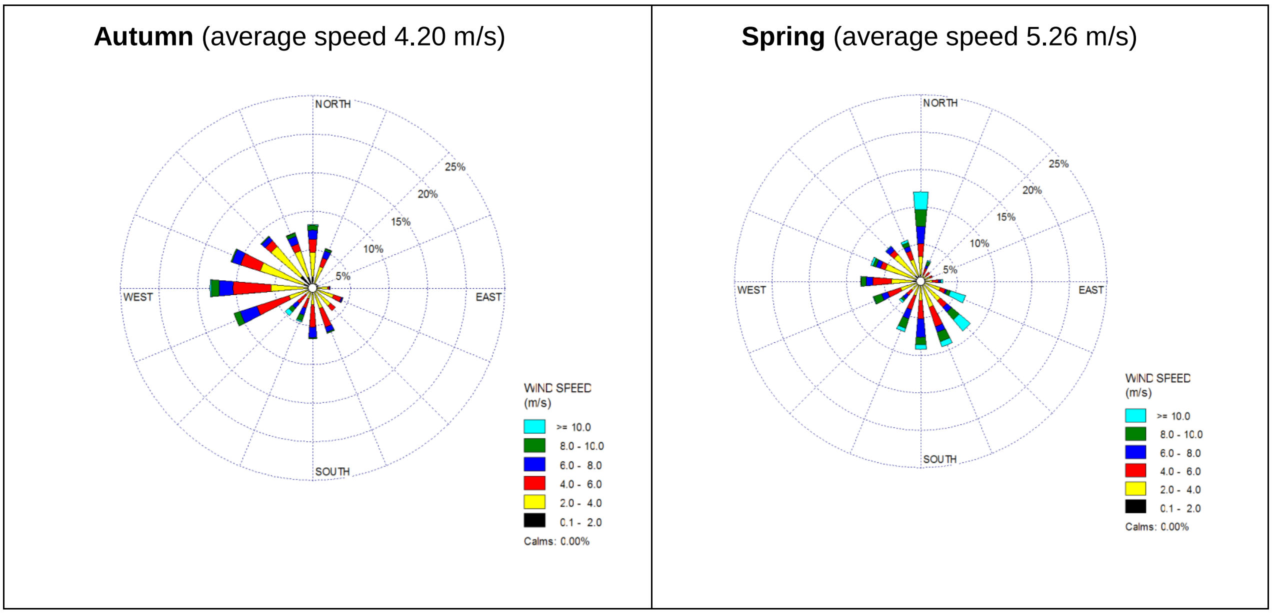


Summer (average speed 5.47 m/s)



Winter (average speed 5.08 m/s)





Autumn (average speed 4.20 m/s)

Spring (average speed 5.26 m/s)

Figure 9 Wind roses for EPA Point Cook

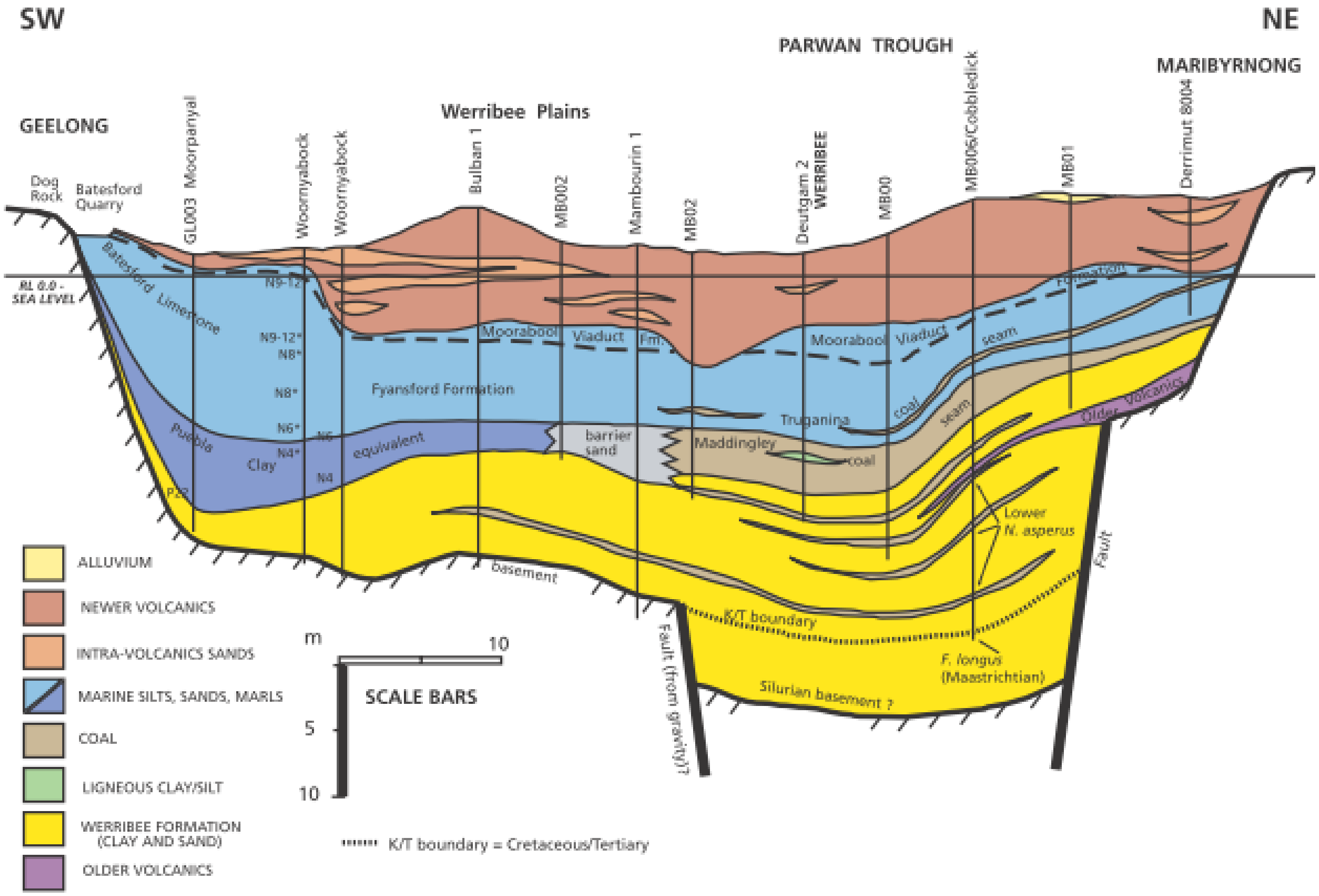
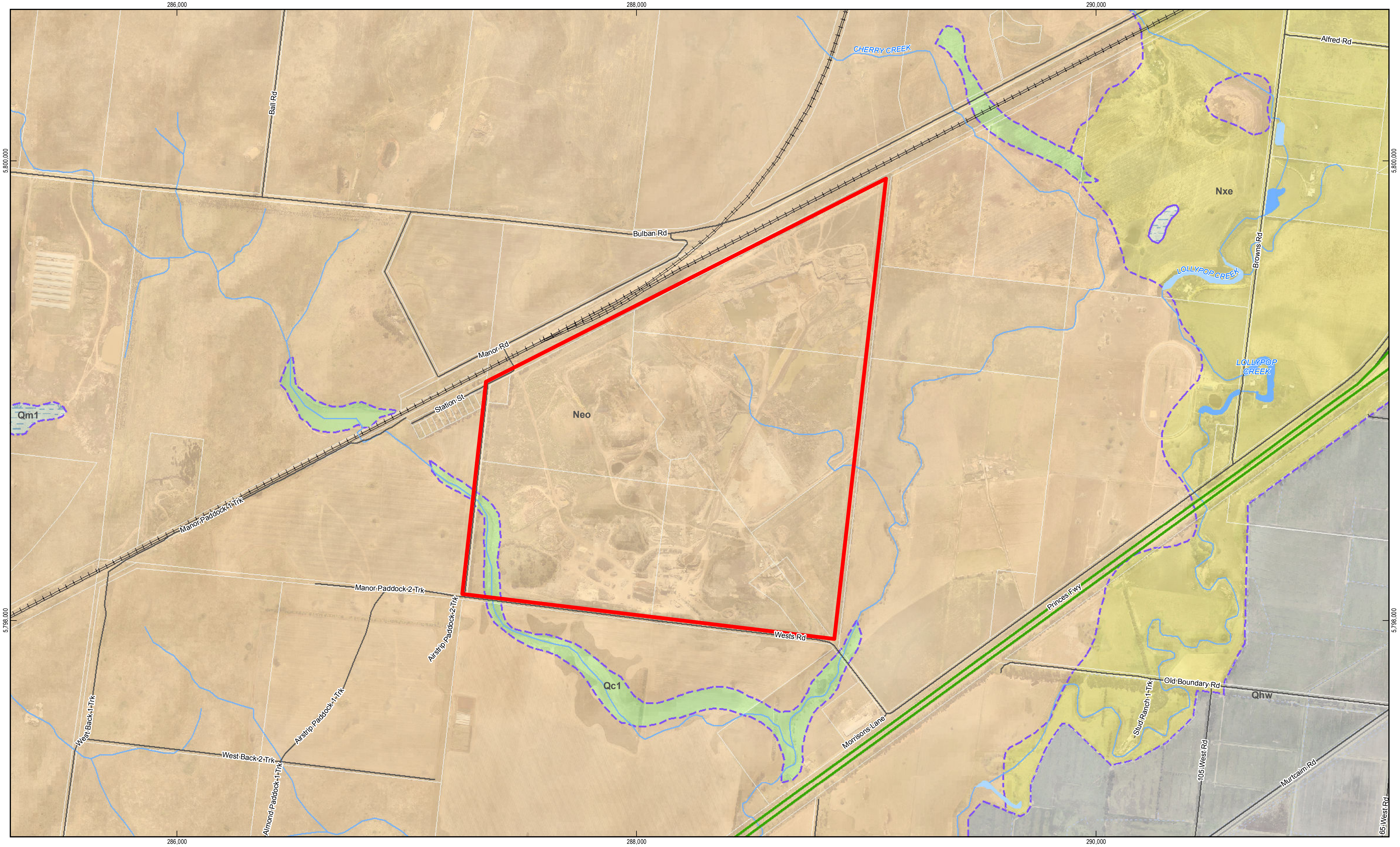


Figure 10 Stratigraphy, north west limit of Werribee Irrigation District

Source: Holgate et al (2002)



Paper Size A3

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

LEGEND

🟥 Site Boundary

Geological Fault Structure Type

— Conformity

- - - Disconformity

Geographic Feature ID

🟧	Neo
🟨	Nxe
🟩	Qc1
⬜	Qhw
- - -	Qm1

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Regional Geology

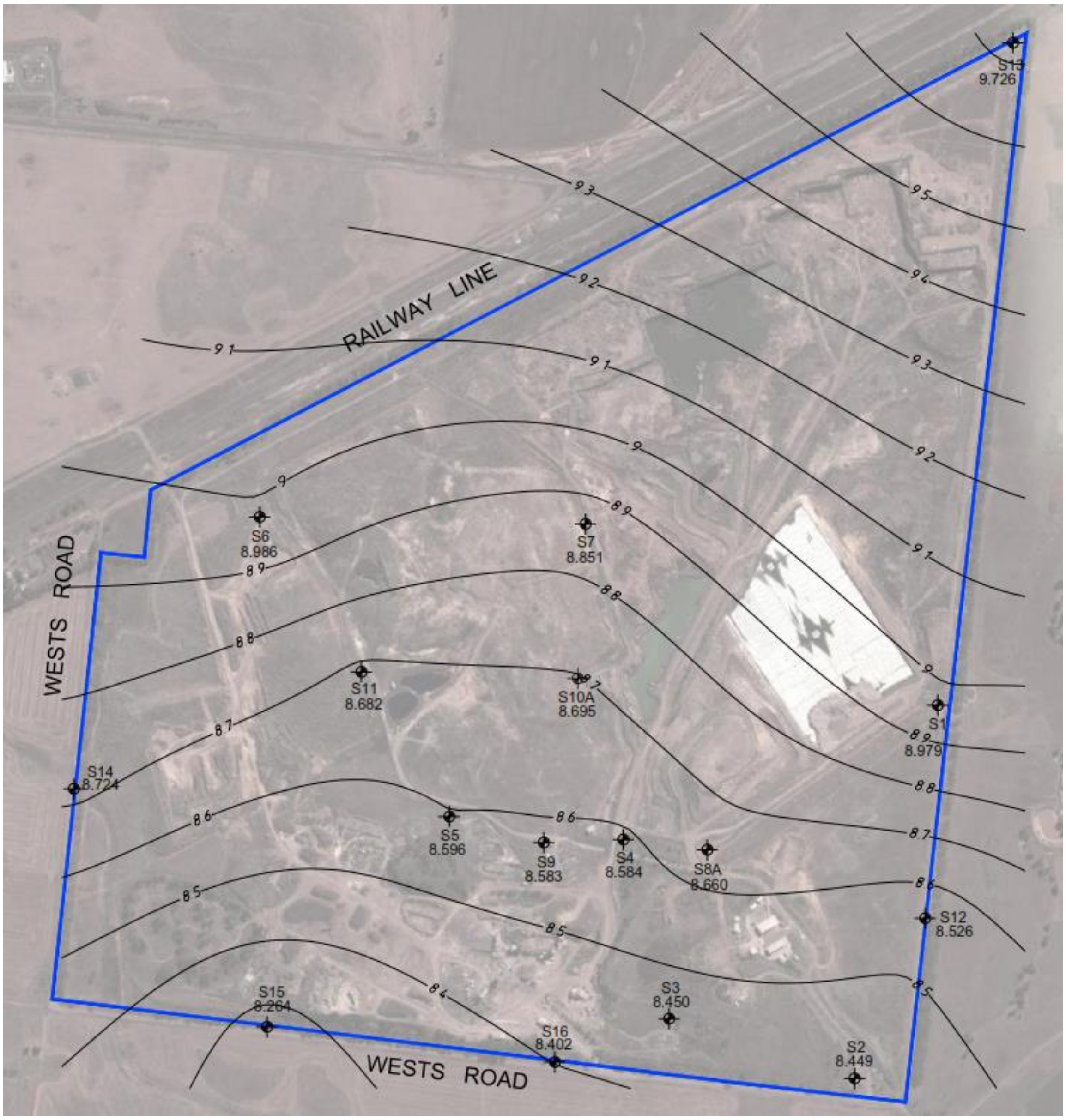
Figure 11

180 Lonsdale Street Melbourne VIC 3000 Australia **T** 61 3 8687 8000 **F** 61 3 8687 8111 **E** melmail@ghd.com **W** www.ghd.com

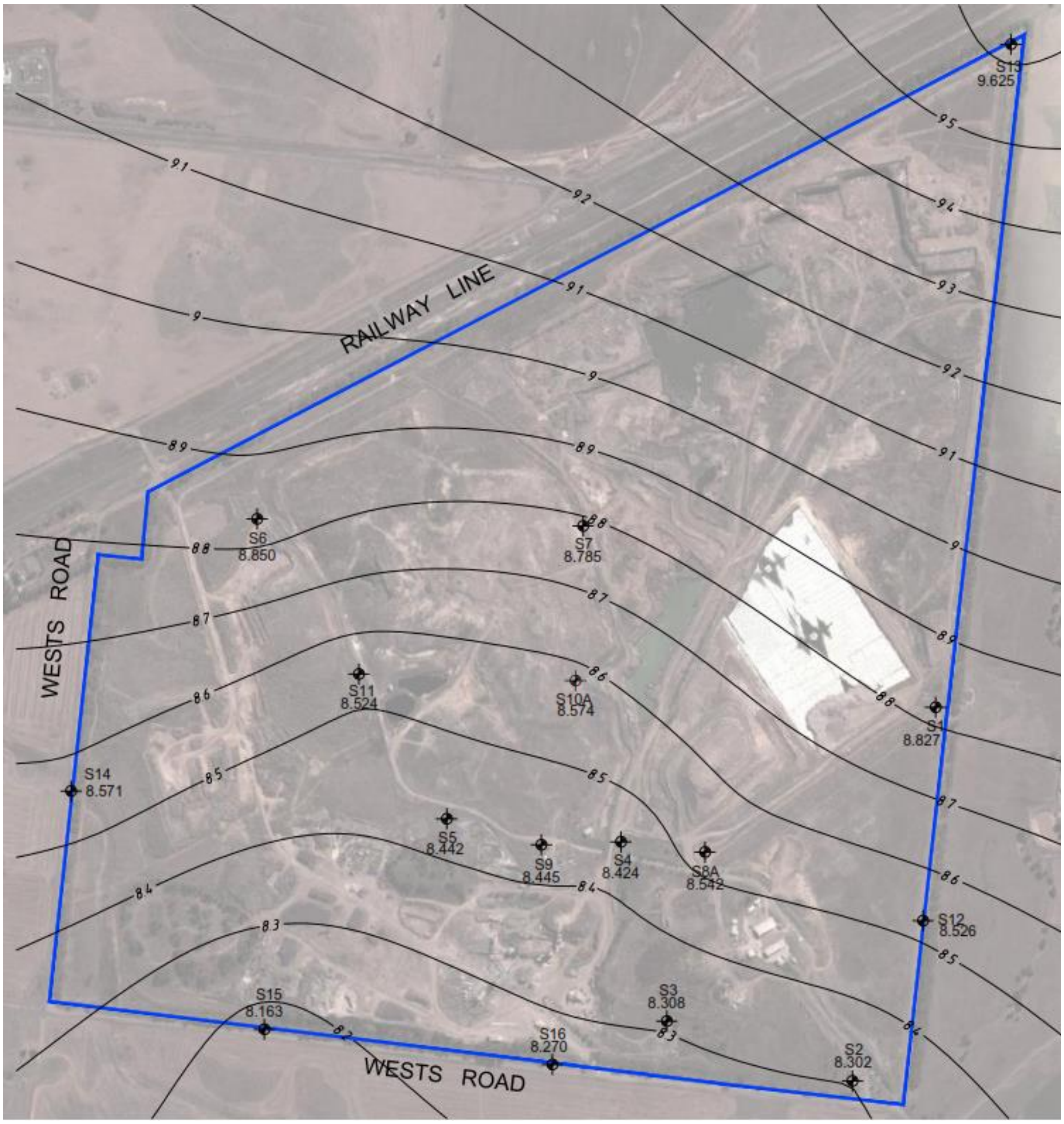
G:\31\33268\GIS\Maps\Working\3133268_Fig10_Geology_A3L.mxd

Data source: Imagery, NearMap, extracted 03/03/2016, Image Date 07/04/2011 and VicMap, DELWP (2016). Created by:lrsmith

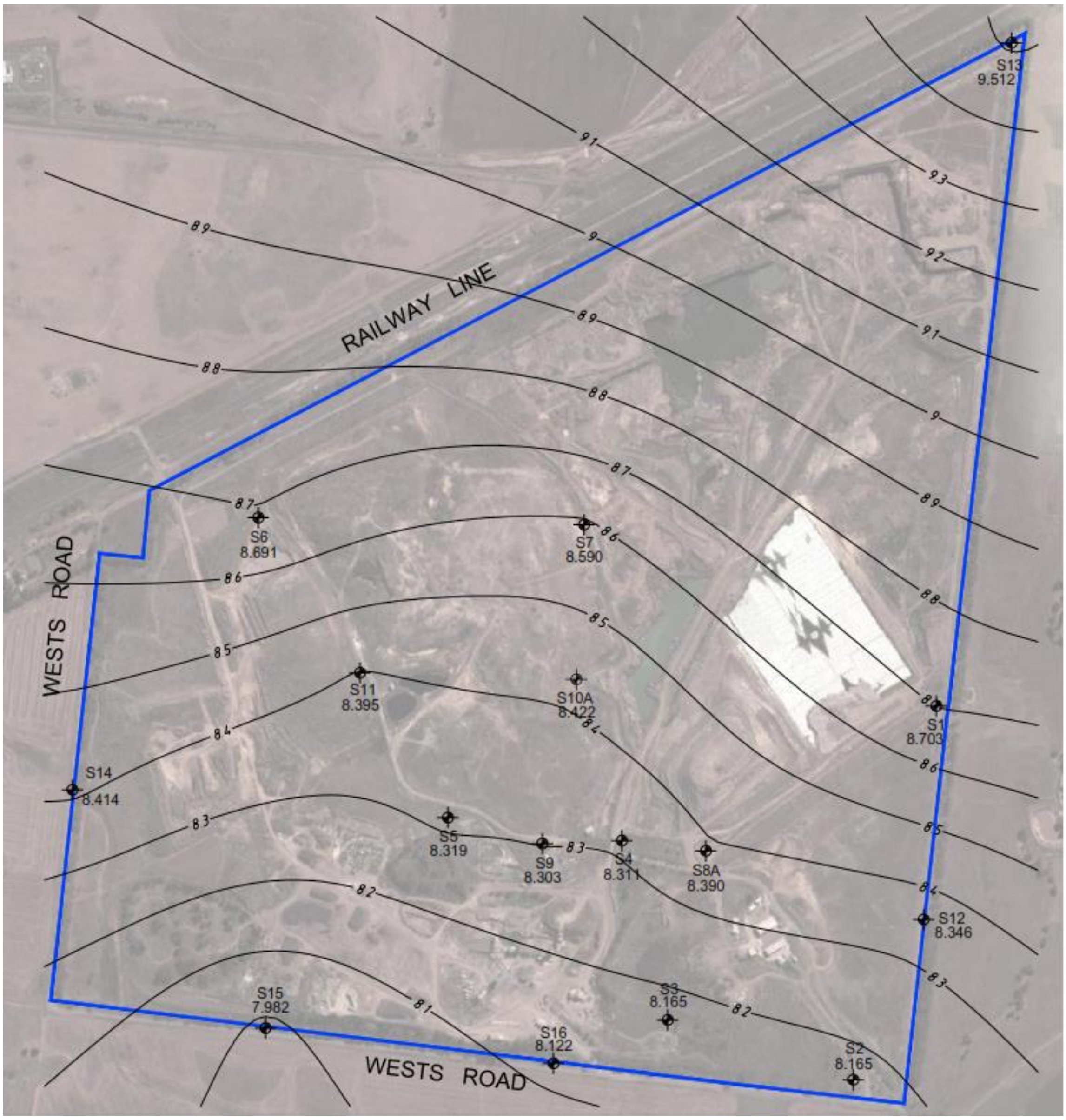
October 2014



January 2015



April 2015


S13
9.512
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RAILWAY LINE
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89
S6
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S7
8.590
86
86
88
WESTS ROAD
85
85
S11
8.395
S10A
8.422
S1
8.703
84
84
86
S14
8.414
83
S5
8.319
S9
8.303
83
S4
8.311
S8A
8.390
85
84
82
S12
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S16
8.122
S2
8.165
WESTS ROAD

July 2015

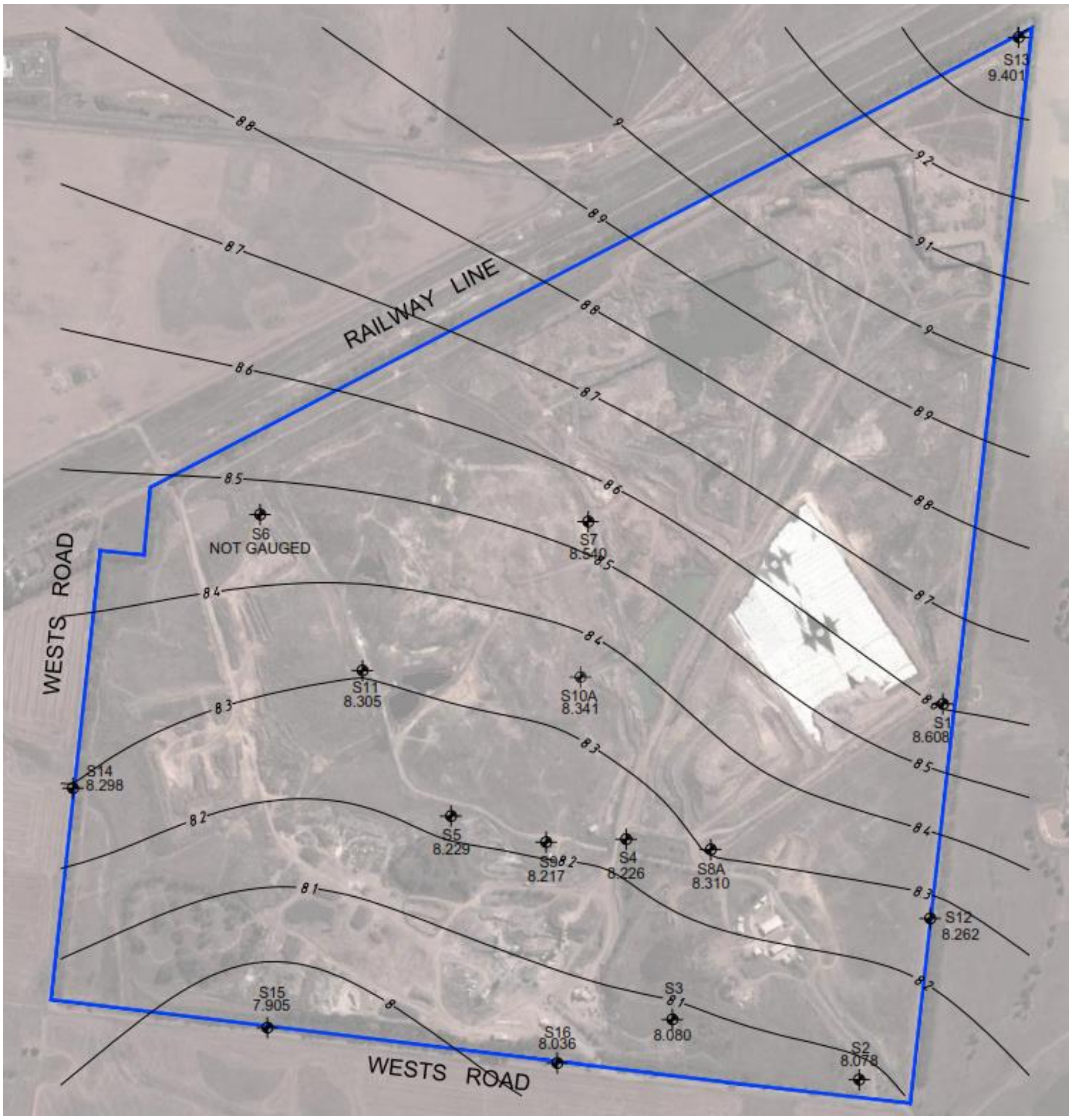


Figure 12 Groundwater contours

Source – Annual Licence Compliance Report 2014 – 2015, Wests Road Refuse Disposal Facility, Werribee, Compass Environmental, 23 September 2015

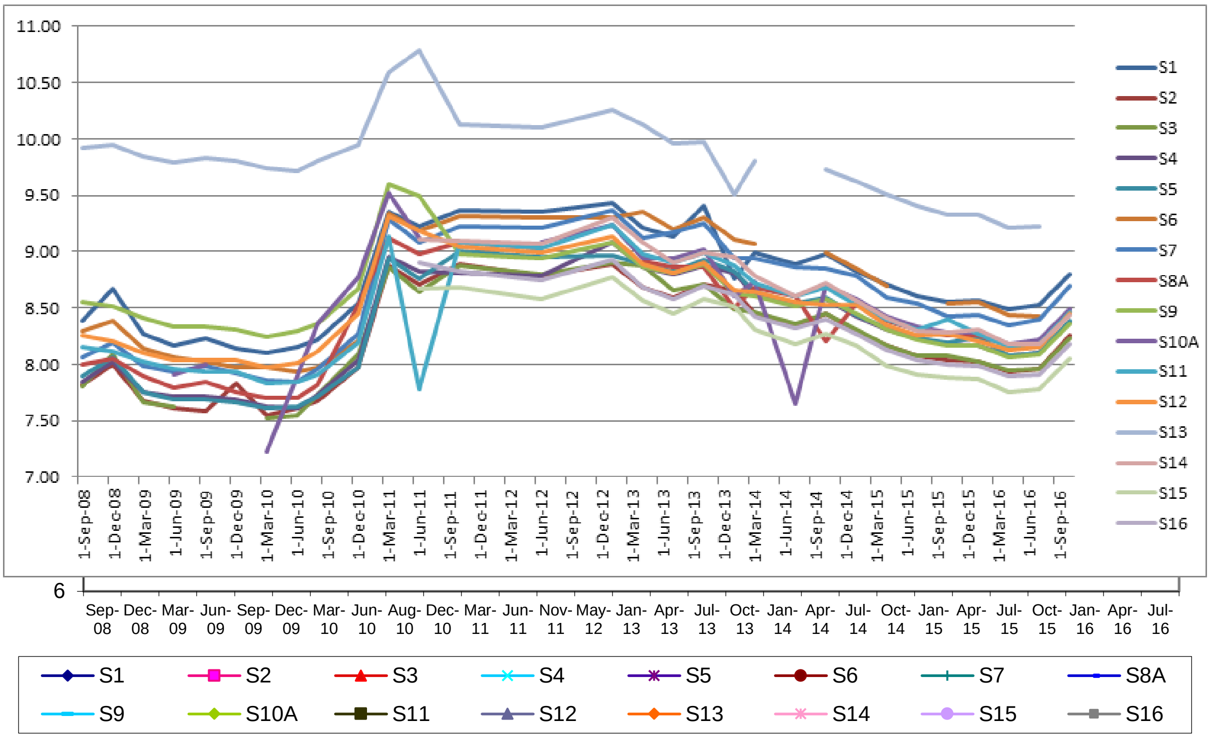
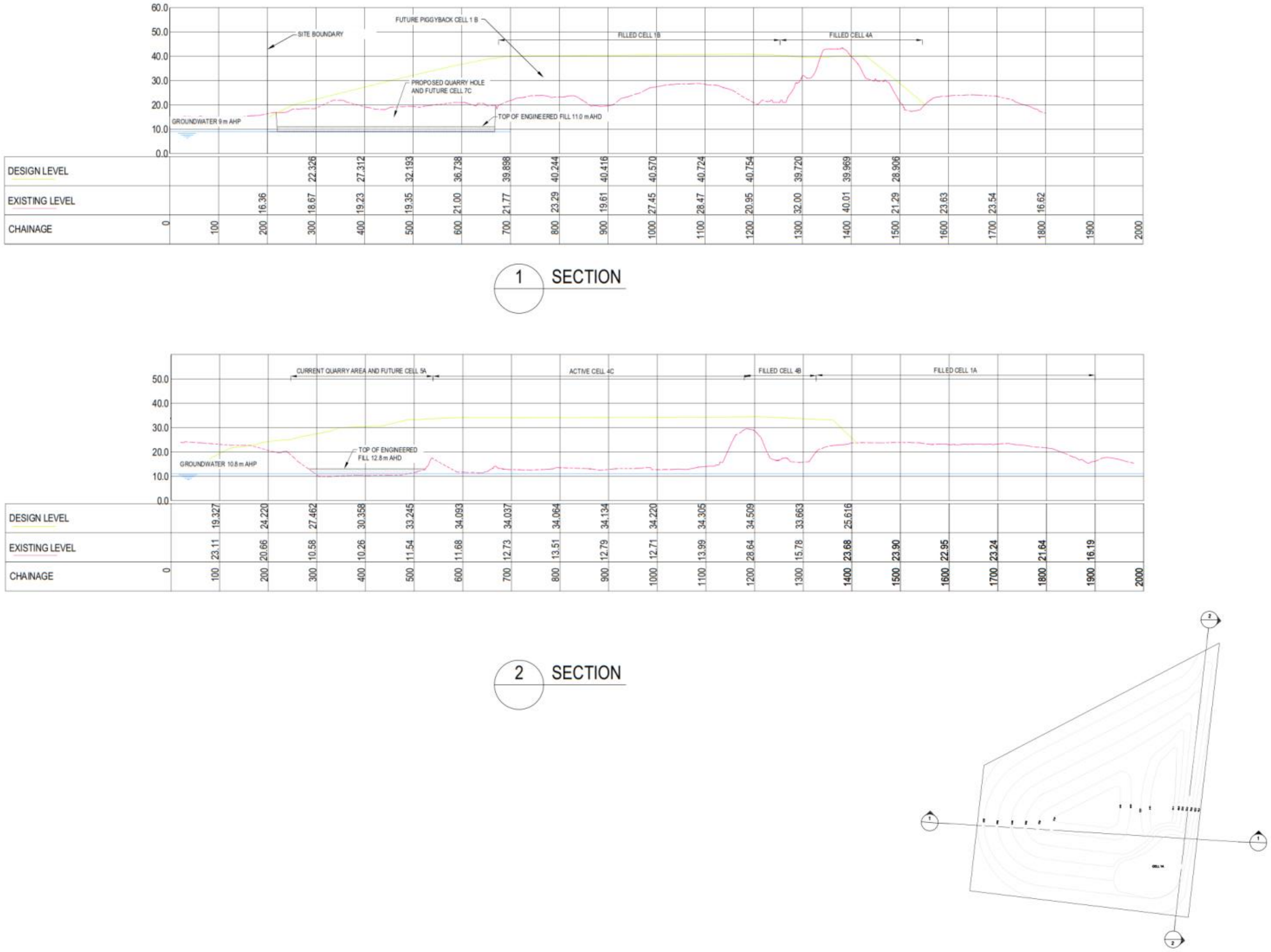


Figure 13 Historical groundwater levels for onsite groundwater monitoring bores (reduced water level, mAHD)



DESIGN LEVEL				22.326	27.312	32.193	36.738	39.898	40.244	40.416	40.570	40.724	40.754	39.720	39.969	28.906					
EXISTING LEVEL			16.36	18.67	19.23	19.35	21.00	21.77	23.29	19.61	27.45	28.47	20.95	32.00	40.01	21.29	23.63	23.54	16.62		
CHAINAGE	0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000

DESIGN LEVEL		19.327	24.220	27.462	30.358	33.245	34.093	34.037	34.064	34.134	34.220	34.305	34.509	33.663	25.616						
EXISTING LEVEL		23.11	20.66	10.58	10.26	11.54	11.68	12.73	13.51	12.79	12.71	13.99	28.64	15.78	23.68	23.90	22.95	23.24	21.64	16.19	
CHAINAGE	0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000

Figure 14 Landfill cross sections

Paper Size A3

0 125 250 500 750 1,000

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

LEGEND

▭	Site Boundary	—	Collector	▬	Lake	—	Contour 5 m
—	Freeway	- · -	Proposed	—	Stream		
—	Highway	┼┼	Railway	- - -	Drain/Channel/Other		
—	Arterial	▬	Watercourse	—	Contour 1 m		

Wests Road RDF -
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Topography Features

Job Number	33-33268
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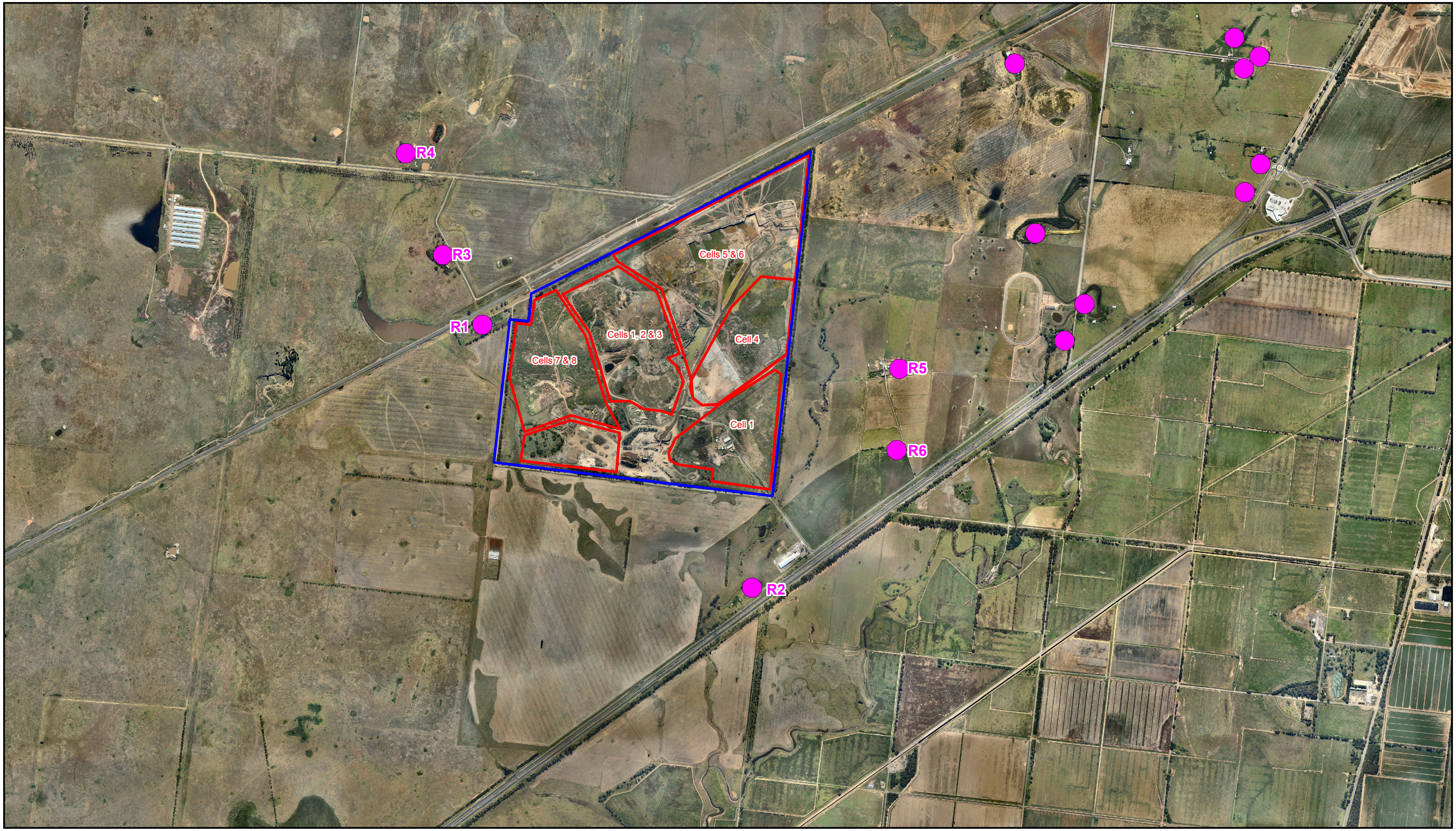
Figure 15

G:\31\33268\GIS\Maps\Working\3133268_Fig12_Topography_A3L.mxd

Data source: Imagery, NearMap, extracted 03/03/2016, Image Date 07/04/2011 and VicMap, DELWP (2016). Created by:lrsmith



0 300 600 900
Metres (at A4)

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid Of Australia, Zone 55

N
W E
S

LEGEND

🟦 Site boundary

🟥 Landfill Cells

● Sensitive Receptors

CLIENTS | PEOPLE | PERFORMANCE

Wyndham City Council
Wests Road -
Works Approval Application

Job Number	3133268
Revision	A
Date	03/03/2016

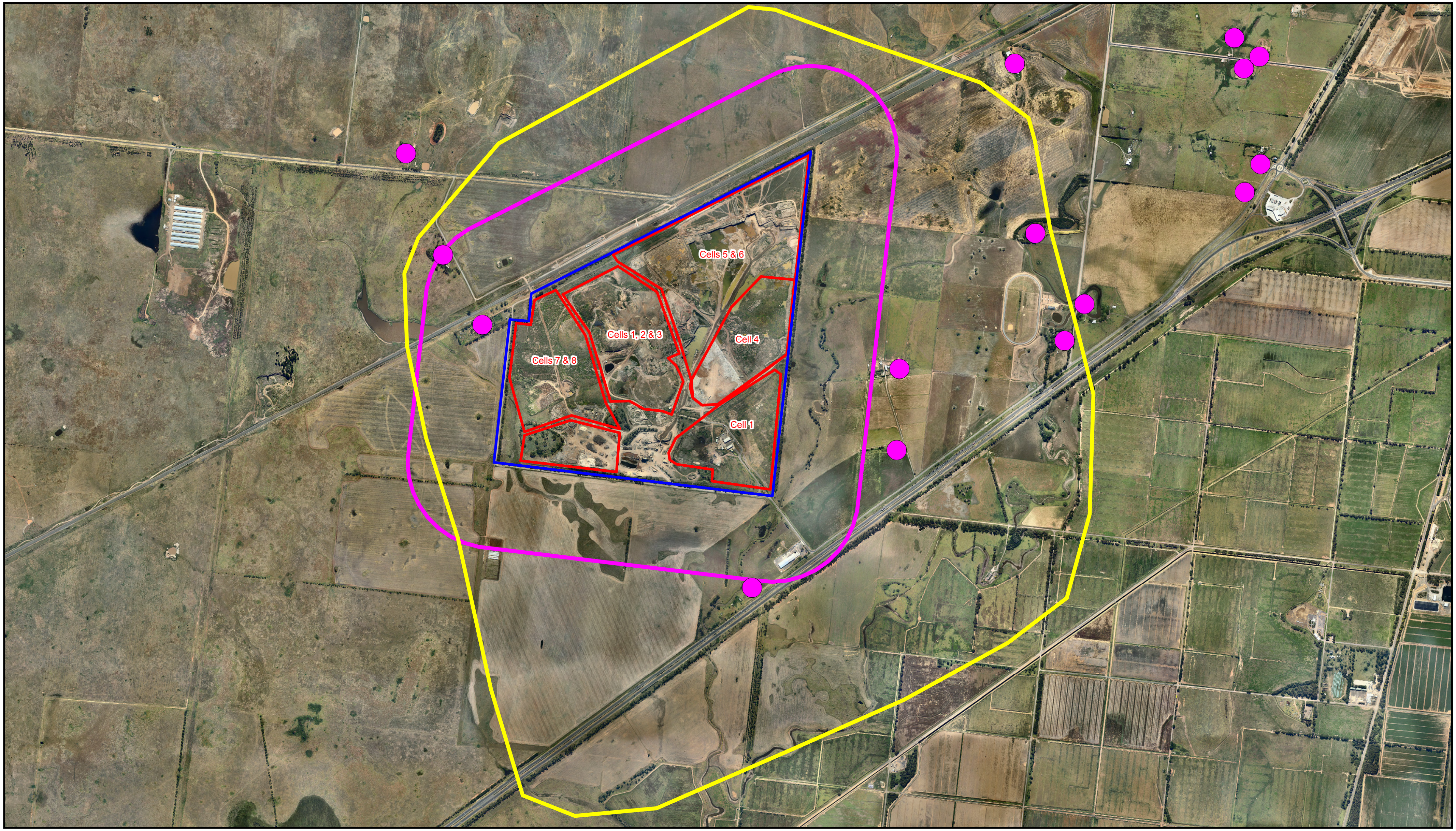
Sensitive Receptor Map

Figure 16

G:\31\33268\GIS\Maps\Working\Figure14.wor

8/180 Lonsdale St Melbourne VIC 3000 Australia **T** 61 3 8687 8000 **F** 61 3 8687 8111 **E** melmail@ghd.com.au **W** www.ghd.com.au

Wyndham City Council Imagery 2011. Created by: MA



0 300 600 900
Metres (at A4)

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid Of Australia, Zone 55

N
W E
S

LEGEND

🟦	Site boundary
🟥	Landfill Cells
🟪	EPA Default Buffer (500 m)
●	Sensitive Receptors
🟨	Extent of Medium Risk

CLIENTS | PEOPLE | PERFORMANCE

Wyndham City Council
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Job Number | 3133268
Revision | A
Date | 03/03/2016

RDF Separation Distance

Figure 17

G:\31\33268\GIS\Maps\Working\Figure14.wor

8/180 Lonsdale St Melbourne VIC 3000 Australia T 61 3 8687 8000 F 61 3 8687 8111 E melmail@ghd.com.au W www.ghd.com.au

Wyndham City Council Imagery 2011. Created by: MA

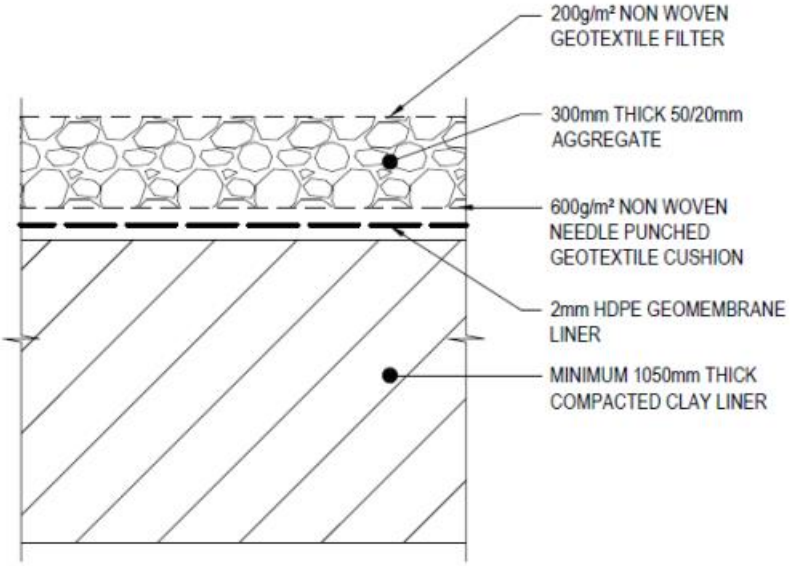

Figure 18 Indicative landfill lining design

Figure 19 Indicative leachate sump location

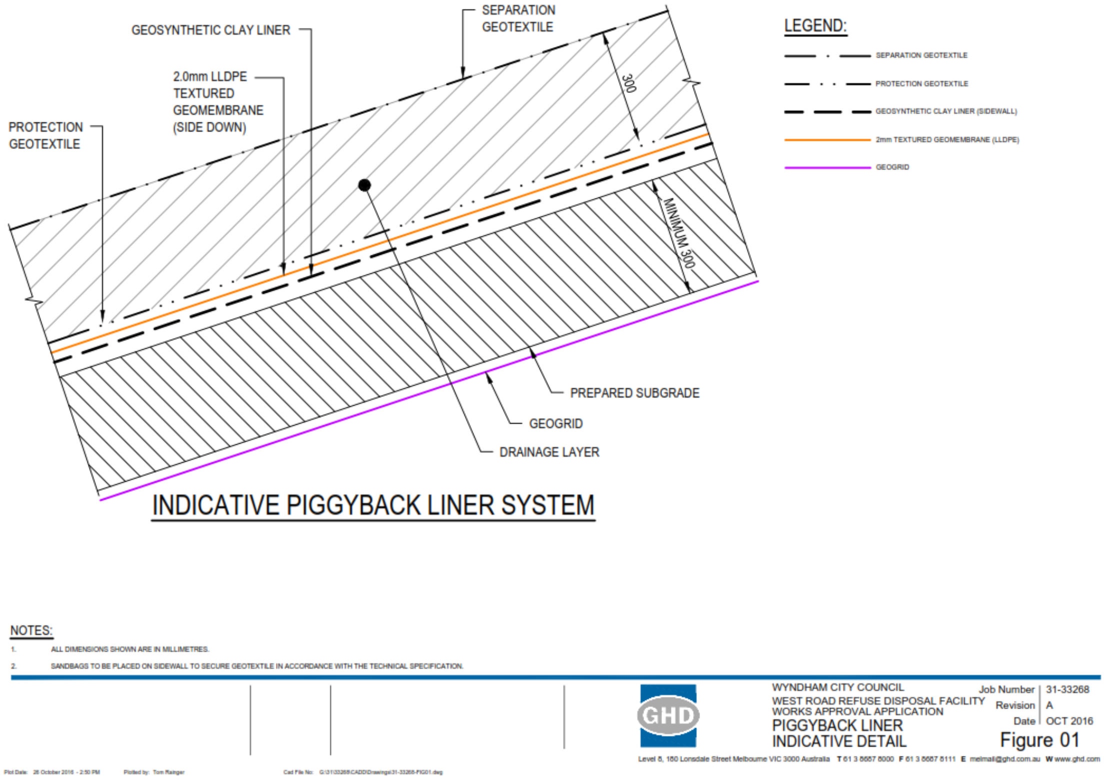

Figure 20 Indicative liner design with stability amelioration measures

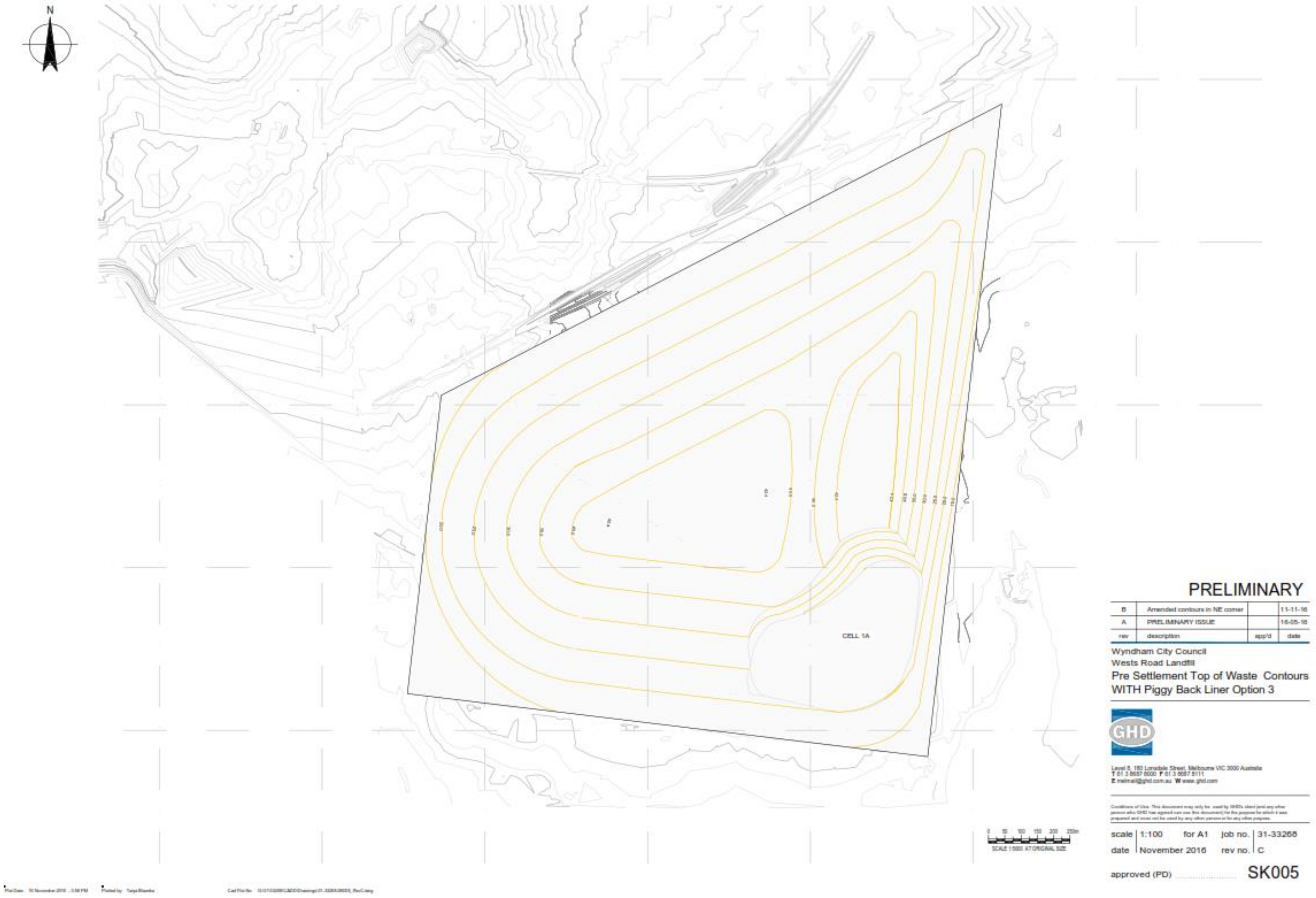

Figure 21 Proposed pre-settlement top of waste contours

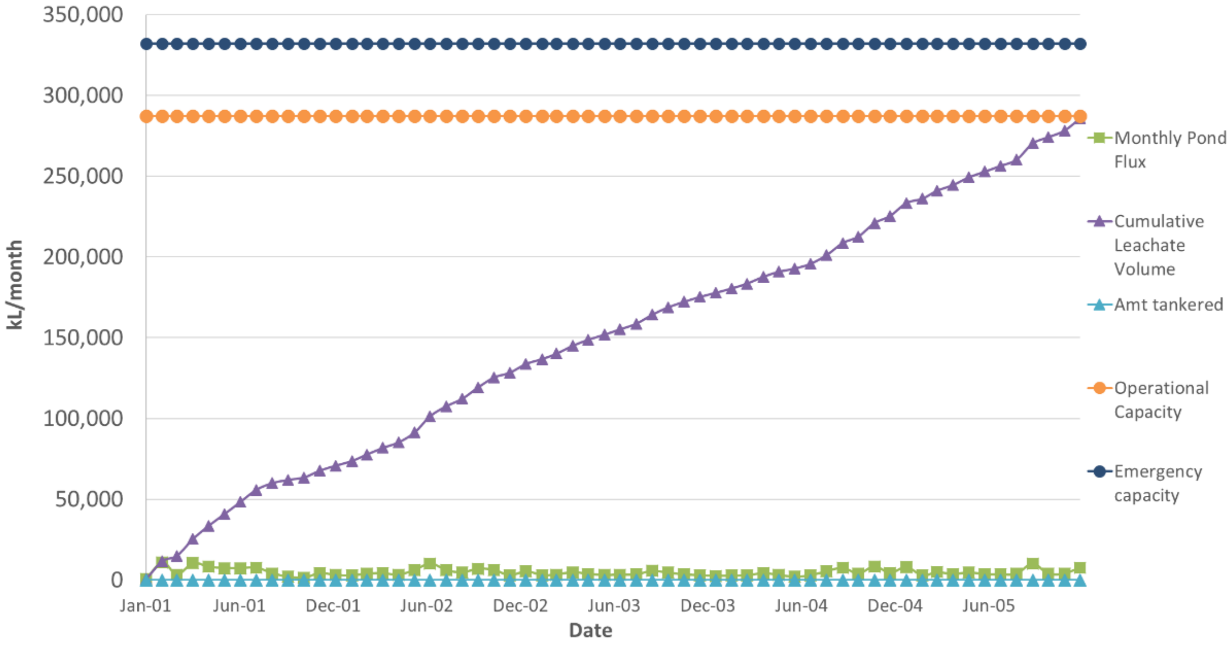

Figure 22 Anticipated leachate generation quantities from preliminary water balance (no off-site disposal)

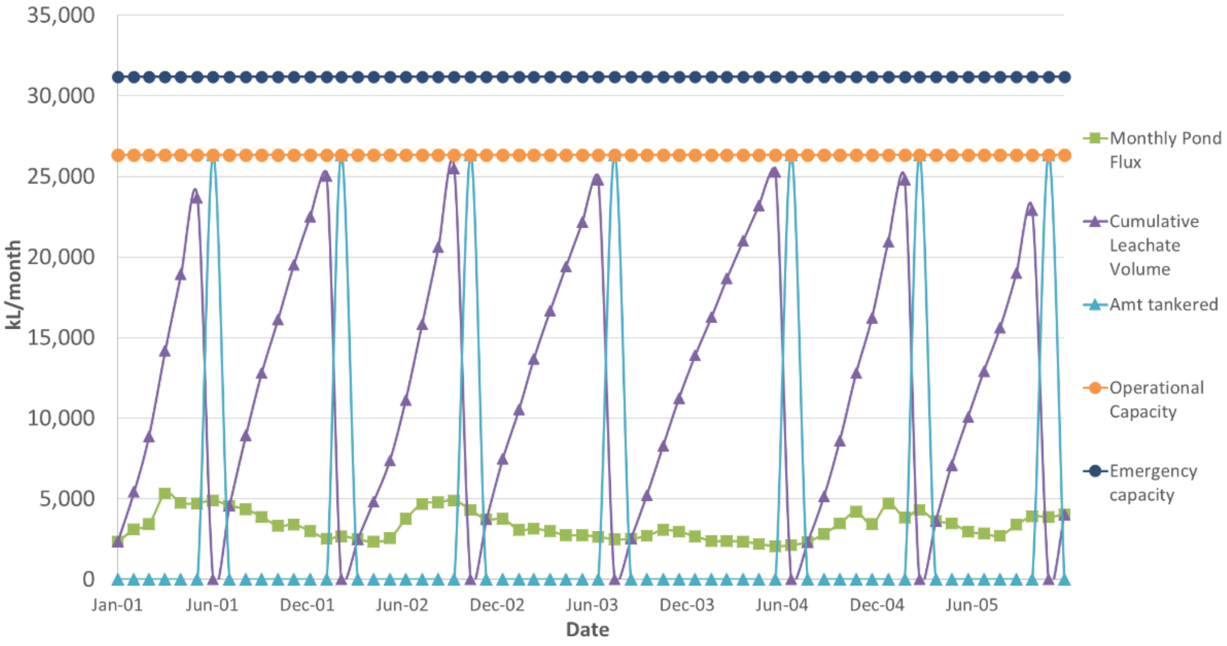

Figure 23 Anticipated leachate generation quantities from water balance (with off-site disposal)

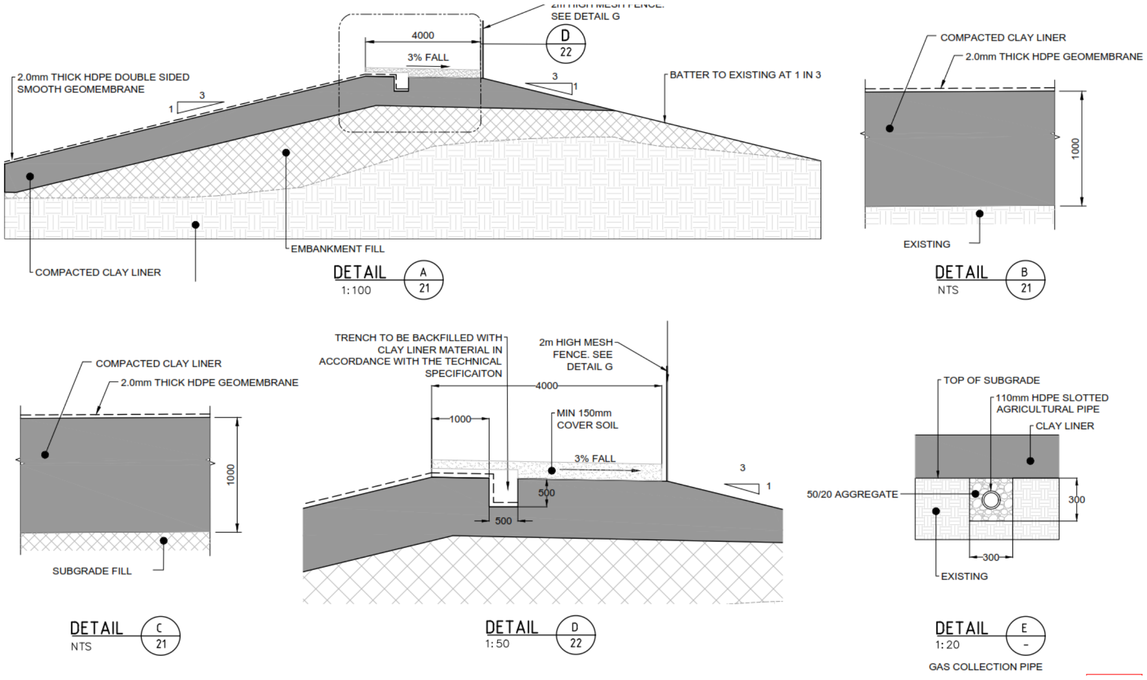

Figure 24 Indicative leachate pond construction details

Figure 25 Indicative rehabilitation schedule

6. References

Bureau of Meteorology 2016, http://www.bom.gov.au/climate/environ/other/koppen_explain.shtml

Dahlhaus P. G. & O'Rourke M. 1992, Newer Volcanics. In:Peck W. A.,Neilson J. L., Olds R. J. & Seddon K. D. eds. Engineering Geology of Melbourne, pp. 205–212. A. A. Balkema, Rotterdam

EPA Victoria 2015, Best Practice Environmental Management, Siting, Design, Operation and Rehabilitation of Landfills, EPA Publication 788.3

Fire Services Commissioner Victoria 2012, Towards Improved Fire Management in Landfill Sites

GHD 2015, Audit report for Wyndham City Council – Wyndham Vale Buffer Study CARMS 69507-1, Environmental Audit Report

Leonard J. G.1979, Preliminary assessment of the groundwater resources in the Port Phillip Region, Report of the Geological Survey of Victoria 66

Sustainability Victoria 2014, Victorian waste and recycling data results 2013-14

Appendices

Appendix A – Planning Permit

wyndhamcity
city. coast. country

Civic Centre 45 Princes Highway, Werribee, Victoria 3030, Australia
Postal PO Box 197, Werribee, Victoria 3030, Australia
Telephone (03) 9742 0777
Facsimile (03) 9741 6237
TTY (03) 9742 0817
Email mail@wyndham.vic.gov.au
www.wyndham.vic.gov.au
DX 30258 Werribee Vic
ABN 38 393 903 860

WYP1221/07.03

18 June 2014

Wyndham City Council
PO Box 197
WERRIBEE VIC 3030

Dear Sir/Madam,

Planning Permit Application: WYP1221/07.03
Description: Municipal Refuse Disposal Facility Expansion - VCAT Order (Reference Number P1794/2013 and P2540/2013)
Location: Land Title: V 8499 F 397, V 8406 F 478, V6358 F 513, V 8227, F 869, V7914 F 107
Land Address: Wests Road WERRIBEE VIC 3030

Please find attached a copy of the amended permit as per the Victorian Civil and Administrative Tribunal Orders issued on the 16 June 2014.

Should you have any further enquiries regarding the above matter, please contact me on 9742-0844 .

Yours faithfully,

Peter Van Til
Town Planning Manager

Encl.

PLANNING PERMIT

Application No.: WYP1221/07.03 (Amended)
Planning Scheme: Wyndham Planning
Responsible Authority: Wyndham City Council

ADDRESS OF LAND:

Land Title: V 8499 F 397, V 8406 F 478, V 6358, F 513, V 8227 F 869, V 7914 F 107
Land Address: Wests Road WERRIBEE VIC 3030

THE PERMIT ALLOWS:

The use of the land and associated works for the expansion of an existing Refuse Disposal facility (into Cells 4, 5, 6, 7, & 8) in accordance with the endorsed plans.

THE FOLLOWING CONDITIONS APPLY TO THIS PERMIT:

1. The development and/or use(s) permitted by this permit as shown on the endorsed plan(s) and/or described in the endorsed documents must not be altered or modified (for any reason) except with the prior written consent of the Responsible Authority.

2. By 30 June 2014 three (3) copies of plans must be submitted to the Responsible Authority for its approval and endorsement. The plans must be generally in accordance with the plan endorsed on 21 May 2008 under this permit but amended to show:

   - the location and description of all current and proposed signage;
   - the current layout of the subject site (including the location of all significant vegetation, buildings, leachate ponds, vehicular tracks etc);
   - the location of any proposed buildings and structures;
   - the precise location and description of each of the cells shown in the endorsed plan and the order in which those cells are to be filled; and
   - the height of the cells upon their completion in accordance with condition 3.

3. The maximum height of any cell once completed (excluding the height of top soil and vegetation which is placed on the land or planted as part of an approved landscape plan or rehabilitation plan or any naturally occurring vegetation) must not exceed 44m AHD.

Date

Signature for the Responsible Authority

18 June 2014

Peter Van Til
Town Planning Manager

4. The Planning Permit shall have no force or effect until such time that the proponent has applied for and been issued with a Works Approval and Environmental Licence from the Environment Protection Authority and the landfill operations must be carried out in accordance with such Works Approval and Licence.

5. The use permitted by this permit must not, in the opinion of the Responsible Authority, adversely affect the amenity of the locality by reason of the processes carried on; the transportation of materials, goods, or commodities to or from the subject land; the appearance of any buildings, works or materials; the emission of noise, artificial light, vibration, smell, fumes, smoke, vapour, steam, soot, dust, waste water, waste products, grit, or oil; the presence of vermin, or otherwise.

6. Noise emissions must comply with State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade) No. N-1 and must not be offensive to persons beyond the boundaries of the land in accordance with the State Environment Protection Policy (Air Quality Management).

7. Works undertaken on the land must comply with the requirements specified in the Environment Protection Authorities, Noise Control Guidelines TG 302/92.

8. By 1 March 2015, the permit holder must submit an Acoustic Management Plan prepared by a suitably qualified acoustic consultant or firm to the Responsible Authority for approval. The Acoustic Management Plan must detail:

   - all potential noise sources from the land (including those associated with ongoing landfill activities, truck traffic, unloading of waste, and occasions where additional machinery is required on site);

   - the proposed scheduling of works and activities (including measures to avoid or minimise overlap between different noise generating activities carried out on the land, including but not limited to vehicle movements, cell construction, lining, capping, earthmoving, rehabilitation, shaping, filling, drilling, resource recovery, as well as any quarrying activities);

Date | Signature for the Responsible Authority

18 June 2014

Peter Van Til
Town Planning Manager

- measures and operational procedures for limiting noise emissions from the land including noise from vehicles and equipment operating on the land; and
- how noise emissions will be managed to ensure compliance with Condition 6 of this permit.

9. Odour emissions from the premises must be controlled so as to not cause a nuisance (as defined by the Health Act 1958) to nearby properties.

10. By 1 March 2015, the permit holder must submit to the Responsible Authority an odour management plan prepared to the satisfaction of the Responsible Authority by a suitably qualified person. The odour management plan must include:

    - the strategies to be employed to ensure compliance with the State Environment Protection Policy (Air Quality Management);
    - the proposed monitoring of odour emissions;
    - the manner in which odour complaints will be addressed.

    Once approved, the odour management plan shall be endorsed and form part of this permit.

11. By 30 November 2014 the permit holder must submit to the Responsible Authority, for its approval and endorsement, an overall site landscape plan prepared to the Responsible Authority's satisfaction by a suitable qualified landscape designer. The landscape plan must include the following elements and achieve the following objectives (as the case may be):

    - a full description of the vegetation to be planted (including the species), its age and size at planting, its expected height and spread at maturity, its projected rate of growth and maintenance requirements;

Date

Signature for the Responsible Authority

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Town Planning Manager

- a comprehensive description of the proposed staging of the planting (including the date or dates by which planting of each stage will commence and be completed) and maintenance regime;
- the vegetation to be retained and the means by which such vegetation is to be protected and maintained;
- the objective of the landscaping must include for it to act as an effective screening or softening of the refuse disposal operations and the completed cells when viewed from adjoining properties and the proximate public places (including Wests Road) and as an effective litter trap;
- if it is considered desirable to achieve the above described objective that the landscaping include areas outside of the subject site (such as proximate road reserves and public land controlled or managed by the Responsible Authority), the landscape plan must include those areas.

Once approved, the landscape plan shall be endorsed and shall form part of this permit.

12. The landscaping must be carried out in accordance with the landscape plan (including in accordance with staging depicted in the plan). Once undertaken, the landscaping must be maintained to the satisfaction of the Responsible Authority.

13. All works associated with the use permitted by this permit must be carried out to the satisfaction of the Responsible Authority and all care must be taken to minimise the effect of such activities on the amenity of the locality.

14. The permit holder shall ensure that an experienced and trained site manager is present at all times when the site is open to receive waste, together with a sufficient number of staff to ensure the satisfactory operation of the landfill. The site manager must be familiar with the conditions of this permit and all works approvals and licences issued by the EPA with respect to the land and have sufficient authority to respond effectively to any complaints received by the manager with respect to the landfill operations.

Date

Signature for the Responsible Authority

18 June 2014

Peter Van Til
Town Planning Manager

15. By 1 September 2014, the operator must provide the Responsible Authority with existing conditions survey plans (typically aerial survey data) of the site until the entire site has been filled to the satisfaction of the responsible authority as follows:

    - Annual surveys of the entire site to be undertaken between 1st January and the 30th June and the survey plans submitted to Council within 30 days of the date of the survey.

    - Surveys to be undertaken of all active fill areas where levels are within 2m of the approved pre-settlement fill levels as a means of monitoring the surface on a regular basis. Surveys to be undertaken at intervals of no more than twelve (12) months and survey plans submitted to the Responsible Authority within 30 days of the date of the survey.

    - All survey plans to clearly highlight any overfilling above the levels indicated on endorsed plans.

16. By 1 September 2014 a perimeter wire mesh fence of at least 2.0 metres in height must be erected by the permit holder and must be maintained around the land to prevent paper and other light materials being blown from the land.

17. Litter screens must be erected near the tipping area as and when required to reduce to a minimum the amount of loose paper and other light materials being blow from the land.

18. All fencing and litter screens must be kept clean at all times and any debris must be removed on a regular basis.

19. Litter arising from the operations of the landfill must at all times be confined within the boundaries of the land.

20. Dust arising from the landfill operation must be minimised to the satisfaction of the Responsible Authority including, without limitation, by:

- Grassing of filled areas within six (6) months upon the completion of waste disposal operations for each stage of tipping.
- Regular watering down of internal access road surfaces.

21. The emission of sand and dust from the site must be prevented by regular watering or other effective measures.

22. Control techniques to reduce birds and rodents on the land must be implemented by the permit holder in accordance with the requirements of State Environment Protection Policy – EPA Publication No. 265 "The Siting and Management of Landfills Receiving Municipal Waste" and any further legislative requirements of the EPA.

23. There shall be no burning off of materials.

24. An adequate water supply and distribution must at all times be provided to the land so that water may be discharged by means of a hose to extinguish a fire on any part of the land.

25. In the event of fire at the landfill area, immediate action must be taken to extinguish the fire and notify the appropriate fire authority immediately. The permit holder must submit to the Environment Protection Authority and the appropriate fire authority, within fourteen (14) days of the fire, a written report detailing the date, time, location and suspected cause of the fire and when it was extinguished.

26. In the event of mud, crushed rock or other debris being carried onto public roads or footpaths from the subject land, appropriate measures must be implemented to minimise the problem to the satisfaction of the Responsible Authority.

27. Outdoor lighting must be designed, baffled and located to the satisfaction of the Responsible Authority such that no direct light is emitted outside the boundaries of the subject land.

Date

Signature for the Responsible Authority

18 June 2014

Peter Van Til
Town Planning Manager

28. Suitable signs will be prominently displayed fronting Wests Road at the entrance to the site indicating:
    - the hours of opening of the site;
    - those wastes which may be deposited; and
    - where wastes may be deposited.
29. Direction signs must be kept legible and in good repair.
30. Areas set aside for the parking of vehicles together with the aisles and drives must be properly formed to such levels that they can be utilised in accordance with the endorsed plan and must be drained and provided with an impervious all-weather seal coat or must be paved with crushed rock or gravel of adequate thickness as necessary to prevent the formation of potholes and depressions according to the nature of the subgrade and vehicles which will use the areas. The areas must be constructed, drained and maintained in a continuously useable condition to the satisfaction of the Responsible Authority.
31. The loading and unloading of vehicles and the delivery of goods or other material must at all times be undertaken within the boundaries of the subject land.
32. All surface drainage must be diverted away from those portions of the landfill that have been or are being used for the deposit of wastes.
33. Waste or stormwater contaminated by waste must not be discharged beyond the boundaries of the land.
34. Discharge of groundwater, stormwater and wastewater from the land shall be in accordance with the requirements of the Environment Protection Authority.
35. Leachate may only be discharged from the land in accordance with the requirements of the Environment Protection Authority.

Date

Signature for the Responsible Authority

18 June 2014

Peter Van Til
Town Planning Manager

36. Waste water for off-site discharge must be treated in accordance with the requirements of the Environment Protection Authority.

37. The subject land must not be used for the storage of dangerous, hazardous or explosive goods, materials or substances.

38. Any form of public address system and telephone amplification must not be used on the subject land except one which is audible only within the perimeter of the subject site.

39. By 1 March 2015, a Site Rehabilitation Landscape Plan prepared by a suitably qualified person must be submitted to the Responsible Authority for approval. The Site Rehabilitation Landscape Plan must:

    - accord with the staging of the development hereby approved;
    - include details of the progressive rehabilitation and planting of each cell upon the completion of the relevant stage;
    - include measures to ensure that plantings do not affect the integrity of the landfill cap, to account for the change in capping to a geosynthetic liner;
    - require planting to be undertaken within the time frames and periods specified in the Site Rehabilitation Landscape Plan to ensure the maintenance and improvement of the plantings for the remaining life of the landfill; and
    - manage the integration, rehabilitation and ongoing management of the plantings on the landfill areas with the remainder of the property.

Date

Signature for the Responsible Authority

18 June 2014

Peter Van Til
Town Planning Manager

40. By 1 September 2014, the permit holder, in consultation with the Responsible Authority, must establish and convene a Landfill Consultative Committee.

   a) The purposes of the committee is:

      i. to review complaints and generally assess compliance with the conditions of all approvals associated with the landfill operation;
      ii. the review of environmental performance and encourage the use of best practice techniques in the operation of the landfill;
      iii. to consider and recommend to the Responsible Authority for consideration any preventative mechanisms which may be required to minimise amenity impacts resulting from the use and development of the land; and
      iv. to provide comment on any plan submitted to the Responsible Authority for approval and endorsement under this permit.

   b) The Committee shall comprise at least:

      i. one person nominated by and representing the Responsible Authority;
      ii. one representative of the permit holder;
      iii. representative of the Environment Protection Authority (provided the EPA is agreeable to participate in the Committee);
      iv. a representative of the Metropolitan Waste Management Committee (provided that committee is agreeable to particulate in the Committee); and
      v. two representatives of local resident as determined by the Responsible Authority.

   c) Meetings of the Consultative Committee must be convened on a regular basis (and at least twice a year). The other representatives must be provided with a reasonable opportunity to attend or be represented by alternates, at each meeting.

   d) The Consultative Committee shall record and consider all matters raised by the representatives which pertain to its purposes and the permit holder shall have regard to the recommendations of the Committee to the satisfaction of the Responsible Authority.

Date

Signature for the Responsible Authority

18 June 2014

Peter Van Til
Town Planning Manager

e) The reasonable costs (including secretarial duties) of the Consultative Committee shall be borne by the permit holder to the satisfaction of the Responsible Authority.

OR, in the event that the Wests Road RDF and Waste Management Community Reference Group agrees to be so, the Reference Group shall become the Landfill Consultative Committee, thereafter performing the purposes of the Committee in accordance with the Reference Group's own terms of reference and rules.

41. This permit will expire if the development permitted by this permit is not commenced within two years from the date hereof or is discontinued for a period of two years. The time within which the development must commence may on written request made before or within three months after the expiry of this permit be extended by the Responsible Authority.

NOTE: This permit is issued pursuant to the provisions of the Wyndham Planning Scheme and does not relieve the permit holder of the necessity to obtain a building permit pursuant to the Building Act 1993

Date	Signature for the Responsible Authority
18 June 2014	**Peter Van Til** Town Planning Manager

IMPORTANT INFORMATION ABOUT THIS PERMIT

WHAT HAS BEEN DECIDED?

The Responsible Authority has issued a permit. *NOTE: This is not a permit granted under Division 5 or 6 of Part 4 of the Planning and Environment Act 1987.*

WHEN DOES A PERMIT BEGIN?

A permit operates:

- from the date specified in the permit; or
- if no date is specified, from—
  (i) the date of the decision of the Victorian Civil and Administrative Tribunal, if the permit was issued at the direction of the Tribunal; or
  (ii) the date on which it was issued, in any other case.

WHEN DOES A PERMIT EXPIRE?

1. A permit for the development of land expires if—
   - the development or any stage of it does not start within the time specified in the permit; or
   - the development requires the certification of a plan of subdivision or consolidation under the *Subdivision Act 1988* and the plan is not certified within two years of the issue of the permit, unless the permit contains a different provision; or
   - the development or any stage is not completed within the time specified in the permit, or, if no time is specified, within two years after the issue of the permit or in the case of a subdivision or consolidation within 5 years of the certification of the plan of subdivision or consolidation under the *Subdivision Act 1988*.
2. A permit for the use of land expires if—
   - the use does not start within the time specified in the permit, or if no time is specified, within two years after the issue of the permit; or
   - the use is discontinued for a period of two years.
3. A permit for the development and use of land expires if—
   - the development or any stage of it does not start within the time specified in the permit; or
   - the development or any stage of it is not completed within the time specified in the permit, or, if no time is specified, within two years after the issue of the permit; or
   - the use does not start within the time specified in the permit, or, if no time is specified, within two years after the completion of the development; or
   - the use is discontinued for a period of two years.
4. If a permit for the use of land or the development and use of land or relating to any of the circumstances mentioned in section 6A(2) of the *Planning and Environment Act 1987*, or to any combination of use, development or any of those circumstances requires the certification of a plan under the *Subdivision Act 1988*, unless the permit contains a different provision—
   - the use or development of any stage is to be taken to have started when the plan is certified; and
   - the permit expires if the plan is not certified within two years of the issue of the permit.
5. The expiry of a permit does not affect the validity of anything done under that permit before the expiry.

WHAT ABOUT APPEALS?

- The person who applied for the permit may apply for a review of any condition in the permit unless it was granted at the direction of the Victorian Civil and Administrative Tribunal, in which case no right of review exists.
- An application for review must be lodged within 60 days after the permit was issued, unless a notice of decision to grant a permit has been issued previously, in which case the application for review must be lodged within 60 days after the giving of that notice.
- An application for review is lodged with the Victorian Civil and Administrative Tribunal.
- An application for review must be made on an Application for Review form which can be obtained from the Victorian Civil and Administrative Tribunal, and be accompanied by the applicable fee.
- An application for review must state the grounds upon which it is based.
- An application for review must also be served on the Responsible Authority.
- Details about applications for review and the fees payable can be obtained from the Victorian Civil and Administrative Tribunal.

Appendix B – EPA Licence

EPA VICTORIA

VICTORIA State Government

ENVIRONMENT PROTECTION ACT 1970
SECTION 20

LICENCE

WYNDHAM CITY COUNCIL

Holder of

Licence: **12483**

Issued: 06/01/1992

Last Amended: 27/07/2016

ABN: 38 393 903 860

Registered Address:
45 PRINCES HWY
WERRIBEE VIC 3030

Premises Address:
420 WESTS RD
WERRIBEE VIC 3030

Scheduled Categories: A05 Landfills

Description: The licence holder operates a landfill. This licence allows for solid inert waste, putrescible waste and shredded tyres to be deposited to land.

Quentin Cooke

....

QUENTIN COOKE
Team Leader
Development Assessments
Delegate of the Environment Protection Authority

Issued under the *Environment Protection Act 1970*, Section 20

PREAMBLE

Licences

Who we are: The Environment Protection Authority ("EPA") is an independent statutory authority established under the *Environment Protection Act 1970* ("the Act"). Our purpose is to protect and improve our environment by preventing harm to the environment and human health.

Why we issue licences: EPA is responsible for preventing or controlling pollution (including noise) and improving the quality of the environment. This responsibility includes regulating activities that may present a danger to the environment. One of the tools available to EPA is the licensing of certain scheduled premises that may present a risk to the environment.

Section 20 of the Act requires the occupier of a "scheduled premises" to obtain an EPA licence to discharge, handle, treat or dispose of waste to the environment. These premises are defined in the *Environment Protection (Scheduled Premises and Exemptions) Regulations 2007* ("the Regulations").

When we issue licences: EPA will issue a licence when satisfied that an applicant has put in place measures to protect the environment. Licences allow activities to occur and set performance outcomes based on a site's environmental risk. EPA can amend, suspend or revoke a licence in response to changes in standards, site activities or licence holder performance. Licence holders must submit an annual performance statement and pay an annual fee to EPA. All licences and performance statements are publicly available.

Licence information and obligations

For the purposes of this licence "You" means the licence holder identified on the first page of this licence at the "premises" identified on the first page and represented in Schedule 1.

If you object to any of the licence conditions, you may have the decision reviewed by applying in writing to the Registrar, Planning and Environment Division, Victorian Civil and Administrative Tribunal ("VCAT"), 7th Floor, 55 King Street, Melbourne within 21 days of the date of issue. An application fee may be applicable when lodging an appeal with VCAT. Contact VCAT on (03) 9628 9777 for further details on fees associated with an appeal. A copy of the appeal should also be forwarded to the Manager, Development Assessments Unit, Environment Protection Authority, GPO Box 4395, Melbourne, 3001, within 7 days of lodgement of the appeal.

Interested (third) parties may also appeal against the licence within 21 days of the date of issue. The Tribunal will notify you if such appeals are received. If an appeal is lodged, this licence will not come into effect.

Compliance: You must comply at all times with the Act and all policies and regulations administered by EPA. Strict penalties apply for non-compliance with any part of your licence or making a false claim on your annual performance statement.

Licence structure

Structure: Your licence has multiple parts:

- Environmental performance conditions - setting out the performance outcomes you must meet;
- Schedule 1A - locality plan of your premises;
- Schedule 1B - plan of premises (provided by you).

Some types of licences also contain Schedule 1C - final landfill contour plans and/or Schedule 2 - tables specifying wastes that may be accepted at the premises and the associated treatment applied to them.

CONDITIONS

General Conditions

LI_G1	Waste from the premises must not be discharged to the environment except in accordance with this licence.
LI_G2	You must immediately notify EPA of non-compliance with any condition of this licence.
LI_G3	By 30 September each year you must submit an annual performance statement to EPA for the previous financial year in accordance with the Annual Performance Statement Guidelines (EPA Publication 1320).
LI_G4	Documents and monitoring records used for preparation of the annual performance statement must be retained at the premises for seven years from the date of each statement.
LI_G6	You must maintain a financial assurance calculated in accordance with the EPA method.
LI_G7	In accordance with the method and frequency specified in section 50SB of the Act you must (a) calculate the amount of landfill levy payable, (b) prepare a landfill levy statement and (c) submit to EPA both the statement and fee payable.

Amenity Conditions

LI_A1	Offensive odours must not be discharged beyond the boundaries of the premises.
LI_A2	Unacceptable noise (including vibration) must not be emitted beyond the boundaries of the premises.
LI_A3	Nuisance dust must not be discharged beyond the boundaries of the premises.

Waste Acceptance Conditions

LI_WA1	Only wastes listed in Schedule 2 may be accepted at the premises.
LI_WA2	Wastes accepted at the premises may only be treated or disposed of in accordance with Schedule 2.

Waste Management Conditions

LI_WM3	You must ensure that litter is not deposited beyond the boundaries of the premises.
LI_WM4	You must ensure that waste does not burn at the premises.

Landfill Conditions

LI_L1	You must implement a monitoring program, verified by an environmental auditor appointed pursuant to the Act, which enables both you and EPA to determine compliance with this licence.
LI_L2	You must engage an environmental auditor appointed pursuant to the Act to conduct the environmental audits at the frequency specified in the verified monitoring program.
LI_L3	By the end of each day's operations waste must be covered with a layer of soil at least 0.30 metres thick or using another method of cover approved by EPA.

LI_L4	Waters contaminated by leachate must not be discharged beyond the boundaries of the premises.
LI_L4.1	You must extract leachate from cell(s) Cell 4A, Cell 4B, Cell 4C Stage 1 and Cell 4C Stage 2 such that the depth of leachate above the lowest point of the drainage layer does not exceed 300 mm.
LI_L5	You must prevent emissions of landfill gas from exceeding the investigation levels specified in Best Practice Environmental Management, Siting, Design, Operation and Rehabilitation of Landfills (EPA Publication 788).
LI_L6	You must progressively rehabilitate landfill cells in accordance with Best Practice Environmental Management, Siting, Design, Operation and Rehabilitation of Landfills (EPA Publication 788).
LI_L7	You must not start constructing a new cell without written EPA approval.
LI_L8	You must ensure that an independent annual survey is conducted for each landfill cell to (a) determine the quantity of waste deposited and verify the amount of landfill levy payable, (b) demonstrate the need for any new cells and (c) confirm that cell heights are less than the approved pre-settlement contour plan.
LI_L9.1	You must manage each landfill cell so that its final contour prior to settlement is not higher at any point than the pre-settlement contour plan shown in Schedule 1.
LI_L10	A weighbridge must be used to determine the weight of waste deposited at the premises.

Air Conditions

Licence does not have any discharge to air conditions.

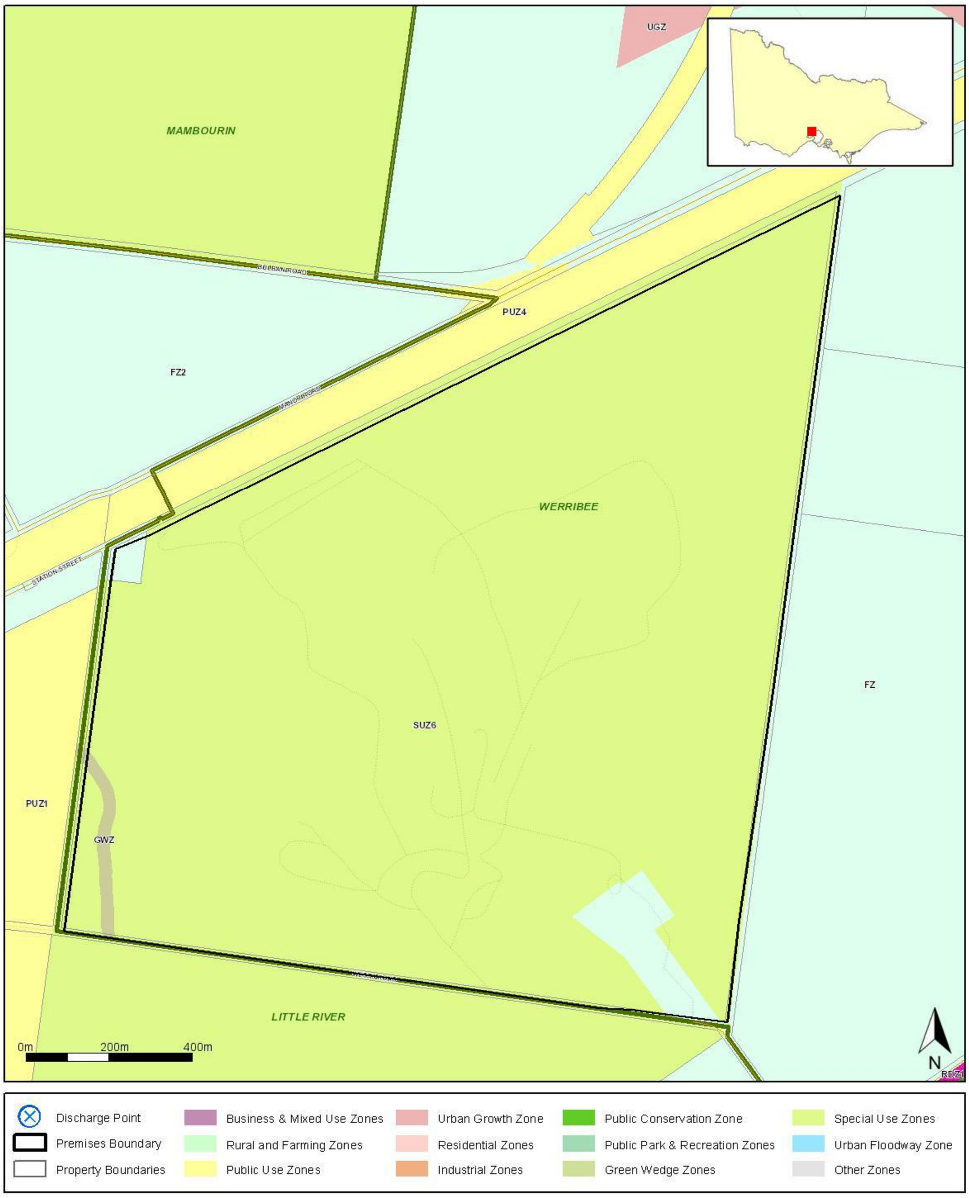
Water Conditions

LI_DW1 Stormwater discharged from the premises must not be contaminated with waste.

Land Conditions

LI_DL1 You must not contaminate land or groundwater.

SCHEDULE 1A - LOCALITY PLAN



Licence:	12483
Company Name:	WYNDHAM CITY COUNCIL
ABN:	38 393 903 860
Premises Address:	Werribee Landfill, 420 Wests RD, WERRIBEE VIC 3030
Issued:	06/01/1992
Last Amended:	27/07/2016

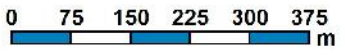
Before relying on the information in this map, users should carefully evaluate its accuracy, currency, completeness and relevance for their purposes, and should obtain any appropriate professional advice relevant to their particular circumstances.

SCHEDULE 1B - PREMISES PLAN

RDF Plan of Premises - 420 Wests Rd, Werribee

Legend

●	Site centroid: Lon 144.589477 Lat -37.932637	●	Leachacte Pond	▲	Leachate	●	Groundwater Bores	🟩	LGU Facility
●	Gas Monitoring Bores	🟧	New Leachate Pond	●	Future Leachate Pond	▭	Active Cells	▨	Clean Fill Depot



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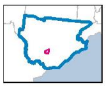

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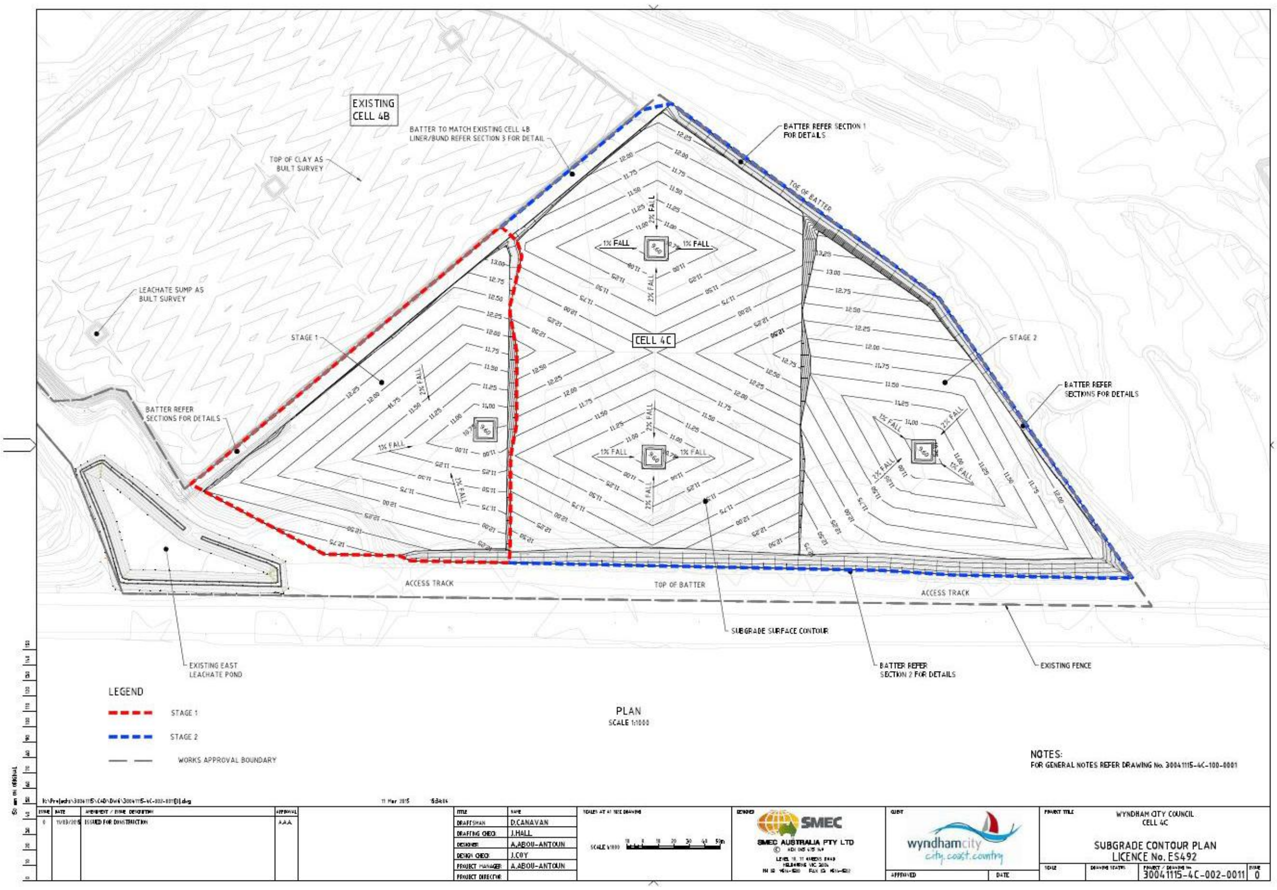
SCHEDULE 1B - PREMISES PLAN



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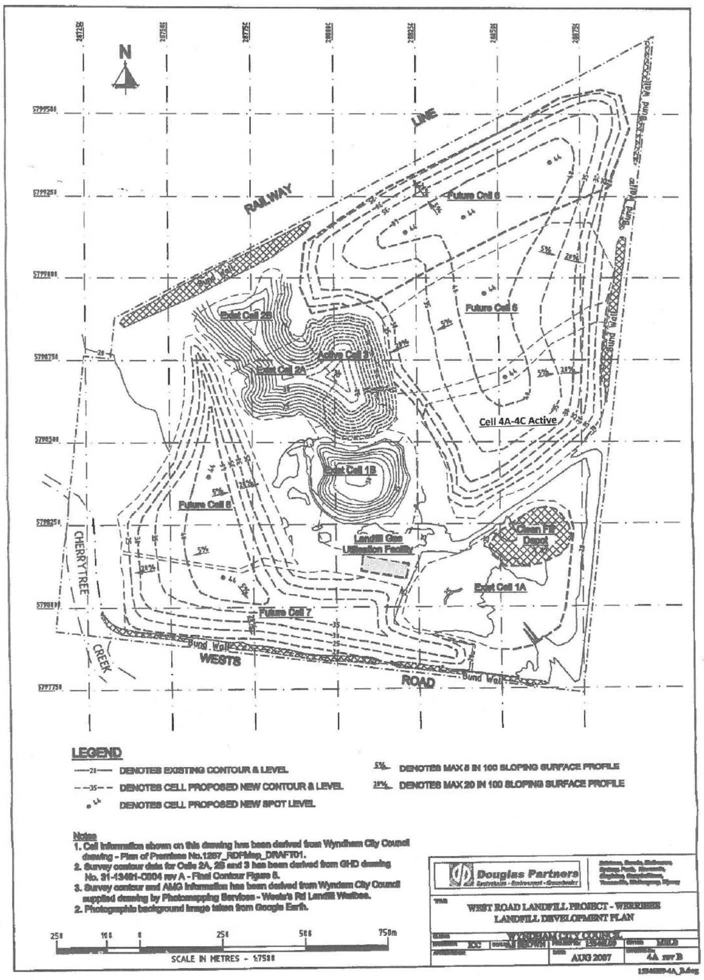
Issued:	06/01/1992
Last Amended:	27/07/2016

SCHEDULE 1C - CONTOUR PLAN



Licence:	12483
Company Name:	WYNDHAM CITY COUNCIL
ABN:	38 393 903 860
Premises Address:	Werribee Landfill, 420 Wests RD, WERRIBEE VIC 3030
Issued:	06/01/1992
Last Amended:	27/07/2016

SCHEDULE 2 - WASTE ACCEPTANCE TABLES

Disposal to Landfill - General Waste

Landfill Cell	Waste Type
CELL 4B	Putrescible waste
	Solid inert waste
	Tyres shredded into pieces < 250 mm
CELL 4C STAGE 1	Putrescible waste
	Solid inert waste
	Tyres shredded into pieces < 250 mm
CELL 4C STAGE 2	Putrescible waste
	Solid inert waste
	Tyres shredded into pieces < 250 mm
Cell 4A	Putrescible waste
	Solid inert waste
	Tyres shredded into pieces < 250 mm

Appendix C – Supporting information to Section 3.1

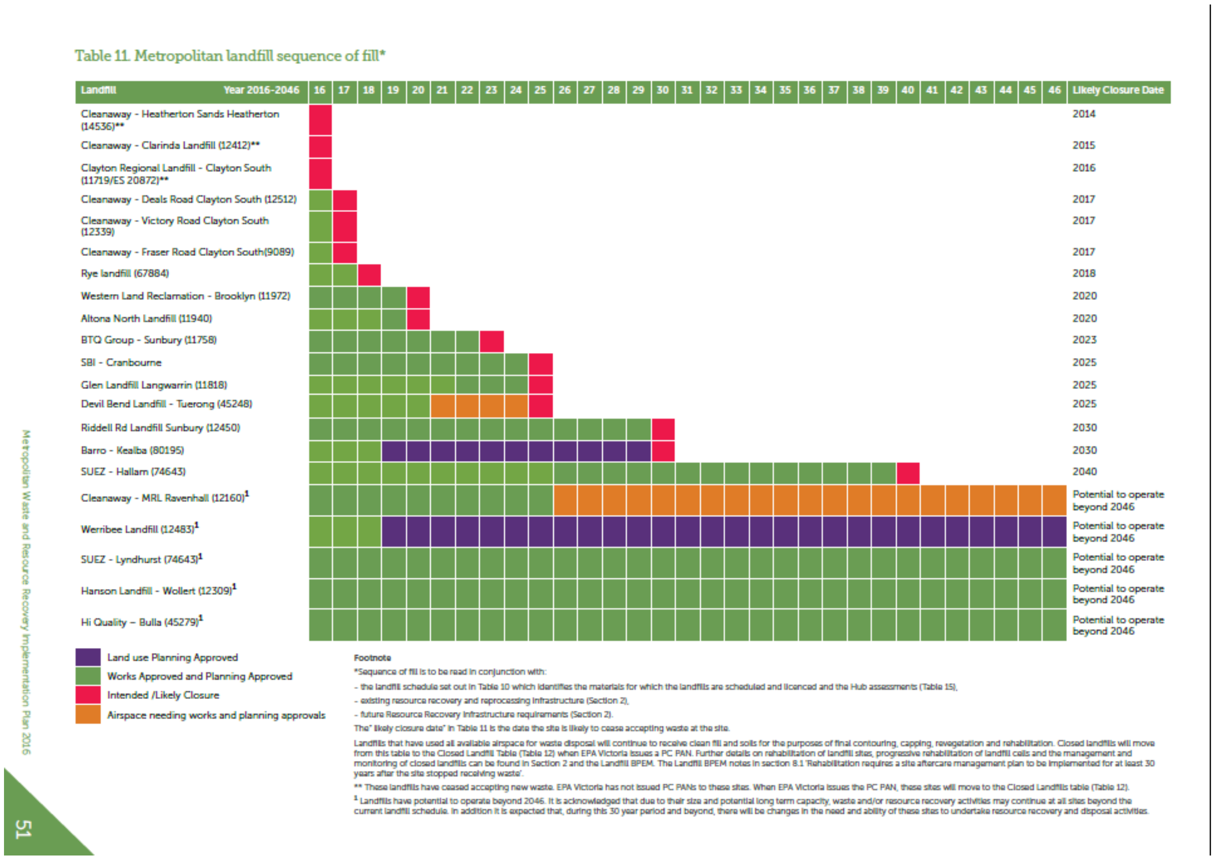


Table 11. Metropolitan landfill sequence of fill*

Landfill Year 2016-2046	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	Likely Closure Date
Cleanaway - Heatherton Sands Heatherton (14536)**	🟥																															2014
Cleanaway - Clarinda Landfill (12412)**	🟥																															2015
Clayton Regional Landfill - Clayton South (11719/ES 20872)**	🟥																															2016
Cleanaway - Deals Road Clayton South (12512)	🟩	🟥																														2017
Cleanaway - Victory Road Clayton South (12339)	🟩	🟥																														2017
Cleanaway - Fraser Road Clayton South(9089)	🟩	🟥																														2017
Rye landfill (67884)	🟩	🟩	🟥																													2018
Western Land Reclamation - Brooklyn (11972)	🟩	🟩	🟩	🟩	🟥																											2020
Altona North Landfill (11940)	🟩	🟩	🟩	🟩	🟥																											2020
BTQ Group - Sunbury (11758)	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟥																								2023
SBI - Cranbourne	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟥																						2025
Glen Landfill Langwarrin (11818)	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟥																						2025
Devil Bend Landfill - Tuerong (45248)	🟩	🟩	🟩	🟩	🟩	🟧	🟧	🟧	🟧	🟥																						2025
Riddell Rd Landfill Sunbury (12450)	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟥																	2030
Barro - Kealba (80195)	🟩	🟩	🟩	🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟥																	2030
SUEZ - Hallam (74643)	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟥							2040
Cleanaway - MRL Ravenhall (12160)[1]	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟧	🟧	🟧	🟧	🟧	🟧	🟧	🟧	🟧	🟧	🟧	🟧	🟧	🟧	🟧	🟧	🟧	🟧	🟧	🟧	🟧	Potential to operate beyond 2046
Werribee Landfill (12483)[1]	🟩	🟩	🟩	🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟪	Potential to operate beyond 2046
SUEZ - Lyndhurst (74643)[1]	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	Potential to operate beyond 2046
Hanson Landfill - Wollert (12309)[1]	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	Potential to operate beyond 2046
Hi Quality – Bulla (45279)[1]	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	Potential to operate beyond 2046

🟪 Land use Planning Approved
🟩 Works Approved and Planning Approved
🟥 Intended /Likely Closure
🟧 Airspace needing works and planning approvals

Footnote

*Sequence of fill is to be read in conjunction with:

- the landfill schedule set out in Table 10 which identifies the materials for which the landfills are scheduled and licenced and the Hub assessments (Table 15),
- existing resource recovery and reprocessing infrastructure (Section 2),
- future Resource Recovery Infrastructure requirements (Section 2).

The" likely closure date" in Table 11 is the date the site is likely to cease accepting waste at the site.

Landfills that have used all available airspace for waste disposal will continue to receive clean fill and soils for the purposes of final contouring, capping, revegetation and rehabilitation. Closed landfills will move from this table to the Closed Landfill Table (Table 12) when EPA Victoria issues a PC PAN. Further details on rehabilitation of landfill sites, progressive rehabilitation of landfill cells and the management and monitoring of closed landfills can be found in Section 2 and the Landfill BPEM. The Landfill BPEM notes in section 8.1 'Rehabilitation requires a site aftercare management plan to be implemented for at least 30 years after the site stopped receiving waste'.

** These landfills have ceased accepting new waste. EPA Victoria has not issued PC PANs to these sites. When EPA Victoria issues the PC PAN, these sites will move to the Closed Landfills table (Table 12).

[1] Landfills have potential to operate beyond 2046. It is acknowledged that due to their size and potential long term capacity, waste and/or resource recovery activities may continue at all sites beyond the current landfill schedule. In addition it is expected that, during this 30 year period and beyond, there will be changes in the need and ability of these sites to undertake resource recovery and disposal activities.

Appendix D – Letter regarding Metropolitan Landfill Schedule

METROPOLITAN
WASTE AND
RESOURCE RECOVERY
GROUP

State Government
Victoria

PO Box 1326
SOUTH MELBOURNE VIC 3205
PHONE (03) 8698 9800 FAX (03) 9699 3840

GHD
MELBOURNE
RECEIVED
11 JAN 2016

NAME	INT	DATE
C. McIntosh		

FILE:

Monday, 21 December 2015

Mr Colin McIntosh
Principal Environmental Scientist
GHD
Level 8, 180 Lonsdale St
MELBOURNE VIC 3000

Dear Mr McIntosh

SUBJECT: WEST ROAD LANDFILL EXTENSION – METROPOLITAN LANDFILL SCHEDULE

Thankyou for your letter dated 28 October 2015. In the letter you requested that the MWRRG;

> *"confirm that the extension of the landfill into cells 5,6,7 and 8 accords with the stated and current position of MWRRG'.*

As you are aware the Statewide Waste and Resource Recovery Infrastructure Plan states;

> *"Werribee Landfill, Wyndham is a significant residual municipal solid waste (MSW) hub currently taking 10% of Victoria's municipal waste from the metropolitan Melbourne and regional areas. It has the potential airspace for about 60 years and is located close to major transport routes".*
> *Table 2.2 Page 42*

In addition the Draft Metropolitan Waste and Resource Recovery Implementation Plan states;

> *"The Werribee hub is a significant putrescible landfill and resource recovery site for Melbourne that has good transport connections due to its location adjoining the Princes Highway and access to the proposed outer metropolitan ring road and Geelong railway line.*
> *The entire site has planning approval to operate as a landfill and resource recovery facility. Wyndham advises that the site has current works approval for 3 to 5 years of landfill capacity. Further works approvals for the remaining cells are expected to be lodged."*
> *Table 13 Page 64*

The Werribee Landfill is 1 of 3 landfill sites in the metropolitan area that has a life expectancy beyond 30 years. The site is therefore considered by MWRRG to be strategically important for the disposal of waste to landfill but also as a potential site to accommodate resource recovery operations over the long term, in line with the directions of the Metropolitan Implementation Plan.

MWRRG has an existing contract with the Wyndham City Council for the disposal of waste from participating councils. The approval of the new cells will provide certainty for the participating councils and any additional councils that may request to join during the expected contract life the extends to 2021.

Yours sincerely

Robert Millard
Chief Executive Officer

Appendix E – Groundwater Section Annual Compliance Report 2014 - 2015

6 Groundwater Monitoring Program

6.1 Monitoring Requirements

The groundwater monitoring program was conducted as per monitoring requirements outlined in **Section 1.2**.

The groundwater monitoring events for the August 2014 – July 2015 period of reporting were conducted on a quarterly basis with four monitoring events completed, as follows:

- ☐ October 2014;
- ☐ January 2015;
- ☐ April 2015; and
- ☐ July 2015.

6.2 Monitoring Objectives

The groundwater monitoring objectives include:

- ☐ Licence condition LI_DL1.
- ☐ As defined under the State Environment Protection Policy (Groundwaters of Victoria).

The State Environment Protection Policy (Groundwaters of Victoria) (Groundwater SEPP 1997) provides the framework for the protection of groundwater and associated beneficial uses throughout Victoria. The Groundwater SEPP identifies the segments of the groundwater environment based on background salinity. For each segment protected beneficial uses are defined and groundwater quality indicators and objectives are outlined. Beneficial uses of groundwater are considered to be precluded when relevant groundwater quality objectives for those beneficial uses have been exceeded.

Data collected showed TDS values generally in the range of 4,000 and 10,000 mg/L (based on laboratory measured TDS data obtained throughout the period of monitoring). This indicated the local groundwater quality is likely to fall within Segment C of the groundwater environment.

The Groundwater SEPP specifies the following protected beneficial uses of groundwater under Segment C:

- ☐ Maintenance of ecosystems (freshwater).
- ☐ Stock watering.
- ☐ Primary contact recreation.
- ☐ Industrial use.
- ☐ Buildings and structures.

The groundwater quality objectives for each of the protected beneficial uses are listed in **Table 9** below.

Table 9 Groundwater Quality Objectives

Beneficial use	Water Quality Objectives
Maintenance of Aquatic Ecosystems	The Groundwater SEPP refers to the relevant SEPP for surface waters. Groundwater associated with the site is likely to discharge to the Port Phillip Bay. In accordance with SEPP Schedule F6 Waters of the Port Phillip Bay (1997), this surface water falls under the Werribee Segment where highly modified ecosystems with some habitat values are found. The

Beneficial use	Water Quality Objectives
	environmental quality objectives for this segment should meet the ANZECC (2000) criteria for highly modified marine aquatic ecosystems (90% level of protection) have been applied in the absence of specific criteria listed in the Policy. It is noted that the Werribee Segment of Schedule F6 contained no relevant water quality objectives for the groundwater dataset. These water quality objectives apply at the point of discharge of groundwater to surface water.
Stock Watering	The Groundwater SEPP refers to criteria specified in the ANZECC 1992 guidelines for livestock. The ANZECC 1992 criteria have since been revised in 2000 with the revised guidelines adopted as part of this assessment. Note, for organics these criteria default to the guideline levels for potable waters.
Primary Contact Recreation	The Groundwater SEPP refers to criteria specified in the ANZECC (1992) guidelines for primary contact recreation. Note, these criteria defaulted to the ANZECC 1992 guideline levels for raw waters for drinking purposes, which were based on the Australian Drinking Water Guidelines (ADWG 1986). The ADWG guidelines were updated in 2011 and consequently the water quality criteria in ADWG 2011 (NHRMC 2011) have been adopted for the purpose of this assessment. The ADWG criteria have been further modified to account for lower ingestion rates during swimming as compared to drinking, in accordance with the recreational water quality guidelines (NHMRC 2008). A modification factor of 10 has been adopted for inorganics, where the criteria were not based on aesthetic considerations. A modification of the adopted criteria for organics to account for the different ingestion rates has not been considered appropriate due to the vapour and dermal contact pathway that may dominate the exposure. It is understood that the Auditor considers that it is overly conservative to adopt an aesthetic based drinking water criteria to assess primary contact recreation risks. Consequently where no health criteria were available, these parameters were considered to pose a low risk to the beneficial use of primary contact recreation and no specific water quality criteria were adopted.
Industrial Water Use	The Groundwater SEPP refers to criteria specified in the ANZECC (1992) guidelines for industrial use. It is noted however that no specific guidance has been provided in the ANZECC (2000) guidelines, with the following statement provided – *"After extensive consultation with representative industrial groups, the current Guidelines provide no specific guidance for industrial water use, because industrial water requirements are so varied (both within and between industries) and sources of water for industry have other coincidental environmental values that tend to drive management of the resource. Industrial water use continuous to be a recognised environmental value that has high economic benefit to the community. It must be given adequate consideration during the planning and management of water resources."* Consequently no specific assessment criteria have been applied to the industrial water use. The main limiting factor for the use of groundwater for industrial uses at the site or in its vicinity is expected to be salinity.
Buildings and Structures	The Groundwater SEPP states that the concentrations of pH, sulphate and redox potential should be considered. To assess potential impact on this beneficial use, the reported pH and sulphate concentrations were compared against criteria relevant to buried concrete provided in AS2159-2009 (Piling-Design and Installation).

6.3 Methodology

6.3.1 Groundwater Monitoring Well Locations

A total of 16 monitoring wells are monitored across the site, refer to **Figure 3**.

6.3.2 Groundwater Sampling

The groundwater sampling was conducted in accordance with EPA Publication 669 Groundwater Sampling Guidelines. Prior to sampling, the headspace (0.2 m inside the casing) of each of the wells was monitored with a Q-RAE II monitor for CH_4 (% volume), CO (ppm), O_2 (%), and H_2S (ppm) and PID for volatile organic compounds (VOCs in ppm). The wells were also gauged prior to sampling using an oil/water interface meter to determine the depth to groundwater and check for phase-separated hydrocarbons (PSH). Measurements were taken from the top of the casing.

All wells were purged and sampled using a low flow sampling technique (micropurge). A bladder pump with disposable bladders was used for pumping. All tubing (air lines and water lines) was replaced between each well. During purging field water quality parameters were collected including pH, redox potential, dissolved oxygen (DO), electric conductivity and temperature. A flow through cell was used for this purpose. The intake of the sampling pump was initially placed within 1.0 m of the measured standing water level and remained within this range throughout the sampling of all wells.

Groundwater samples were collected in appropriate containers provided by the analysing laboratories and placed immediately in ice cooled eskies. All samples for laboratory analysis for metals were filtered in the field through a 0.45 micron filter and placed in a laboratory prepared bottles with appropriate preservative.

All samples were transported to the selected laboratory with the Chain of Custody documentation. The water quality meter was calibrated prior to each day of groundwater sampling. Groundwater sampling field records and copies of equipment calibration records are provided in **Appendix C**.

6.4 Results

6.4.1 Well Gauging Data

Well gauging was conducted on 6 October 2014, 12 January 2015, 22 April 2015, and 20 July 2016, prior to each quarterly groundwater sampling round. Four (4) groundwater elevation contour plans were prepared based on the well gauging data collected during each groundwater sampling event, refer to **Figures 2a** to **2d**. The contour plans consistently confirm groundwater flow in a southerly direction.

The reduced water levels for the period of 2008 – 2015 are provided in **Figure 6.1** below.

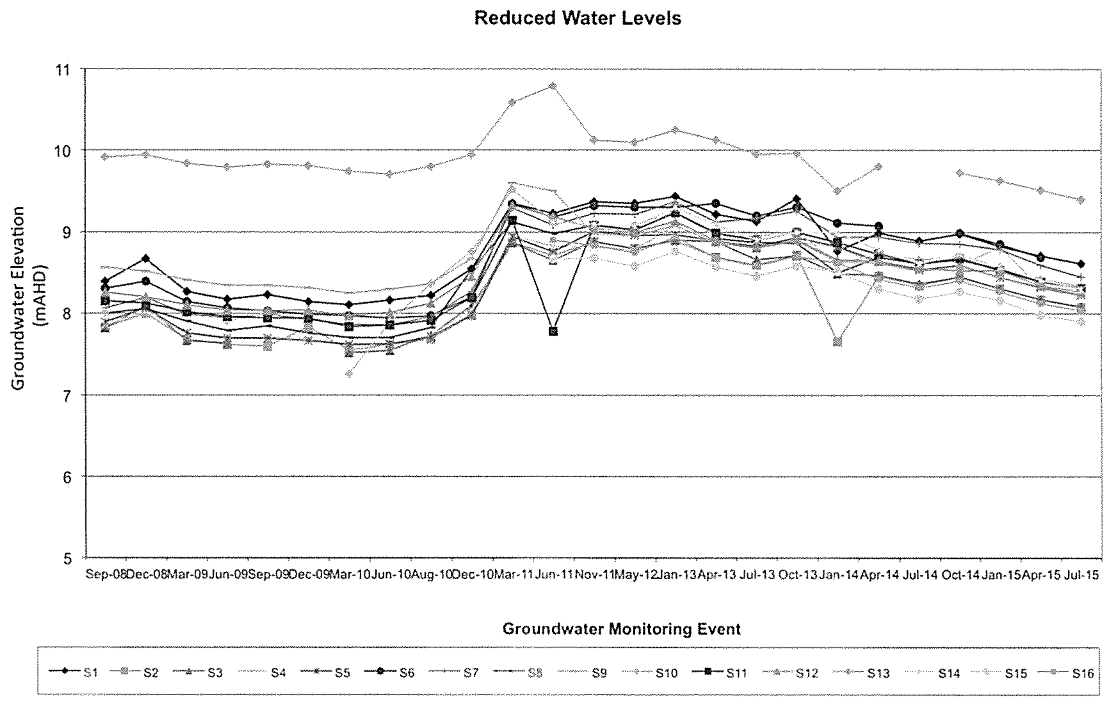


Figure 6.1 Reduced water level (mAHD) data from October 2013 to July 2015.

6.4.2 Analytical Results

Groundwater analytical results are presented in **Table J1** in **Appendix J**, with laboratory reports provided in **Appendix Q**. The field monitoring records are provided in **Appendix C**.

The groundwater monitoring showed elevated concentrations of ammonia, total nitrogen, manganese, iron, alkalinity, dissolved methane and TOC, above background levels. A summary of the exceedences of the adopted water quality criteria for the 2014 - 2015 monitoring period is provided in **Table 10** below. For some detected analytes no criteria were adopted as there was no relevant criteria available. The industrial water use has not been included in the table as the groundwater quality objectives vary depending on the type of industry and cannot be predicted with confidence.

Table 10 Summary of Exceedance of Groundwater Criteria (2014 – 2015 monitoring period)

Analyte	Maximum Concentration mg/L (On-site – wells)[1]	Maximum Concentration mg/L (Down gradient)[3]	Background Concentration Range[2]	Groundwater Quality		
				MOE ANZECC 2000	PCR (ADWG 2011)	SW (ANZECC 2000)
Units	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*
TDS	**10,000**	**8,300**	**8,400 – 10,000**	-	-	**2000**
Ammonia as N	**7.6**	0.3	<0.1	**1.2**	-	-
Total Nitrogen	**9.3**	**4.7**	**2.8 – 3.1**	**0.3[4]**	-	-
Manganese	**6.6**	0.019	0.002 – 0.011	**0.080**	**5**	-

Notes:

Exceedances highlighted in bold.

[1] On-site wells - S1, S2, S3, S4, S5, S6, S7, S8A, S9, S10A, S11, and S12

[2] Up-gradient well - S13 - over monitoring period of 2008 - 2014

[3] Down-gradient wells - S14, S15, S16

[4] As adopted by AEA 2013 Audit Report, based on Table 3.3.2 of ANZECC 2000

- No criteria.

6.5 Risks to Beneficial Uses of Groundwater

Groundwater is considered to be polluted where groundwater quality is changed such that the groundwater is no longer suitable for a beneficial use and/or it affects beneficial uses of other segments of the environment, such as soil and air.

Based on the comparison with the adopted water quality criteria and background levels, the on-site groundwater quality is potentially detrimental to the following beneficial uses:

☐ Maintenance of ecosystems: ammonia, total nitrogen, and manganese.
☐ Primary contact recreation: manganese.
☐ Stock water: elevated background TDS.
☐ Industrial water: potentially ammonia, iron, manganese, alkalinity due to aesthetic issues. However the naturally elevated TDS concentrations are considered to be the main limiting factor for the use of groundwater for industrial purposes.

Maintenance of Ecosystems

The nearest surface water body to the site is the Cherry Tree Creek running through the far south western corner of the site. As discussed in **Section 7.3.3**, this surface water feature is not considered to be in connection with the groundwater, which is over 4.0 m deeper (based on July 2015 gauging) than the invert levels of this surface water feature. Regionally groundwater is expected to be discharging to Port Phillip Bay located approximately 7 km to the south of the site. Accordingly, the nearest surface water body, where the protection of aquatic ecosystems is relevant is located a significant distance from the site.

The identified concentrations of ammonia, total nitrogen and manganese are considered to pose negligible risk to the nearest receiving water body, given the significant distance of the site from the nearest potential receiving surface water body (approximately 7 km) and the likely attenuation processes which will occur over this distance, which are expected to reduce the contaminant concentrations to acceptable levels prior to reaching a potential surface water discharge point. In addition to the above, it is noted that the ammonia and manganese concentrations at the down gradient site boundary are well below the adopted water quality criteria for protection of marine ecosystems.

Compass Environmental has concluded that the groundwater is not polluted with respect to the beneficial use – maintenance of aquatic ecosystems.

Primary Contact Recreation

The adopted water quality criteria for primary contact recreation have been exceeded for manganese in one on-site well (S7) only.

The current likelihood of this beneficial use being realised both on-site and off-site is considered to be low given the current uses of the site (landfill and quarry) and grazing/farming down gradient. In addition, the likelihood of groundwater being extracted for primary contact recreation purposes (such as filling a swimming pool) is considered low given that no features such as these were identified in the area.

Compass Environmental concluded that the elevated levels of manganese may preclude the on-site beneficial use of primary contact recreation, however are unlikely to preclude this use off-site.

Stock Water

The adopted water quality criterion for stock watering have been exceeded for TDS in all wells, including the upgradient background well S13. The TDS concentrations mostly represent regional background levels and hence do not constitute pollution.

Industrial water

Although no specific criteria have been applied to the beneficial use of industrial water, it is considered that the presence of elevated concentrations of ammonia, iron, manganese and alkalinity at levels exceeding the drinking water criteria may preclude the use of groundwater for some industrial uses due to aesthetic issues.

However, the high background TDS concentrations are likely to be the main limiting factor in the use of groundwater for industrial purposes.

Buildings and Structures

Based on the comparison of groundwater pH (>5.5), sulphate (up to 830 mg/L SO4) and chloride (<6,000 mg/L) levels against the exposure classification criteria provided in AS2159-2009 for buried concrete and unprotected steel, the groundwater would be classified as mild based on sulphate concentrations.

Sulphate concentrations above 800 mg/L were only identified in the background well S13. The elevated sulphate concentrations were considered to represent background levels.

It is concluded that the groundwater is not polluted with respect to the beneficial use – buildings and structures.

6.5.1 Licence Compliance

The identified on-site groundwater contamination by ammonia, total nitrogen, manganese, iron, alkalinity, dissolved methane and elevated TOC levels constitute a non-compliance with the landfill licence condition LI_DL1. The impacts are relatively minor and mainly confined to the site boundaries, with only slightly elevated levels of alkalinity and total nitrogen detected at the site boundaries.

Whilst a breach of the landfill licence condition has been observed, it is noted that the current risks associated with the identified contamination are considered to be low. The council has undertaken a number of initiatives to allow better management of leachate at the site as detailed in **Section 8.5** of this report.

It is expected that the leachate impacts will be greatly reduced as remediation works are completed.

APPENDIX J

Tabulated Groundwater Results

Project 1192
Client Wyndham City Council
Site Werribee

Table J1 - Groundwater Results

					Inorganics					Anions							Cations				Nitrogen						Metals		MAH									PAH							
					BOD	COD	Ferrous Iron	TDS	TOC	Alkalinity (Bicarbonate as HCO3)	Alkalinity (Hydroxide) as CaCO3	Alkalinity (total) as CaCO3	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Chloride	Sulphate	Calcium	Magnesium	Potassium	Sodium	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Nitrogen (Total Oxidised)	Nitrogen (Total)	TKN (as N)	Iron	Manganese	Benzene	Ethylbenzene	Toluene	Xylene (o)	Xylene (m & p)	1,2,4-trimethylbenzene	Isopropylbenzene	Styrene	Xylene Total	3-methylcholanthrene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL					2	5	0.05	5	1	2	2	2	2	2	1	1	0.1	0.1	0.1	0.1	0.01	0.01	0.01	0.01	0.1	0.1	0.01	0.001	0.001	0.001	0.001			0.001	0.001	0.001	0.003						0.000002		
ANZECC 2000 MW 90%																					1.2				0.3 (c)			0.080(b)	0.9	0.18 (b)	0.08 (b)						0.075 (b)								
PCR_ADWG 2011												*			*	*				*	*	112.9					*	5**	0.001	0.3	0.8			0.015 (a)		0.03	0.6						0.00001		
ANZECC 2000 Stockwater								2000								1000	1000	600				90.29							0.001	0.3	0.8			0.015 (a)		0.03	0.6						0.00001		
Field ID	Sample Date	SampleCode	Lab No.	Sample Type																																									
S1	3/11/2011	11-46815_2804827	11-46815	Normal	-	-	-	5800	5	440^	<2	360	360	<2	2800	440	79	210	21	1600	<0.1	3	-	-	-	-	<0.01	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1	15/05/2012	12-23173_3037189	12-23173	Normal	-	-	-	6100	3	460	<2	370	370	<2	2700	440	99	270	26	1500	0.3	1.2	-	-	-	-	<0.01	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1	16/01/2013	13-04504_3330648	13-04504	Normal	-	-	-	-	4	480	-	-	-	-	3000	490	92	250	21	1800	<0.1	1.2	-	-	-	-	<0.01	0.004	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
160112	16/01/2013	13-04504_3330652	13-04504	Field_D	-	-	-	-	5	480	-	-	-	-	3100	490	93	250	21	1800	<0.1	0.72	-	-	-	-	<0.01	0.005	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S201	16/01/2013	M13-Ja06971	365703	Interlab_D	-	-	-	-	13	480	-	-	-	-	3200	500	89	260	22	1700	<0.01	3.2	-	-	-	-	0.84	0.011	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.003	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S1	17/04/2013	13-19065_3441388	13-19065	Normal	-	-	-	6100	4	470	-	-	-	-	3200	500	91	240	22	1800	<0.1	3	-	-	-	-	0.02	0.002	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S1	9/07/2013	13-30796_3538300	13-30796	Normal	-	-	-	5500	4	460	-	-	-	-	2900	430	88	250	22	1900	<0.1	0.62	-	-	-	-	0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S1	17/10/2013	13-45840_3656290	13-45840	Normal	-	-	-	5900	3	450	-	-	-	-	3100	380	89	230	21	1600	<0.1	2.4	-	-	-	-	0.01	0.002	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S1	6/01/2014	14-02614_3748068	14-02614	Normal	-	-	-	5700	-	450	-	-	-	-	3200	430	85	240	21	1700	<0.1	2.8	-	-	-	-	0.04	0.003	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S1	1/04/2014	14-15882_3850181	14-15882	Normal	<2	17	<0.1	5800	10	440	-	-	-	-	2800	440	84	250	23	1800	<0.1	1.8	<0.01	1.8	1.9	0.1	<0.01	0.011	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S1	2/07/2014	14-29185_3957496	14-29185	Normal	-	-	-	5500	2	330	-	-	-	-	3100	480	88	240	22	1600	<0.1	2.7	<0.01	2.7	3	0.3	0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S1	9/10/2014	14-44165_4076402	14-44165	Normal	-	-	-	6000	7	430	-	-	-	-	3100	420	92	260	24	1800	<0.1	2.4	<0.01	2.5	2.7	0.2	0.02	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S1	15/01/2015	15-03991_4188341	15-03991	Normal	-	-	-	4000	3.1	300	-	-	-	-	3000	450	89	220	22	1600	<0.1	2.5	<0.01	2.5	2.5	<0.1	<0.01	0.004	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S1	23/04/2015	15-19781_4307981	15-19781	Normal	<2	<25	<0.1	5800	3.1	460	<2	380	380	<2	3300	420	84	250	24	1800	<0.1	2.5	<0.01	2.5	2.8	0.2	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S230415	23/04/2015	15-19781_4307985	15-19781	Field_D	<2	<10	<0.1	5600	2.5	390	<2	360	320	39	3200	440	84	250	24	1800	<0.1	2.5	<0.01	2.5	2.6	0.1	<0.01	0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S201	23/04/2015	M15-Ap18493	455170	Interlab_D	<5	21	<0.05	5600	<5	-	-	-	360	35	3100	420	110	290	21	2000	0.02	2.7	<0.02	-	3.2	0.5	<0.05	<0.005	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.003	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001
S1	22/07/2015	15-33431_4411242	15-33431	Normal	-	-	-	5000	2.7	430	-	-	-	-	3300	440	86	230	20	1600	<0.1	2.6	<0.01	2.6	2.8	0.1	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S2	31/10/2011	11-46411_2802039	11-46411	Normal	-	-	-	6800	8	854^	<2	700	700	<2	3300	510	110	260	24	2100	<0.1	<0.01	-	-	-	-	0.12	0.35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	14/05/2012	12-22913_3035431	12-22913	Normal	-	-	-	6800	12	870	<2	710	710	<2	3300	450	110	270	27	2000	<0.1	0.04	-	-	-	-	0.02	0.39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	17/01/2013	13-04742_3332862	13-04742	Normal	-	-	-	-	9	490	-	-	-	-	3500	460	100	260	24	1900	<0.1	0.14	-	-	-	-	0.03	0.043	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S2	17/04/2013	13-19065_3441389	13-19065	Normal	-	-	-	7000	10	880	-	-	-	-	3500	490	130	300	27	2100	<0.1	0.22	-	-	-	-	0.06	0.16	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S2	11/07/2013	13-31027_3540742	13-31027	Normal	-	-	-	7200	5	890	-	-	-	-	3600	430	120	300	27	2100	<0.1	0.03	-	-	-	-	0.05	0.29	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S2	17/10/2013	13-45840_3656291	13-45840	Normal	-	-	-	6700	7	860	-	-	-	-	3600	480	110	280	25	1900	0.1	0.02	-	-	-	-	0.03	0.067	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S2	7/01/2014	14-02697_3748910	14-02697	Normal	-	-	-	7000	-	850	-	-	-	-	3300	310	110	270	24	2000	<0.1	0.05	-	-	-	-	0.02	0.04	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S2	3/04/2014	14-16283_3853874	14-16283	Normal	<2	65	<0.1	7200	5	690	-	-	-	-	3600	550	110	270	25	2100	<0.1	0.07	<0.01	0.07	0.3	0.2	<0.01	0.071	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S2	2/07/2014	14-29185_3957497	14-29185	Normal	-	-	-	6600	8	750	-	-	-	-	3900	530	110	290	25	2200	<0.1	0.13	<0.01	0.13	0.4	0.2	0.02	0.11	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S2	8/10/2014	14-43773_4073885	14-43773	Normal	-	-	-	6900	11	850	-	-	-	-	3500	440	120	290	27	2000	<0.1	0.03	<0.01	0.03	0.2	0.2	0.03	0.074	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S2	13/01/2015	15-03411_4184549	15-03411	Normal	-	-	-	6200	4	830	-	-	-	-	3500	500	110	280	27	2100	<0.1	0.06	<0.01	0.06	0.2	0.2	<0.01	0.034	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S2	28/04/2015	15-20348_4313231	15-20348	Normal	<2	<25	<0.1	6700	4.2	810	-	-	-	-	3500	500	100	260	25	2000	<0.1	0.04	<0.01	0.05	0.2	0.1	0.03	0.28	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S2	22/07/2015	15-33431_4411243	15-33431	Normal	-	-	-	5700	2.3	800	-	-	-	-	3700	430	97	240	21	1800	<0.1	0.03	<0.01	0.03	0.2	0.2	0.02	0.26	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S3	3/11/2011	11-46815_2804828	11-46815	Normal	-	-	-	7900	5	512^	<2	420	420	<2	4000	660	62	210	30	2600	<0.1	<0.01	-	-	-	-	0.02	0.019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	16/05/2012	12-23337_3038591	12-23337	Normal	-	-	-	7700	8	470	<2	390	390	<2	3900	580	60	240	35	2600	<0.1	0.37	-	-	-	-	<0.01	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	15/01/2013	13-03903_3327426	13-03903	Normal	-	-	-	-	2	470	-	-	-	-	3400	560	62	230	28	2700	<0.1	0.85	-	-	-	-	<0.01	0.01	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S3	18/04/2013	13-19313_3442829	13-19313	Normal	-	-	-	8000	3	470	-	-	-	-	4400	650	56	210	29	2400	<0.1	0.9	-	-	-	-	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S3	9/07/2013	13-30796_3538301	13-30796	Normal	-	-	-	7300	4	480	-	-	-	-	4200	590	67	230	30	2600	<0.1	0.36	-	-	-	-	<0.01	0.003	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S3	16/10/2013	13-45540_3654438	13-45540	Normal	-	-	-	8200	3	460	-	-	-	-	4400	700	62	230	29	2300	<0.1	0.99	-	-	-	-	<0.01	0.008	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S3	9/01/2014	14-03142_3752003	14-03142	Normal	-	-	-	8300	-	470	-	-	-	-	4000	500	66	220	32	2600	<0.1	0.72	-	-	-	-	0.02	0.026	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S3	3/04/2014	14-16283_3853875	14-16283	Normal	<2	44	<0.1	8100	2	460	-	-	-	-	4500	800	62	220	31	2500	<0.1	1.1	<0.01	1.1	1.3	0.1	<0.01	0.002	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S3	4/07/2014	14-29468_3960071	14-29468	Normal	-	-	-	8100	3	470	-	-	-	-	4800	700	60	230	30	2600	<0.1	1.1	<0.01	-	1.2	0.2	<0.01	0.007	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S3	7/10/2014	14-43525_4072498	14-43525	Normal	-	-	-	8300	6	220	-	-	-	-	3800	610	62	220	31	2500	<0.1	1.1	<0.01	1.1	1.2	0.1	0.01	0.004	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S3	13/01/2015	15-03411_4184551	15-03411	Normal	-	-	-	6900	3.5	470	-	-	-	-	4300	720	63	210	32	2600	<0.1	1.1	<0.01	1.1	1.4	0.2	<0.01	0.015	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S3	23/04/2015	15-19781_4307982	15-19781	Normal	<2	<25	<0.1	7400	3.9	480	<2	390	390	<2	4500	660	58	210	33	2700	<0.1	1.2	<0.01	1.2	1.5	0.3	0.01	0.005	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S3	21/07/2015	15-33269_4409999	15-33269	Normal	-	-	-	7000	1.3	480	-	-	-	-	4200	640	59	200	25	2400	<0.1	1.2	<0.01	1.2	1.2	<0.1	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S4	7/11/2011	11-47070_2807630	11-47070	Normal	-	-	-	5400	4	183^	<2	150	150	<2	3100	480	61	150	29	1800	1.4	<0.01	-	-	-	-	0.29	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	14/05/2012	12-22913_3035432	12-22913	Normal	-	-	-	5600	8	440	<2	360	360	<2	3000	430	64	170	31	1700	1.9	0.08	-	-	-	-	0.16	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	17/01/2013	13-04742_3332863	13-04742	Normal	-	-	-	-	8	190	-	-	-	-	3200	440	68	210	29	1700	0.7	0.02	-	-	-	-	0.1	0.94	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S4	17/04/2013	13-19065_3441390	13-19065	Normal	-	-	-	6100	6	380	-	-	-	-	2900	480	81	230	31	1900	0.7	0.1	-	-	-	-	0.35	1.1	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S4	15/07/2013	13-31496_3544456	13-31496	Normal	-	-	-	6500	5	370	-	-	-	-	2700	440	88	230	30	2000	1	0.12	-	-	-	-	0.34	0.97	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S4	15/10/2013	13-45346_3653040	13-45346	Normal	-	-	-	6600	5	430	-	-	-	-	3800	530	67	180	30	1600	0.7	<0.01	-	-	-	-	0.4	1.1	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S4	8/01/2014	14-03010_3750701	14-03010	Normal	-	-	-	7200	-	470	-	-	-	-	3000	410	93	280	33	2100	0.9	0.06	-	-	-	-	0.59	0.94	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S4	1/04/2014	14-15882_3850182	14-15882	Normal	6	<10	0.8	7500	11	500	-	-	-	-	3400	520	94	310	37	2200	0.8	<0.01	<0.01	<0.01	1.2	1.2	0.84	0.86	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S4	3/07/2014	14-29400_3958868	14-29400	Normal	-	-	-	7100	4	540	-	-	-	-	3600	530	63	150	28	1600	0.6	0.01	<0.01	0.01	0.8	0.8	0.07	1.1	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
030714	3/07/2014	14-29400_3958872	14-29400	Field_D	-	-	-	7400	4	550	-	-	-	-	3200	500	62	160	29	1700	0.6	0.06	0.01	0.07	0.9	0.9	0.07	1.1	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S204	3/07/2014	M14-Jl05817	424198	Interlab_D	-	-	-	8400	17	450^	-	-	370	-	3700	190	65	150	28	1700	0.59	<0.02	<0.02	<0.05	0.7	0.7	0.2	1	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.003	<0.005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	<0.0001
S4	7/10/2014	14-43525_4072499	14-43525	Normal	-	-	-	7800	8	270	-	-	-	-	3000	420	59	140	28	1600	0.5	0.03	<0.01	0.03	0.5	0.5	0.06	1	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S4	14/01/2015	15-03810_4186953	15-03810	Normal	-	-	-	6900	5	520	<2	430	430	<2	4000	610	87	300	28	2100	0.4	0.02	<0.01	0.02	0.6	0.6	0.88	0.66	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S4	27/04/2015	15-20278_4312735	15-20278	Normal	<2	<25	0.5	7700	4.9	520	-	-	-	-	3900	650	100	350	35	2300	0.5	0.01	<0.01	0.01	0.6	0.6	0.49	0.57	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S4	23/07/2015	15-33543_4412325	15-33543	Normal	-	-	-	6400	2.4	440	-	-	-	-	3400	560	95	280	31	2000	0.5	0.23	0.06	0.3	0.8	0.5	0.45	0.74	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S5	2/11/2011	11-46545_2803160	11-46545	Normal	-	-	-	8100	11	976^	<2	800	800	<2	4200	720	110	400	42	2500	0.8	0.02	-	-	-	-	0.21	4.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	14/05/2012	12-22913_3035433	12-22913	Normal	-	-	-	8600	27	1200	<2	960	960	<2	4200	550	94	360	40	2400	0.8	0.02	-	-	-	-	0.24	4.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	15/01/2013	13-03903_3327427	13-03903	Normal	-	-	-	-	19	1400	-	-	-	-	3800	530	89	360	37	2800	0.8	<0.01	-	-	-	-	0.31	4.3	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S5	16/04/2013	13-18893_3440210	13-18893	Normal	-	-	-	8000	30	1400	-	-	-	-	3900	560	80	340	38	2400	0.9	<0.01	-	-	-	-	0.32	4.4	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S5	15/07/2013	13-31496_3544457	13-31496	Normal	-	-	-	8600	24	1300	-	-	-	-	3800	530	84	350	37	2600	0.9	0.02	-	-	-	-	0.35	3.8	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S5	15/10/2013	13-45346_3653041	13-45346	Normal	-	-	-	8400	15	1300	-	-	-	-	4200	570	89	330	37	2300	0.8	<0.01	-	-	-	-	0.48	3.9	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S5	8/01/2014	14-03010_3750702	14-03010	Normal	-	-	-	8300	-	1300	-	-	-	-	4000	560	89	360	39	2400	1.1	0.04	-	-	-	-	0.43	4.3	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S5	2/04/2014	14-16107_3852467	14-16107	Normal	<2	46	0.5	8400	7	1200	-	-	-	-	3900	540	88	350	35	2300	0.8	<0.01	<0.01	<0.01	1.3	1.3	0.56	4.1	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S205	2/04/2014	M14-Ap02919	414047	Interlab_D	<5	59	0.38	8400	8.9	1300	-	-	-	-	4100	520	81	320	34	2200	0.59	<0.02	0.03	<0.05	1	1	0.71	5.7	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.003	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001
020414	2/04/2014	14-16107_3852472	14-16107	Field_D	2	41	0.6	8500	7	1300	-	-	-	-	4100	620	90	380	43	2600	0.8	<0.01	<0.01	<0.01	1.2	1.2	0.57	4	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S5	7/07/2014	14-29641_3961609	14-29641	Normal	-	-	-	8200	13	1200	-	-	-	-	4000	620	80	340	39	2300	0.7	0.01	<0.01	0.02	1.3	1.3	0.39	4	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S5	8/10/2014	14-43773_4073886	14-43773	Normal	-	-	-	8800	21	1100	-	-	-	-	4700	520	98	400	41	2600	0.8	<0.01	<0.01	<0.01	1.2	1.2	0.4	4.2	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S5	14/01/2015	15-03810_4186956	15-03810	Normal	-	-	-	8900	11	1100	<2	900	900	<2	4300	590	72	340	33	2300	0.6	<0.01	<0.01	<0.01	1.6	1.6	0.31	4.3	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S5	27/04/2015	15-20278_4312736	15-20278	Normal	<2	<25	0.4	9300	8.5	1100	-	-	-	-	4100	650	93	380	37	2500	0.6	<0.01	<0.01	<0.01	1	1	0.41	3.8	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S5	23/07/2015	15-33543_4412326	15-33543	Normal	-	-	-	7300	4.8	990	-	-	-	-	4000	600	88	340	36	2400	0.7	0.09	0.02	0.1	1.1	1	0.48	3.9	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S230715	23/07/2015	15-33543_4412328	15-33543	Field_D	-	-	-	7900	7	1000	-	-	-	-	4200	600	90	360	36	2400	0.8	0.03	0.03	0.06	1.2	1.2	0.47	3.8	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S205	23/07/2015	M15-Jl22233	466416	Interlab_D	-	-	-	6900	24	-	880	-	-	<10	4400	580	99	400	38	2500	0.59	<0.02	<0.02	0.4	1	1	0.39	3.9	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.003	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001
S6	3/11/2011	11-46815_2804829	11-46815	Normal	-	-	-	6200	12	842^	<2	690	690	<2	3000	450	55	260	36	2000	5	<0.01	-	-	-	-	2.9	3.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6	17/05/2012	12-23644_3041937	12-23644	Normal	-	-	-	5300	20	930	<2	760	760	<2	2600	360	42	210	32	1600	2.6	0.1	-	-	-	-	3.1	2.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Project 1192
Client Wyndham City Council
Site Werribee

Table J1 - Groundwater Results

					Inorganics					Anions							Cations				Nitrogen						Metals		MAH									PAH							
					BOD	COD	Ferrous Iron	TDS	TOC	Alkalinity (Bicarbonate as HCO3)	Alkalinity (Hydroxide) as CaCO3	Alkalinity (total) as CaCO3	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Chloride	Sulphate	Calcium	Magnesium	Potassium	Sodium	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Nitrogen (Total Oxidised)	Nitrogen (Total)	TKN (as N)	Iron	Manganese	Benzene	Ethylbenzene	Toluene	Xylene (o)	Xylene (m & p)	1,2,4-trimethylbenzene	Isopropylbenzene	Styrene	Xylene Total	3-methylcholanthrene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL					2	5	0.05	5	1	2	2	2	2	2	1	1	0.1	0.1	0.1	0.1	0.01	0.01	0.01	0.01	0.1	0.1	0.01	0.001	0.001	0.001	0.001			0.001	0.001	0.001	0.003						0.000002		
ANZECC 2000 MW 90%																					1.2				0.3 (c)			0.080(b)	0.9	0.18 (b)	0.08 (b)						0.075 (b)								
PCR_ADWG 2011												*			*	*				*	*	112.9					*	5**	0.001	0.3	0.8			0.015 (a)		0.03	0.6						0.00001		
ANZECC 2000 Stockwater								2000								1000	1000	600				90.29							0.001	0.3	0.8			0.015 (a)		0.03	0.6						0.00001		
Field ID	Sample Date	SampleCode	Lab No.	Sample Type																																									
S6	14/01/2013	13-03801_3326691	13-03801	Normal	-	-	-	-	21	1200	-	-	-	-	1700	200	31	150	24	1300	3.5	<0.01	-	-	-	-	5.4	2.5	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S6	19/04/2013	13-19708_3447146	13-19708	Normal	-	-	-	5000	21	1100	-	-	-	-	2300	320	45	210	30	1500	3.8	<0.01	-	-	-	-	4.2	3.3	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S6	12/07/2013	13-31104_3541613	13-31104	Normal	-	-	-	5400	14	960	-	-	-	-	2600	330	37	190	27	1600	2.3	0.12	-	-	-	-	1.6	2.3	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S206	12/07/2013	M13-Jl10365	385951	Interlab_D	-	-	-	5000	<5	970	-	-	-	-	2400	380	35	190	14	1400	1.9	<0.02	-	-	-	-	<0.05	2	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.003	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001
120713	12/07/2013	13-31104_3541617	13-31104	Field_D	-	-	-	5200	14	950	-	-	-	-	2600	330	40	200	28	1600	2.3	0.04	-	-	-	-	1.6	2.4	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S6	16/10/2013	13-45540_3654441	13-45540	Normal	-	-	-	5400	15	950	-	-	-	-	2800	360	38	200	28	1600	2.1	<0.01	-	-	-	-	1.5	1.7	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S6	9/01/2014	14-03142_3752004	14-03142	Normal	-	-	-	5700	-	980	-	-	-	-	2600	290	44	220	32	1800	3.7	0.02	-	-	-	-	1.4	2.6	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S6	31/03/2014	14-15737_3848877	14-15737	Normal	5	33	1.6	6100	19	850	-	-	-	-	2400	360	44	220	31	1800	2.3	0.06	<0.01	0.06	2.4	2.3	1.6	2.4	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S6	4/07/2014	14-29468_3960072	14-29468	Normal	-	-	-	5800	13	980	-	-	-	-	3100	480	46	240	32	1900	2	0.03	0.02	-	2.4	2.3	1.5	2.3	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S6	6/10/2014	14-43373_4071005	14-43373	Normal	-	-	-	6300	16	550	-	-	-	-	3100	420	48	220	32	2000	2.2	0.02	<0.01	0.02	2.2	2.2	1.5	2.6	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S6	13/01/2015	15-03411_4184548	15-03411	Normal	-	-	-	6200	4.6	890	-	-	-	-	3100	530	56	260	35	2000	2.1	<0.01	<0.01	<0.01	2.5	2.5	1.7	2.9	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S6	22/04/2015	15-19660_4306872	15-19660	Normal	2	<25	1.5	6200	6.6	880	-	-	-	-	3500	530	58	300	39	2200	2.4	0.03	<0.01	0.03	2.8	2.7	1.5	2.9	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S6	21/07/2015	15-33269_4410000	15-33269	Normal	-	-	-	5600	4.2	920	-	-	-	-	3400	510	48	220	26	1600	2.5	0.04	<0.01	0.04	2.5	2.5	1.6	2.8	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S7	7/11/2011	11-47070_2807631	11-47070	Normal	-	-	-	7400	15	1586^	<2	1300	1300	<2	3600	250	72	320	33	2600	3.8	0.01	-	-	-	-	3.8	5.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	17/05/2012	12-23644_3041938	12-23644	Normal	-	-	-	7400	26	1500	<2	1300	1300	<2	3300	230	70	330	34	2200	2.2	0.01	-	-	-	-	5.7	5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	14/01/2013	13-03801_3326692	13-03801	Normal	-	-	-	-	10	1200	-	-	-	-	3900	400	81	310	33	2200	2.8	0.11	-	-	-	-	4	5.9	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S7	19/04/2013	13-19708_3447147	13-19708	Normal	-	-	-	8400	18	1100	-	-	-	-	4100	480	82	270	35	2000	3	0.12	-	-	-	-	4.6	5.9	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S7	12/07/2013	13-31104_3541614	13-31104	Normal	-	-	-	8500	13	1200	-	-	-	-	4300	450	94	360	38	2600	3	0.11	-	-	-	-	5.1	6.2	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S7	16/10/2013	13-45540_3654439	13-45540	Normal	-	-	-	8800	14	1200	-	-	-	-	4700	520	90	350	35	2500	3.3	<0.05	-	-	-	-	4.7	5.3	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S7	9/01/2014	14-03142_3752005	14-03142	Normal	-	-	-	9500	-	1200	-	-	-	-	4400	410	98	400	39	2600	3.3	0.03	-	-	-	-	5.8	6.5	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S7	31/03/2014	14-15737_3848878	14-15737	Normal	4	14	5.5	9900	16	980	-	-	-	-	5100	670	100	390	38	2600	2.2	0.05	0.02	0.08	2.3	2.2	5.5	6.2	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S7	4/07/2014	14-29468_3960073	14-29468	Normal	-	-	-	9100	13	930	-	-	-	-	5400	710	110	420	41	2700	1.7	0.29	0.03	-	2.3	2	5.3	5.9	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S7	6/10/2014	14-43373_4071006	14-43373	Normal	-	-	-	10,000	15	280	-	-	-	-	4700	600	110	330	39	2600	1.8	0.64	<0.01	0.64	2.4	1.8	5.6	6.6	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S7	13/01/2015	15-03411_4184550	15-03411	Normal	-	-	-	8400	6.1	860	-	-	-	-	4900	750	100	420	41	2700	1.3	0.98	0.09	1.1	2.8	1.8	4	4.6	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S7	22/04/2015	15-19660_4306873	15-19660	Normal	<2	<25	3.5	8800	6	930	-	-	-	-	5500	710	100	440	40	2900	1.5	0.02	<0.01	0.02	1.9	1.9	3.5	4	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S7	20/07/2015	15-33119_4408705	15-33119	Normal	-	-	-	8900	2.8	870	-	-	-	-	5400	710	100	380	35	2500	1.1	0.38	0.02	0.4	1.5	1.1	3.1	3.2	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S8	2/11/2011	11-46545_2803161	11-46545	Normal	-	-	-	7500	2	403^	<2	330	330	<2	4100	620	100	320	31	2300	<0.1	2.7	-	-	-	-	0.02	0.006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S208	2/11/2011	M11-No01704	317310	Interlab_D	-	-	-	7800	<5	440	-	-	-	-	4100	170	98	330	27	2300	0.02	3.5	-	-	-	-	<0.05	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S021111	2/11/2011	11-46545_2803163	11-46545	Field_D	-	-	-	7500	2	415^	<2	340	340	<2	4100	730	90	280	29	2200	<0.1	2.7	-	-	-	-	0.03	0.007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S8	15/05/2012	12-23173_3037190	12-23173	Normal	-	-	-	8000	2	420	<2	340	340	<2	3900	550	94	340	33	1900	0.2	1.4	-	-	-	-	<0.01	0.011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S8	17/04/2013	13-19065_3441391	13-19065	Normal	-	-	-	7700	3	470	-	-	-	-	4200	640	110	320	30	2300	<0.1	2.7	-	-	-	-	0.01	0.011	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S170413	17/04/2013	13-19065_3441393	13-19065	Field_D	-	-	-	7900	3	470	-	-	-	-	4400	680	100	310	28	2100	<0.1	2.6	-	-	-	-	<0.01	0.008	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S208	17/04/2013	M13-Ap14190	376172	Interlab_D	-	-	-	7700	<5	480	-	-	-	-	4100	570	89	310	28	2200	<0.01	3.1	-	-	-	-	0.67	0.009	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.003	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S8	12/07/2013	13-31104_3541615	13-31104	Normal	-	-	-	8100	3	450	-	-	-	-	4100	540	94	330	31	2200	0.3	1.3	-	-	-	-	<0.01	0.012	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S8	15/10/2013	13-45346_3653042	13-45346	Normal	-	-	-	7800	2	430	-	-	-	-	4300	630	99	330	30	2100	<0.1	2.6	-	-	-	-	<0.01	0.004	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S8A	8/01/2014	14-03010_3750703	14-03010	Normal	-	-	-	8300	-	450	-	-	-	-	4100	670	110	350	34	2400	<0.1	2.6	-	-	-	-	0.03	0.021	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S8A	1/04/2014	14-15882_3850183	14-15882	Normal	<2	23	<0.1	7900	8	440	-	-	-	-	3400	560	99	330	34	2300	<0.1	1.9	<0.01	1.9	2.1	0.2	0.12	0.021	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S8A	7/07/2014	14-29641_3961610	14-29641	Normal	-	-	-	7800	2	440	-	-	-	-	4500	710	98	330	34	2200	<0.1	2.6	0.02	2.6	2.7	0.1	0.02	0.004	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S8A	7/10/2014	14-43525_4072495	14-43525	Normal	-	-	-	8600	5	330	-	-	-	-	4300	540	100	350	34	2200	<0.1	2.4	<0.01	2.4	2.4	<0.1	0.02	0.005	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
071014	7/10/2014	14-43525_4072501	14-43525	Field_D	-	-	-	8400	6	290	-	-	-	-	4200	580	100	340	33	2200	<0.1	2.4	<0.01	2.4	2.4	<0.1	0.02	0.008	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S208A	7/10/2014	M14-Oc06798	434833	Interlab_D	-	-	-	8600	13	430	-	-	-	-	4400	610	95	320	32	2100	<0.01	2.6	<0.02	2.6	3.3	0.7	<0.05	0.006	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.003	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001
S8A	21/01/2015	15-04837_4195791	15-04837	Normal	-	-	-	7200	3.9	440	-	-	-	-	4400	660	82	290	34	2600	<0.1	2.4	<0.01	2.4	2.5	0.1	<0.01	0.003	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S8A	28/04/2015	15-20348_4313232	15-20348	Normal	<2	<25	<0.1	7600	4	440	-	-	-	-	4400	680	99	340	33	2400	<0.1	2.5	<0.01	2.5	2.7	0.3	0.01	0.012	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S8A	23/07/2015	15-33543_4412327	15-33543	Normal	-	-	-	7200	3.8	440	-	-	-	-	4000	640	100	340	31	2300	<0.1	2.4	0.02	2.4	2.7	0.3	<0.01	0.01	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S9	2/11/2011	11-46545_2803162	11-46545	Normal	-	-	-	6500	12	1464^	<2	1200	1200	<2	3300	470	60	240	42	2100	6.6	0.03	-	-	-	-	0.86	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	14/05/2012	12-22913_3035434	12-22913	Normal	-	-	-	7200	18	900	<2	740	740	<2	3700	450	65	270	44	2200	7.5	0.01	-	-	-	-	0.43	2.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	15/01/2013	13-03903_3327428	13-03903	Normal	-	-	-	-	9	1000	-	-	-	-	3700	450	70	310	41	2400	6.1	<0.01	-	-	-	-	1.1	3.1	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S9	16/04/2013	13-18893_3440211	13-18893	Normal	-	-	-	7900	13	910	-	-	-	-	4000	520	79	310	46	2200	8.4	<0.01	-	-	-	-	0.28	2.5	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S9	11/07/2013	13-31027_3540743	13-31027	Normal	-	-	-	8000	8	1100	-	-	-	-	4000	480	81	340	48	2400	7.3	0.02	-	-	-	-	0.17	2.3	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S9	15/10/2013	13-45346_3653043	13-45346	Normal	-	-	-	8200	7	900	-	-	-	-	4400	560	89	330	45	2300	8.1	<0.01	-	-	-	-	0.34	2.8	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S209	15/10/2013	M13-Oc12519	396541	Interlab_D	-	-	-	7500	<5	1000	-	-	-	-	4500	500	89	380	42	2300	7.9	<0.02	-	-	-	-	0.56	3.3	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.003	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001
151013	15/10/2013	13-45346_3653045	13-45346	Field_D	-	-	-	8400	6	900	-	-	-	-	4100	530	89	330	45	2200	7.5	<0.01	-	-	-	-	0.33	2.8	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S9	7/01/2014	14-02697_3748911	14-02697	Normal	-	-	-	8300	-	840	-	-	-	-	4400	400	97	360	47	2500	8.1	0.02	-	-	-	-	0.33	2.9	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S209	7/01/2014	M14-Ja01360	405048	Interlab_D	-	-	-	8700	-	860	-	-	-	-	-	-	85	360	36	2400	9	<0.02	-	-	-	-	0.27	2.2	-	-	-	-	-	-	-	-	-	-	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	-	<0.00002
S070114	7/01/2014	14-02697_3748915	14-02697	Field_D	-	-	-	8500	-	860	-	-	-	-	4700	550	90	370	47	2500	8.7	<0.01	-	-	-	-	0.34	2.9	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S9	1/04/2014	14-15882_3850184	14-15882	Normal	<2	32	<0.1	8600	19	810	-	-	-	-	3300	860	88	360	49	2400	8.2	<0.01	<0.01	<0.01	8.2	8.2	0.29	0.39	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S9	3/07/2014	14-29400_3958869	14-29400	Normal	-	-	-	8200	8	1000	-	-	-	-	4500	630	85	350	48	2400	8.6	<0.01	<0.01	<0.01	8.6	8.6	0.14	2.7	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S9	7/10/2014	14-43525_4072496	14-43525	Normal	-	-	-	9200	17	410	-	-	-	-	4700	510	95	380	48	2400	6.9	<0.01	<0.01	<0.01	7.5	7.5	0.22	2.7	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S9	14/01/2015	15-03810_4186955	15-03810	Normal	-	-	-	7600	6.4	810	<2	670	670	<2	5000	630	79	380	42	2400	7.6	<0.01	<0.01	<0.01	7.6	7.6	0.18	3.1	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
140115A	14/01/2015	15-03810_4186954	15-03810	Field_D	-	-	-	8200	6.8	810	<2	670	670	<2	4800	630	93	390	47	2500	7.6	<0.01	<0.01	<0.01	9.3	9.3	0.18	3	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S209	14/01/2015	M15-Ja05179	444481	Interlab_D	-	-	-	9600	16	-	-	-	700	<10	4900	610	100	380	42	2600	6.9	<0.02	<0.02	-	7.5	7.5	0.17	3	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.003	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001
S9	23/04/2015	15-19781_4307983	15-19781	Normal	2	<25	<0.1	8400	6	780	<2	640	640	<2	5100	650	83	380	50	2600	6.8	0.05	<0.01	0.05	7.7	7.7	0.06	2.9	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S9	21/07/2015	15-33269_4410001	15-33269	Normal	-	-	-	7600	4.1	790	-	-	-	-	5000	640	92	370	40	2700	6.4	0.04	0.01	0.05	6.5	6.4	0.09	2.8	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S10	15/05/2012	12-23173_3037191	12-23173	Normal	-	-	-	6000	13	980	<2	810	810	<2	2900	440	49	200	29	2000	0.2	0.08	-	-	-	-	0.06	0.66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S210	15/05/2012	M12-My13990	337641	Interlab_D	-	-	-	6200	9.8	1100	-	-	-	-	3100	480	50	180	23	1900	0.05	<0.02	-	-	-	-	0.31	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S150512	15/05/2012	12-23173_3037193	12-23173	Field_D	-	-	-	6000	11	1000	<2	820	820	<2	2200	370	56	210	29	1800	0.1	0.05	-	-	-	-	0.05	0.65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S10	15/01/2013	13-03903_3327429	13-03903	Normal	-	-	-	-	8	1100	-	-	-	-	3400	490	65	240	29	2500	0.2	<0.01	-	-	-	-	1	1.2	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S10	19/04/2013	13-19708_3447148	13-19708	Normal	-	-	-	7400	14	1100	-	-	-	-	3900	550	71	270	33	2400	<0.1	0.04	-	-	-	-	0.7	1.1	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S10	11/07/2013	13-31027_3540744	13-31027	Normal	-	-	-	7800	6	1000	-	-	-	-	3700	480	74	270	33	2400	0.2	0.02	-	-	-	-	0.77	0.98	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S10	15/10/2013	13-45346_3653044	13-45346	Normal	-	-	-	7700	6	960	-	-	-	-	3900	550	73	250	31	2200	0.2	<0.01	-	-	-	-	0.82	0.88	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S10A	9/01/2014	14-03142_3752006	14-03142	Normal	-	-	-	7700	-	1100	-	-	-	-	3600	410	78	280	33	2300	0.2	<0.01	-	-	-	-	0.73	1.1	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S10A	2/04/2014	14-16107_3852468	14-16107	Normal	<2	27	1.4	7900	4	1000	-	-	-	-	3900	570	81	290	34	2300	0.4	<0.01	<0.01	<0.01	0.4	0.4	1.4	0.99	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S10A	3/07/2014	14-29400_3958870	14-29400	Normal	-	-	-	7400	11	1000	-	-	-	-	3900	600	72	280	35	2300	0.2	<0.01	<0.01	<0.01	0.5	0.5	2.7	0.95	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S10A	7/10/2014	14-43525_4072497	14-43525	Normal	-	-	-	8200	14	420	-	-	-	-	4200	480	78	280	34	2400	0.1	<0.01	<0.01	<0.01	0.3	0.3	1.7	0.93	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001

Project 1192
Client Wyndham City Council
Site Werribee

Table J1 - Groundwater Results

					Inorganics					Anions							Cations				Nitrogen						Metals		MAH									PAH							
					BOD	COD	Ferrous Iron	TDS	TOC	Alkalinity (Bicarbonate as HCO3)	Alkalinity (Hydroxide) as CaCO3	Alkalinity (total) as CaCO3	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Chloride	Sulphate	Calcium	Magnesium	Potassium	Sodium	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Nitrogen (Total Oxidised)	Nitrogen (Total)	TKN (as N)	Iron	Manganese	Benzene	Ethylbenzene	Toluene	Xylene (o)	Xylene (m & p)	1,2,4-trimethylbenzene	Isopropylbenzene	Styrene	Xylene Total	3-methylcholanthrene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL					2	5	0.05	5	1	2	2	2	2	2	1	1	0.1	0.1	0.1	0.1	0.01	0.01	0.01	0.01	0.1	0.1	0.01	0.001	0.001	0.001	0.001			0.001	0.001	0.001	0.003						0.000002		
ANZECC 2000 MW 90%																					1.2				0.3 (c)			0.080(b)	0.9	0.18 (b)	0.08 (b)						0.075 (b)								
PCR_ADWG 2011												*			*	*				*	*	112.9					*	5**	0.001	0.3	0.8			0.015 (a)		0.03	0.6						0.00001		
ANZECC 2000 Stockwater								2000								1000	1000	600				90.29							0.001	0.3	0.8			0.015 (a)		0.03	0.6						0.00001		
Field ID	**Sample Date**	**SampleCode**	**Lab No.**	**Sample Type**																																									
S10A	21/01/2015	15-04837_4195792	15-04837	Normal	-	-	-	7300	5.7	940	-	-	-	-	4200	590	81	290	35	2700	<0.1	0.03	<0.01	0.03	<0.1	<0.1	3	1	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S10A	27/04/2015	15-20278_4312737	15-20278	Normal	<2	<25	2.4	7100	6.7	970	-	-	-	-	3800	650	86	310	34	2500	0.1	<0.01	<0.01	<0.01	0.4	0.4	2.4	1	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S10A	22/07/2015	15-33431_4411244	15-33431	Normal	-	-	-	7500	5.4	950	-	-	-	-	4400	610	79	290	31	2500	<0.1	<0.01	<0.01	<0.01	0.4	0.4	3.4	1.1	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S11	7/11/2011	11-47070_2807632	11-47070	Normal	-	-	-	7300	68	1464^	<2	1200	1200	<2	3100	380	50	280	35	2400	0.8	0.25	-	-	-	-	4.1	0.74	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	15/05/2012	12-23173_3037192	12-23173	Normal	-	-	-	6700	29	420	<2	350	350	<2	3300	340	47	320	38	2000	0.5	0.12	-	-	-	-	5.6	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	16/01/2013	13-04504_3330649	13-04504	Normal	-	-	-	-	28	1800	-	-	-	-	3300	170	34	260	30	2200	1.1	0.1	-	-	-	-	6.8	1.1	0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S11	16/04/2013	13-18893_3440212	13-18893	Normal	-	-	-	6400	32	1600	-	-	-	-	3100	270	34	250	33	2100	1.2	<0.01	-	-	-	-	7.3	0.94	0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S11	11/07/2013	13-31027_3540745	13-31027	Normal	-	-	-	6500	8	1600	-	-	-	-	2800	330	35	250	32	2100	0.8	0.02	-	-	-	-	6.6	0.7	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S11	17/10/2013	13-45840_3656292	13-45840	Normal	-	-	-	6500	23	1400	-	-	-	-	3000	300	38	240	32	2000	0.7	0.19	-	-	-	-	6.9	0.85	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S11	8/01/2014	14-03010_3750704	14-03010	Normal	-	-	-	6300	-	1400	-	-	-	-	2900	320	35	260	34	2200	1.4	0.05	-	-	-	-	7.2	0.92	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S11	3/04/2014	14-16283_3853876	14-16283	Normal	2	34	7.3	6700	16	1300	-	-	-	-	3200	490	39	260	33	2000	0.6	0.13	<0.01	0.13	1.1	0.9	7.3	0.77	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S11	3/07/2014	14-29400_3958871	14-29400	Normal	-	-	-	6400	18	1300	-	-	-	-	2900	340	39	240	34	2100	0.4	0.15	<0.05	0.15	1	0.8	6.3	0.71	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S11	8/10/2014	14-43773_4073887	14-43773	Normal	-	-	-	6600	22	1500	-	-	-	-	3100	330	41	270	34	2100	0.4	0.15	<0.01	0.16	0.9	0.7	6.7	0.79	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S11	14/01/2015	15-03810_4186957	15-03810	Normal	-	-	-	6000	8	1300	<2	1100	1100	<2	3100	320	33	240	28	2000	0.6	0.14	<0.01	0.14	1.5	1.3	4.7	0.75	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S11	27/04/2015	15-20278_4312738	15-20278	Normal	<2	14	2.7	5800	7.7	1200	-	-	-	-	3100	370	43	220	30	2000	0.4	0.18	<0.01	0.18	1	0.8	2.9	0.54	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S11	21/07/2015	15-33269_4410002	15-33269	Normal	-	-	-	5700	5.3	1200	-	-	-	-	3400	440	43	220	29	2000	0.7	0.25	0.03	0.29	1.4	1.2	1.5	0.44	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S12	3/11/2011	11-46815_2804830	11-46815	Normal	-	-	-	4400	4	439^	<2	360	360	<2	2200	310	70	180	19	1200	<0.1	1.9	-	-	-	-	0.01	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	16/05/2012	12-23337_3038592	12-23337	Normal	-	-	-	4800	6	440	<2	360	360	<2	2400	310	75	190	19	1400	<0.1	0.95	-	-	-	-	<0.01	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	16/01/2013	13-04504_3330650	13-04504	Normal	-	-	-	-	4	470	-	-	-	-	2400	290	74	200	22	1300	<0.1	0.74	-	-	-	-	<0.01	0.005	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S12	17/04/2013	13-19065_3441392	13-19065	Normal	-	-	-	4600	3	450	-	-	-	-	2600	340	80	210	20	1400	0.1	2.2	-	-	-	-	0.01	0.005	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S12	9/07/2013	13-30796_3538302	13-30796	Normal	-	-	-	4600	5	470	-	-	-	-	2500	300	78	210	21	1400	<0.1	0.56	-	-	-	-	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S12	17/10/2013	13-45840_3656293	13-45840	Normal	-	-	-	4600	2	450	-	-	-	-	2500	280	72	190	20	1200	<0.1	2.2	-	-	-	-	0.03	0.003	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S12	6/01/2014	14-02614_3748069	14-02614	Normal	-	-	-	4600	-	450	-	-	-	-	2600	310	72	190	19	1300	<0.1	1.9	-	-	-	-	0.04	0.009	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S12	2/04/2014	14-16107_3852469	14-16107	Normal	<2	11	<0.1	4600	1	430	-	-	-	-	2400	310	77	210	20	1300	<0.1	2.1	<0.01	2.1	2.1	<0.1	0.03	0.007	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S12	7/07/2014	14-29641_3961611	14-29641	Normal	-	-	-	4100	2	440	-	-	-	-	2500	350	72	190	21	1200	<0.1	2.2	<0.01	2.2	2.3	0.1	0.02	0.01	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S12	8/10/2014	14-43773_4073888	14-43773	Normal	-	-	-	4600	5	440	-	-	-	-	2300	310	83	220	20	1300	0.2	2.2	<0.01	2.2	2.4	0.2	0.01	0.004	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S12	15/01/2015	15-03991_4188342	15-03991	Normal	-	-	-	3800	2	410	-	-	-	-	2400	320	73	190	18	1300	<0.1	2.2	<0.01	2.2	2.2	<0.1	<0.01	0.017	<0.001	<0.001	<0.001			<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S12	23/04/2015	15-19781_4307984	15-19781	Normal	<2	<10	<0.1	4200	1.8	440	<2	360	360	<2	2600	320	67	190	21	1300	<0.1	2.3	<0.01	2.3	2.6	0.3	<0.01	0.002	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S12	22/07/2015	15-33431_4411245	15-33431	Normal	-	-	-	4100	0.9	440	-	-	-	-	2100	310	68	180	18	1200	<0.1	2.1	<0.01	2.1	2.2	0.1	<0.01	0.002	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S13	4/11/2011	11-46925_2806228	11-46925	Normal	-	-	-	9500	2	415^	-	-	340	-	4900	830	91	400	38	2700	<0.1	2.7	-	-	-	-	0.02	0.019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	17/05/2012	12-23644_3041939	12-23644	Normal	-	-	-	9800	3	410	<2	340	340	<2	5600	880	93	420	44	2600	<0.1	2.6	-	-	-	-	<0.01	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	14/01/2013	13-03801_3326693	13-03801	Normal	-	-	-	-	2	410	-	-	-	-	5000	710	92	420	39	2500	<0.1	1.3	-	-	-	-	0.02	0.019	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S13	19/04/2013	13-19708_3447149	13-19708	Normal	-	-	-	9300	2	410	-	-	-	-	5300	800	93	430	39	2600	<0.1	2.7	-	-	-	-	0.02	0.024	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S13	12/07/2013	13-31104_3541616	13-31104	Normal	-	-	-	10,000	2	410	-	-	-	-	5300	720	95	410	39	2700	0.1	0.96	-	-	-	-	<0.01	0.004	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S13	16/10/2013	13-45540_3654440	13-45540	Normal	-	-	-	9500	3	390	-	-	-	-	5200	850	96	410	39	2500	<0.1	2.8	-	-	-	-	<0.01	0.004	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S13	6/01/2014	14-02614_3748070	14-02614	Normal	-	-	-	9300	-	410	-	-	-	-	5000	800	96	410	38	2700	0.1	2.8	-	-	-	-	0.03	0.005	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S13	31/03/2014	14-15737_3848879	14-15737	Normal	4	30	<0.1	10,000	7	400	-	-	-	-	4600	790	93	400	39	2500	<0.1	2.7	<0.01	2.7	2.8	0.1	<0.01	0.016	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S13	4/07/2014	14-29468_3960074	14-29468	Normal	-	-	-	9600	2	420	-	-	-	-	5500	830	93	420	39	2600	<0.1	2.6	<0.01	-	2.8	0.2	0.03	0.024	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S13	6/10/2014	14-43373_4071007	14-43373	Normal	-	-	-	10,000	6	230	-	-	-	-	5000	670	90	380	38	2600	<0.1	2.8	<0.01	2.8	2.8	<0.1	<0.01	0.002	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S13	12/01/2015	15-03259_4183490	15-03259	Normal	-	-	-	8600	3.9	410	-	-	-	-	4900	850	98	420	40	2600	<0.1	2.9	<0.01	2.9	2.9	<0.1	0.02	0.002	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S13	22/04/2015	15-19660_4306874	15-19660	Normal	<2	<25	<0.1	8600	4.4	420	-	-	-	-	5700	830	84	420	39	2800	<0.1	2.9	<0.01	2.9	3.1	0.2	0.01	0.011	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S13	20/07/2015	15-33119_4408706	15-33119	Normal	-	-	-	8400	1.4	410	-	-	-	-	5000	690	82	370	32	2400	<0.1	2.8	<0.01	2.8	2.8	<0.1	<0.01	0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S14	31/10/2011	11-46411_2802040	11-46411	Normal	-	-	-	5700	4	512^	<2	420	420	<2	3000	510	60	210	26	1900	<0.1	1.2	-	-	-	-	<0.01	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	16/05/2012	12-23337_3038593	12-23337	Normal	-	-	-	6200	8	510	<2	420	420	<2	3100	440	68	260	34	2100	<0.1	3.2	-	-	-	-	<0.01	0.003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	17/01/2013	13-04742_3332864	13-04742	Normal	-	-	-	-	5	300	-	-	-	-	2900	420	58	200	25	1700	0.1	2.7	-	-	-	-	0.01	0.004	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S14	18/04/2013	13-19313_3442830	13-19313	Normal	-	-	-	5700	3	550	-	-	-	-	3200	450	57	210	26	1600	<0.1	4.3	-	-	-	-	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S14	9/07/2013	13-30796_3538303	13-30796	Normal	-	-	-	5300	7	550	-	-	-	-	2900	420	63	220	27	1800	<0.1	1.8	-	-	-	-	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S14	14/10/2013	13-45140_3651478	13-45140	Normal	-	-	-	5700	4	550	-	-	-	-	3100	460	64	220	27	1700	<0.1	4.4	-	-	-	-	<0.01	0.002	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S14	7/01/2014	14-02697_3748912	14-02697	Normal	-	-	-	5900	-	540	-	-	-	-	3200	430	64	220	27	1800	0.2	4.6	-	-	-	-	0.02	0.001	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S14	2/04/2014	14-16107_3852470	14-16107	Normal	<2	18	<0.1	6100	2	520	-	-	-	-	3100	460	64	230	29	1900	<0.1	4	<0.01	4	4.1	0.1	0.04	0.023	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S14	7/07/2014	14-29641_3961612	14-29641	Normal	-	-	-	5900	3	540	-	-	-	-	3100	510	64	220	29	1800	<0.1	4.3	<0.01	4.3	4.4	0.1	0.01	0.017	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S14	9/10/2014	14-44165_4076403	14-44165	Normal	-	-	-	6300	9	540	-	-	-	-	3200	440	66	230	30	1900	<0.1	4.6	<0.01	4.6	4.7	0.1	0.02	0.002	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S14	15/01/2015	15-03991_4188343	15-03991	Normal	-	-	-	2900	3.1	280	-	-	-	-	3100	480	68	220	27	1800	<0.1	3.8	<0.01	3.8	3.9	0.1	<0.01	0.004	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S14	28/04/2015	15-20348_4313233	15-20348	Normal	<2	<25	<0.1	6100	3.5	540	-	-	-	-	3500	530	66	230	30	1900	<0.1	4.1	<0.01	4.1	4.4	0.3	<0.01	0.002	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S14	20/07/2015	15-33119_4408707	15-33119	Normal	-	-	-	5600	1.6	530	-	-	-	-	3200	410	64	210	24	1600	<0.1	3.9	<0.01	3.9	4	0.1	<0.01	0.005	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S15	31/10/2011	11-46411_2802041	11-46411	Normal	-	-	-	8100	4	732^	<2	600	600	<2	4200	210	82	310	34	2700	<0.1	0.7	-	-	-	-	<0.01	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	16/05/2012	12-23337_3038594	12-23337	Normal	-	-	-	8900	13	740	<2	610	610	<2	3600	500	91	390	42	2600	<0.1	1.1	-	-	-	-	<0.01	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	17/01/2013	13-04742_3332865	13-04742	Normal	-	-	-	-	7	180	-	-	-	-	2600	520	39	140	21	1600	0.1	0.85	-	-	-	-	0.01	0.003	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S15	18/04/2013	13-19313_3442831	13-19313	Normal	-	-	-	5500	4	430	-	-	-	-	3100	540	38	140	21	1500	0.1	2.1	-	-	-	-	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S15	9/07/2013	13-30796_3538304	13-30796	Normal	-	-	-	6600	6	550	-	-	-	-	3400	630	65	210	28	2100	<0.1	2.3	-	-	-	-	0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S15	14/10/2013	13-45140_3651479	13-45140	Normal	-	-	-	3100	4	300	-	-	-	-	1600	300	15	49	14	1000	<0.1	2.5	-	-	-	-	0.02	0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S15	7/01/2014	14-02697_3748913	14-02697	Normal	-	-	-	2300	-	270	-	-	-	-	1200	240	10	32	11	850	0.3	1.2	-	-	-	-	0.02	<0.001	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S15	2/04/2014	14-16107_3852471	14-16107	Normal	<2	18	<0.1	5200	3	450	-	-	-	-	2700	410	42	150	24	1700	<0.1	1.7	<0.01	1.7	1.8	0.1	<0.01	0.003	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S15	8/07/2014	14-29641_3961615	14-29641	Normal	-	-	-	5700	3	550	-	-	-	-	3200	510	57	200	27	1900	<0.1	1.9	<0.01	1.9	2.1	0.2	<0.01	0.003	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S15	9/10/2014	14-44165_4076404	14-44165	Normal	-	-	-	7300	9	590	-	-	-	-	3800	530	69	230	30	2200	<0.1	1.8	<0.01	1.8	1.8	<0.1	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S15	15/01/2015	15-03991_4188344	15-03991	Normal	-	-	-	3500	4	370	-	-	-	-	2200	430	31	100	17	1500	<0.1	1.3	<0.01	1.3	1.5	0.2	0.02	0.002	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S15	28/04/2015	15-20348_4313234	15-20348	Normal	<2	16	<0.1	4300	3.9	460	-	-	-	-	2500	420	33	120	19	1500	<0.1	1.1	0.01	1.1	1.4	0.3	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S15	22/07/2015	15-33431_4411246	15-33431	Normal	-	-	-	3900	1.8	450	-	-	-	-	2300	360	26	89	15	1300	<0.1	1.6	<0.01	1.6	1.8	0.1	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S16	31/10/2011	11-46411_2802042	11-46411	Normal	-	-	-	6200	4	622^	<2	510	510	<2	3200	720	72	220	28	2100	0.2	0.17	-	-	-	-	<0.01	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S16	16/05/2012	12-23337_3038595	12-23337	Normal	-	-	-	6500	13	650	<2	530	530	<2	2800	360	74	290	37	2100	0.2	0.04	-	-	-	-	<0.01	0.003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S16	16/01/2013	13-04504_3330651	13-04504	Normal	-	-	-	-	8	700	-	-	-	-	3600	480	83	280	31	2300	0.2	0.08	-	-	-	-	<0.01	0.008	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S16	18/04/2013	13-19313_3442832	13-19313	Normal	-	-	-	7600	5	720	-	-	-	-	4100	580	79	270	31	2000	0.3	0.19	-	-	-	-	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S16	8/07/2013	13-30645_3536915	13-30645	Normal	-	-	-	7100	9	720	-	-	-	-	3900	490	91	300	33	2100	0.4	0.02	-	-	-	-	0.06	-	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S16	14/10/2013	13-45140_3651480	13-45140	Normal	-	-	-	7600	7	690	-	-	-	-	4100	580	95	300	34	2200	0.3	0.03	-	-	-	-	<0.01	0.004	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S16	7/01/2014	14-02697_3748914	14-02697	Normal	-	-	-	7300	-	690	-	-	-	-	4300	530	94	320	34	2200	0.5	0.04	-	-	-	-	0.02	0.005	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S16	3/04/2014	14-16283_3853877	14-16283	Normal	<2	32	<0.1	7800	3	690	-	-	-	-	4400	690	99	340	34	2100	0.3	0.03	<0.01	0.03	0.6	0.5	0.07	0.012	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001

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Project 1192
Client Wyndham City Council
Site Werribee

Table J1 - Groundwater Results

					Inorganics					Anions							Cations				Nitrogen						Metals		MAH									PAH							
					BOD	COD	Ferrous Iron	TDS	TOC	Alkalinity (Bicarbonate as HCO3)	Alkalinity (Hydroxide) as CaCO3	Alkalinity (total) as CaCO3	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Chloride	Sulphate	Calcium	Magnesium	Potassium	Sodium	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Nitrogen (Total Oxidised)	Nitrogen (Total)	TKN (as N)	Iron	Manganese	Benzene	Ethylbenzene	Toluene	Xylene (o)	Xylene (m & p)	1,2,4-trimethylbenzene	Isopropylbenzene	Styrene	Xylene Total	3-methylcholanthrene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL					2	5	0.05	5	1	2	2	2	2	2	1	1	0.1	0.1	0.1	0.1	0.01	0.01	0.01	0.01	0.1	0.1	0.01	0.001	0.001	0.001	0.001			0.001	0.001	0.001	0.003						0.000002		
ANZECC 2000 MW 90%																					1.2				0.3 (c)			0.080(b)	0.9	0.18 (b)	0.08 (b)						0.075 (b)								
PCR_ADWG 2011												*			*	*				*	*	112.9					*	5**	0.001	0.3	0.8			0.015 (a)		0.03	0.6						0.00001		
ANZECC 2000 Stockwater								2000								1000	1000	600				90.29							0.001	0.3	0.8			0.015 (a)		0.03	0.6						0.00001		
Field ID	Sample Date	SampleCode	Lab No.	Sample Type																																									
S16	7/07/2014	14-29641_3961613	14-29641	Normal	-	-	-	7600	4	700	-	-	-	-	4200	620	95	330	37	2200	0.3	0.02	<0.01	0.02	0.6	0.6	<0.01	0.011	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S16	9/10/2014	14-44165_4076405	14-44165	Normal	-	-	-	8300	12	660	-	-	-	-	4400	570	100	360	38	2400	0.3	<0.01	<0.01	<0.01	0.5	0.5	<0.01	0.005	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S16	15/01/2015	15-03991_4188345	15-03991	Normal	-	-	-	5800	4.7	520	-	-	-	-	4400	650	99	330	34	2400	<0.1	0.03	<0.01	0.03	0.5	0.5	0.11	0.013	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S16	28/04/2015	15-20348_4313235	15-20348	Normal	<2	29	<0.1	7800	5.8	660	-	-	-	-	4000	650	100	340	36	2300	0.2	<0.01	<0.01	<0.01	0.4	0.4	<0.01	0.005	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
S16	21/07/2015	15-33269_4410003	15-33269	Normal	-	-	-	7300	3.3	630	-	-	-	-	4500	600	100	310	32	2200	<0.1	0.04	<0.01	0.05	0.5	0.5	<0.01	0.019	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN311011	31/10/2011	11-46411_2802043	11-46411	Rinsate	-	-	-	-	-	-	<2	4	4	<2	<1	<1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	<0.01	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN021111	2/11/2011	11-46545_2803164	11-46545	Rinsate	-	-	-	<5	<1	-	<2	3	3	<2	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	-	-	-	-	<0.01	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN031111	3/11/2011	11-46815_2804831	11-46815	Rinsate	-	-	-	<5	<1	-	<2	3	3	<2	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	-	-	-	-	<0.01	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN041111	4/11/2011	11-46925_2806229	11-46925	Rinsate	-	-	-	<5	<1	-	-	-	3	-	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	-	-	-	-	<0.01	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN071111	7/11/2011	11-47070_2807633	11-47070	Rinsate	-	-	-	<5	<1	-	<2	3	3	<2	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	-	-	-	-	<0.01	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN140512	14/05/2012	12-22913_3035435	12-22913	Rinsate	-	-	-	<5	<1	3	<2	2	2	<2	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	-	-	-	-	<0.01	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN150512	15/05/2012	12-23173_3037194	12-23173	Rinsate	-	-	-	-	<1	3	<2	2	2	<2	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	-	-	-	-	<0.01	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN160512	16/05/2012	12-23337_3038596	12-23337	Rinsate	-	-	-	-	<1	2	<2	2	2	<2	<1	<1	<0.1	<0.1	<0.1	0.2	<0.1	<0.01	-	-	-	-	<0.01	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN170512	17/05/2012	12-23644_3041940	12-23644	Rinsate	-	-	-	-	<1	3	<2	2	2	<2	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	-	-	-	-	<0.01	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN140113	14/01/2013	13-03801_3326694	13-03801	Rinsate	-	-	-	-	<1	2	-	-	-	-	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	-	-	-	-	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN150113	15/01/2013	13-03903_3327430	13-03903	Rinsate	-	-	-	-	<1	2	-	-	-	-	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	-	-	-	-	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN160113	16/01/2013	13-04504_3330653	13-04504	Rinsate	-	-	-	-	<1	3	-	-	-	-	<1	<1	<0.1	<0.1	0.3	0.3	<0.1	<0.01	-	-	-	-	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN170113	17/01/2013	13-04742_3332866	13-04742	Rinsate	-	-	-	-	<1	3	-	-	-	-	<1	<1	<0.1	<0.1	<0.1	0.2	<0.1	<0.01	-	-	-	-	0.04	0.002	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN160413	16/04/2013	13-18893_3440213	13-18893	Rinsate	-	-	-	<5	<1	2	-	-	-	-	<1	<1	0.2	<0.1	<0.1	0.4	<0.1	<0.01	-	-	-	-	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN170413	17/04/2013	13-19065_3441394	13-19065	Rinsate	-	-	-	<5	<1	2	-	-	-	-	<1	<1	0.3	<0.1	<0.1	0.7	<0.1	<0.01	-	-	-	-	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN180413	18/04/2013	13-19313_3442833	13-19313	Rinsate	-	-	-	<5	<1	2	-	-	-	-	<1	<1	0.2	<0.1	<0.1	0.3	<0.1	<0.01	-	-	-	-	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN190413	19/04/2013	13-19708_3447150	13-19708	Rinsate	-	-	-	<5	<1	3	-	-	-	-	<1	<1	0.2	<0.1	<0.1	0.4	<0.1	<0.01	-	-	-	-	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN080713	8/07/2013	13-30645_3536916	13-30645	Rinsate	-	-	-	<5	<1	4	-	-	-	-	<1	<1	0.1	<0.1	0.4	0.7	<0.1	<0.01	-	-	-	-	0.03	-	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN090713	9/07/2013	13-30796_3538305	13-30796	Rinsate	-	-	-	<5	<1	3	-	-	-	-	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	-	-	-	-	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN110713	11/07/2013	13-31027_3540746	13-31027	Rinsate	-	-	-	<5	<1	2	-	-	-	-	<1	<1	0.1	<0.1	0.4	0.5	<0.1	<0.01	-	-	-	-	0.03	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN120713	12/07/2013	13-31104_3541618	13-31104	Rinsate	-	-	-	5	<1	3	-	-	-	-	<1	<1	0.3	0.4	1.3	2.9	<0.1	<0.01	-	-	-	-	0.11	0.013	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN150713	15/07/2013	13-31496_3544458	13-31496	Rinsate	-	-	-	<5	<1	3	-	-	-	-	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	-	-	-	-	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN141013	14/10/2013	13-45140_3651481	13-45140	Rinsate	-	-	-	<5	<1	2	-	-	-	-	<1	<1	0.2	<0.1	0.3	0.8	<0.1	<0.01	-	-	-	-	0.04	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN151013	15/10/2013	13-45346_3653046	13-45346	Rinsate	-	-	-	5	1	4	-	-	-	-	<1	<1	0.2	0.1	0.8	1.9	<0.1	<0.01	-	-	-	-	0.04	0.005	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN161013	16/10/2013	13-45540_3654442	13-45540	Rinsate	-	-	-	<5	<1	3	-	-	-	-	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	-	-	-	-	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN171013	17/10/2013	13-45840_3656294	13-45840	Rinsate	-	-	-	<5	<1	4	-	-	-	-	<1	<1	0.1	<0.1	0.4	0.5	<0.1	<0.01	-	-	-	-	0.02	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN060114M	6/01/2014	14-02614_3748072	14-02614	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN060114P	6/01/2014	14-02614_3748071	14-02614	Rinsate	-	-	-	5	-	4	-	-	-	-	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	-	-	-	-	<0.01	<0.001	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN070114M	7/01/2014	14-02697_3748917	14-02697	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN070114P	7/01/2014	14-02697_3748916	14-02697	Rinsate	-	-	-	<5	-	5	-	-	-	-	<1	<1	0.1	<0.1	<0.1	0.5	<0.1	<0.01	-	-	-	-	<0.01	<0.001	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN080114M	8/01/2014	14-03010_3750705	14-03010	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN080114P	8/01/2014	14-03010_3750706	14-03010	Rinsate	-	-	-	<5	-	4	-	-	-	-	<1	<1	0.1	<0.1	<0.1	0.4	<0.1	<0.01	-	-	-	-	<0.01	<0.001	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN090114M	9/01/2014	14-03142_3752008	14-03142	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN090114P	9/01/2014	14-03142_3752007	14-03142	Rinsate	-	-	-	<5	-	2	-	-	-	-	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	-	-	-	-	<0.01	<0.001	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN310314M	31/03/2014	14-15737_3848881	14-15737	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN310314P	31/03/2014	14-15737_3848880	14-15737	Rinsate	4	<5	<0.1	<5	<1	<2	-	-	-	-	<1	<1	0.3	<0.1	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<0.01	<0.001	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN010414M	1/04/2014	14-15882_3850186	14-15882	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN010414P	1/04/2014	14-15882_3850185	14-15882	Rinsate	-	-	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	-	-	-	-	-	-	-
RIN020414M	2/04/2014	14-16107_3852474	14-16107	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN020414P	2/04/2014	14-16107_3852473	14-16107	Rinsate	<2	<5	<0.1	<5	<1	4	-	-	-	-	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RINM030414	3/04/2014	14-16283_3853879	14-16283	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RINP030414	3/04/2014	14-16283_3853878	14-16283	Rinsate	<2	<5	<0.1	<5	<1	<2	-	-	-	-	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN020714	2/07/2014	14-29185_3957498	14-29185	Rinsate	-	-	-	<5	<1	3	-	-	-	-	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN030714	3/07/2014	14-29400_3958873	14-29400	Rinsate	-	-	-	<5	<1	<2	-	-	-	-	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN040714	4/07/2014	14-29468_3960075	14-29468	Rinsate	-	-	-	<5	<1	3	-	-	-	-	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.01	-	<0.1	<0.1	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN070714	7/07/2014	14-29641_3961614	14-29641	Rinsate	-	-	-	<5	<1	3	-	-	-	-	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN080714	8/07/2014	14-29641_3961616	14-29641	Rinsate	-	-	-	<5	<1	<2	-	-	-	-	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN061014	6/10/2014	14-43373_4071008	14-43373	Rinsate	-	-	-	<5	<1	<2	-	-	-	-	<1	<1	<0.1	<0.1	0.2	0.4	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN071014	7/10/2014	14-43525_4072500	14-43525	Rinsate	-	-	-	-	<1	<2	-	-	-	-	<1	<1	<0.1	<0.1	0.2	0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	0.02	0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN081014	8/10/2014	14-43773_4073889	14-43773	Rinsate	-	-	-	-	<1	3	-	-	-	-	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN091014	9/10/2014	14-44165_4076406	14-44165	Rinsate	-	-	-	-	<1	3	-	-	-	-	<1	<1	<1	<1	<1	<1	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN120115	12/01/2015	15-03259_4183491	15-03259	Rinsate	-	-	-	-	<0.5	<2	-	-	-	-	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN130115	13/01/2015	15-03411_4184552	15-03411	Rinsate	-	-	-	-	<0.5	3	-	-	-	-	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN140115	14/01/2015	15-03810_4186952	15-03810	Rinsate	-	-	-	<5	<0.5	<2	<2	<2	<2	<2	<1	<1	<0.1	<0.1	0.2	0.1	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN150115	15/01/2015	15-03991_4188346	15-03991	Rinsate	-	-	-	-	<0.5	<2	-	-	-	-	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN210115	21/01/2015	15-04837_4195793	15-04837	Rinsate	-	-	-	-	<0.5	<2	-	-	-	-	<1	<1	0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN220415	22/04/2015	15-19660_4306875	15-19660	Rinsate	-	-	-	-	<0.5	5	-	-	-	-	<1	<1	<0.1	<0.1	<0.1	0.2	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN230415	23/04/2015	15-19781_4307986	15-19781	Rinsate	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN270415	27/04/2015	15-20278_4312739	15-20278	Rinsate	-	-	-	-	<0.5	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN280415	28/04/2015	15-20348_4313236	15-20348	Rinsate	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN200715	20/07/2015	15-33119_4408709	15-33119	Rinsate	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN210715	21/07/2015	15-33269_4410004	15-33269	Rinsate	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN220715	22/07/2015	15-33431_4411247	15-33431	Rinsate	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001
RIN230715	23/07/2015	15-33543_4412329	15-33543	Trip_B	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<0.01	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.003	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.0001	<0.0001

(a) US EPA Regional Screening Levels (RSL) 2014. Criteria for Tap Water (TR: 1E-06 and THQ; 1.0)
(b) Low reliability values (95%) level of protection
(c) As adopted by AEA (2013) Audit Report (based on Table 3.3.2 of ANZECC
(d) WHO 2011 Drinking Water Guidelines - Provisional
(e) Low reliability trigger values (ANZECC 2000) generally Marine low reliablity
^ Converted from Alkalinity (Bicarbonate as CaCO3) by a factor of 1.22
* Considered to be overly conservative to apply drinking water criteria based on aesthetics to assess primary contact recreation values. No health based criteria available. Consequently no criteria applied.

** Adopted from health based drinking water criteria of 0.5mg/L, multiplied by a factor of 10 to account for incidental ingestion.

Table J1 - Groundwater Results

					PAH											Chlorinated Hydrocarbons																				
					Benzo(k)fluoranthene	Chrysene	Benzo[b+j]fluoranthene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	PAHs (Sum of total)	1,2,4-trichlorobenzene	1,1,1-trichloroethane	Hexachlorobutadiene	1,2,3,4-tetrachlorobenzene	1,2,3,5-Tetrachlorobenzene	1,2,3-trichlorobenzene	1,2,4,5-tetrachlorobenzene	1,3,5-Trichlorobenzene	1,3,5-trimethylbenzene	2-chloronaphthalene	Benzal Chloride	Benzotrichloride	Benzyl chloride	Bromomethane	Chloroethane	Chloromethane	Hexachlorocyclopentadiene	Hexachloroethane	Iodomethane	Pentachlorobenzene	Trichlorofluoromethane
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL																0.00001	0.001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001		0.001	0.00001	0.00001	0.00001				0.00001	0.00001		0.00001	0.001
ANZECC 2000 MW 90%												0.09				0.14																				
PCR_ADWG 2011																		0.0007											0.001							
ANZECC 2000 Stockwater																		0.0007											0.001							
Field ID	Sample Date	SampleCode	Lab No.	Sample Type																																
S1	3/11/2011	11-46815_2804827	11-46815	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1	15/05/2012	12-23173_3037189	12-23173	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1	16/01/2013	13-04504_3330648	13-04504	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
160112	16/01/2013	13-04504_3330652	13-04504	Field_D	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S201	16/01/2013	M13-Ja06971	365703	Interlab_D	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.005	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	-	-	<0.005	<0.001	<0.001	<0.001	<0.005	<0.005	<0.001	<0.005	<0.001
S1	17/04/2013	13-19065_3441388	13-19065	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S1	9/07/2013	13-30796_3538300	13-30796	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S1	17/10/2013	13-45840_3656290	13-45840	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S1	6/01/2014	14-02614_3748068	14-02614	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S1	1/04/2014	14-15882_3850181	14-15882	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S1	2/07/2014	14-29185_3957496	14-29185	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S1	9/10/2014	14-44165_4076402	14-44165	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S1	15/01/2015	15-03991_4188341	15-03991	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S1	23/04/2015	15-19781_4307981	15-19781	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	<0.001	-	<0.001	<0.002
S230415	23/04/2015	15-19781_4307985	15-19781	Field_D	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	<0.001	-	<0.001	<0.002
S201	23/04/2015	M15-Ap18493	455170	Interlab_D	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.005	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	-	-	<0.005	<0.001	-	<0.001	-	<0.005	<0.001	<0.005	<0.001
S1	22/07/2015	15-33431_4411242	15-33431	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S2	31/10/2011	11-46411_2802039	11-46411	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	14/05/2012	12-22913_3035431	12-22913	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	17/01/2013	13-04742_3332862	13-04742	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S2	17/04/2013	13-19065_3441389	13-19065	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S2	11/07/2013	13-31027_3540742	13-31027	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S2	17/10/2013	13-45840_3656291	13-45840	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S2	7/01/2014	14-02697_3748910	14-02697	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S2	3/04/2014	14-16283_3853874	14-16283	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S2	2/07/2014	14-29185_3957497	14-29185	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S2	8/10/2014	14-43773_4073885	14-43773	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S2	13/01/2015	15-03411_4184549	15-03411	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S2	28/04/2015	15-20348_4313231	15-20348	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	<0.001	-	<0.001	<0.002
S2	22/07/2015	15-33431_4411243	15-33431	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S3	3/11/2011	11-46815_2804828	11-46815	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	16/05/2012	12-23337_3038591	12-23337	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	15/01/2013	13-03903_3327426	13-03903	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S3	18/04/2013	13-19313_3442820	13-19313	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S3	9/07/2013	13-30796_3538301	13-30796	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S3	16/10/2013	13-45540_3654438	13-45540	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S3	9/01/2014	14-03142_3752003	14-03142	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S3	3/04/2014	14-16283_3853875	14-16283	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S3	4/07/2014	14-29468_3960071	14-29468	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S3	7/10/2014	14-43525_4072498	14-43525	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S3	13/01/2015	15-03411_4184551	15-03411	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S3	23/04/2015	15-19781_4307982	15-19781	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	<0.001	-	<0.001	<0.002
S3	21/07/2015	15-33269_4409999	15-33269	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S4	7/11/2011	11-47070_2807630	11-47070	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	14/05/2012	12-22913_3035432	12-22913	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	17/01/2013	13-04742_3332863	13-04742	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S4	17/04/2013	13-19065_3441390	13-19065	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S4	15/07/2013	13-31496_3544456	13-31496	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S4	15/10/2013	13-45346_3653040	13-45346	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S4	8/01/2014	14-03010_3750701	14-03010	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S4	1/04/2014	14-15882_3850182	14-15882	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S4	3/07/2014	14-29400_3958868	14-29400	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
030714	3/07/2014	14-29400_3958872	14-29400	Field_D	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S204	3/07/2014	M14-Jl05817	424198	Interlab_D	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.005	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	-	-	<0.005	<0.001	<0.001	<0.001	<0.005	<0.005	<0.001	<0.005	<0.001
S4	7/10/2014	14-43525_4072499	14-43525	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S4	14/01/2015	15-03810_4186953	15-03810	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S4	27/04/2015	15-20278_4312735	15-20278	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	<0.001	-	<0.001	<0.002
S4	23/07/2015	15-33543_4412325	15-33543	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S5	2/11/2011	11-46545_2803160	11-46545	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	14/05/2012	12-22913_3035433	12-22913	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	15/01/2013	13-03903_3327427	13-03903	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S5	16/04/2013	13-18893_3440210	13-18893	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S5	15/07/2013	13-31496_3544457	13-31496	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S5	15/10/2013	13-45346_3653041	13-45346	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S5	8/01/2014	14-03010_3750702	14-03010	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S5	2/04/2014	14-16107_3852467	14-16107	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S205	2/04/2014	M14-Ap02919	414047	Interlab_D	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.005	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	-	-	<0.005	<0.001	<0.001	<0.001	<0.005	<0.005	<0.001	<0.005	<0.001
020414	2/04/2014	14-16107_3852472	14-16107	Field_D	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S5	7/07/2014	14-29641_3961609	14-29641	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S5	8/10/2014	14-43773_4073886	14-43773	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S5	14/01/2015	15-03810_4186956	15-03810	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S5	27/04/2015	15-20278_4312736	15-20278	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	<0.001	-	<0.001	<0.002
S5	23/07/2015	15-33543_4412326	15-33543	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S230715	23/07/2015	15-33543_4412328	15-33543	Field_D	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S205	23/07/2015	M15-Jl22233	466416	Interlab_D	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.005	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	-	-	<0.005	<0.001	<0.001	<0.001	<0.005	<0.005	<0.001	<0.005	<0.001
S6	3/11/2011	11-46815_2804829	11-46815	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6	17/05/2012	12-23644_3041937	12-23644	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Project 1192
Client Wyndham City Council
Site Werribee

Table J1 - Groundwater Results

					PAH											Chlorinated Hydrocarbons																				
					Benzo(k)fluoranthene	Chrysene	Benzo[b+j]fluoranthene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	PAHs (Sum of total)	1,2,4-trichlorobenzene	1,1,1-trichloroethane	Hexachlorobutadiene	1,2,3,4-tetrachlorobenzene	1,2,3,5-Tetrachlorobenzene	1,2,3-trichlorobenzene	1,2,4,5-tetrachlorobenzene	1,3,5-Trichlorobenzene	1,3,5-trimethylbenzene	2-chloronaphthalene	Benzal Chloride	Benzotrichloride	Benzyl chloride	Bromomethane	Chloroethane	Chloromethane	Hexachlorocyclopentadiene	Hexachloroethane	Iodomethane	Pentachlorobenzene	Trichlorofluoromethane
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL																0.00001	0.001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001		0.001	0.00001	0.00001	0.00001				0.00001	0.00001		0.00001	0.001
ANZECC 2000 MW 90%												0.09				0.14																				
PCR_ADWG 2011																		0.0007											0.001							
ANZECC 2000 Stockwater																		0.0007											0.001							
Field ID	Sample Date	SampleCode	Lab No.	Sample Type																																
S6	14/01/2013	13-03801_3326691	13-03801	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S6	19/04/2013	13-19708_3447146	13-19708	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S6	12/07/2013	13-31104_3541613	13-31104	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S206	12/07/2013	M13-Jl10365	385951	Interlab_D	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.005	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	-	-	<0.005	<0.001	<0.001	<0.001	<0.005	<0.005	<0.001	<0.005	<0.001
120713	12/07/2013	13-31104_3541617	13-31104	Field_D	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S6	16/10/2013	13-45540_3654441	13-45540	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S6	9/01/2014	14-03142_3752004	14-03142	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S6	31/03/2014	14-15737_3848877	14-15737	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S6	4/07/2014	14-29468_3960072	14-29468	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S6	6/10/2014	14-43373_4071005	14-43373	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S6	13/01/2015	15-03411_4184548	15-03411	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S6	22/04/2015	15-19660_4306872	15-19660	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	<0.001	-	<0.001	<0.002
S6	21/07/2015	15-33269_4410000	15-33269	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S7	7/11/2011	11-47070_2807631	11-47070	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	17/05/2012	12-23644_3041938	12-23644	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	14/01/2013	13-03801_3326692	13-03801	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S7	19/04/2013	13-19708_3447147	13-19708	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S7	12/07/2013	13-31104_3541614	13-31104	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S7	16/10/2013	13-45540_3654439	13-45540	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S7	9/01/2014	14-03142_3752005	14-03142	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S7	31/03/2014	14-15737_3848878	14-15737	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S7	4/07/2014	14-29468_3960073	14-29468	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	0.00012	<0.0001	<0.0001	0.00012	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S7	6/10/2014	14-43373_4071006	14-43373	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	0.00011	<0.0001	<0.0001	0.00011	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S7	13/01/2015	15-03411_4184550	15-03411	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S7	22/04/2015	15-19660_4306873	15-19660	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	<0.001	-	<0.001	<0.002
S7	20/07/2015	15-33119_4408705	15-33119	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S8	2/11/2011	11-46545_2803161	11-46545	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S208	2/11/2011	M11-No01704	317310	Interlab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S021111	2/11/2011	11-46545_2803163	11-46545	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S8	15/05/2012	12-23173_3037190	12-23173	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S8	17/04/2013	13-19065_3441391	13-19065	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S170413	17/04/2013	13-19065_3441393	13-19065	Field_D	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S208	17/04/2013	M13-Ap14190	376172	Interlab_D	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.005	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	-	-	<0.005	<0.001	<0.001	<0.001	<0.005	<0.005	<0.001	<0.005	<0.001
S8	12/07/2013	13-31104_3541615	13-31104	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S8	15/10/2013	13-45346_3653042	13-45346	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S8A	8/01/2014	14-03010_3750703	14-03010	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S8A	1/04/2014	14-15882_3850183	14-15882	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S8A	7/07/2014	14-29641_3961610	14-29641	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S8A	7/10/2014	14-43525_4072495	14-43525	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
071014	7/10/2014	14-43525_4072501	14-43525	Field_D	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S208A	7/10/2014	M14-Oc06798	434833	Interlab_D	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.0001	<0.0001	<0.001	<0.0001	<0.0001	<0.001	<0.005	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.0001	<0.001	<0.0001	<0.001
S8A	21/01/2015	15-04837_4195791	15-04837	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S8A	28/04/2015	15-20348_4313232	15-20348	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	<0.001	-	<0.001	<0.002
S8A	23/07/2015	15-33543_4412327	15-33543	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S9	2/11/2011	11-46545_2803162	11-46545	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	14/05/2012	12-22913_3035434	12-22913	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	15/01/2013	13-03903_3327428	13-03903	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S9	16/04/2013	13-18893_3440211	13-18893	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S9	11/07/2013	13-31027_3540743	13-31027	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S9	15/10/2013	13-45346_3653043	13-45346	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S209	15/10/2013	M13-Oc12519	396541	Interlab_D	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.005	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	-	-	<0.005	<0.001	<0.001	<0.001	<0.005	<0.005	<0.001	<0.005	<0.001
151013	15/10/2013	13-45346_3653045	13-45346	Field_D	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S9	7/01/2014	14-02697_3748911	14-02697	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S209	7/01/2014	M14-Ja01360	405048	Interlab_D	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.001	<0.001	<0.0001	<0.0001	<0.0001	<0.001	<0.0001	<0.0001	-	-	<0.0001	<0.0001	<0.001	<0.001	-	<0.001	<0.0001	<0.0001	<0.001	<0.0001	<0.001
S070114	7/01/2014	14-02697_3748915	14-02697	Field_D	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S9	1/04/2014	14-15882_3850184	14-15882	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S9	3/07/2014	14-29400_3958869	14-29400	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S9	7/10/2014	14-43525_4072496	14-43525	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S9	14/01/2015	15-03810_4186955	15-03810	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
140115A	14/01/2015	15-03810_4186954	15-03810	Field_D	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S209	14/01/2015	M15-Ja05179	444481	Interlab_D	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.005	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	-	-	<0.005	<0.001	<0.001	<0.001	<0.005	<0.005	<0.001	<0.005	<0.001
S9	23/04/2015	15-19781_4307983	15-19781	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	<0.001	-	<0.001	<0.002
S9	21/07/2015	15-33269_4410001	15-33269	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S10	15/05/2012	12-23173_3037191	12-23173	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S210	15/05/2012	M12-My13990	337641	Interlab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S150512	15/05/2012	12-23173_3037193	12-23173	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S10	15/01/2013	13-03903_3327429	13-03903	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S10	19/04/2013	13-19708_3447148	13-19708	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S10	11/07/2013	13-31027_3540744	13-31027	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S10	15/10/2013	13-45346_3653044	13-45346	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S10A	9/01/2014	14-03142_3752006	14-03142	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S10A	2/04/2014	14-16107_3852468	14-16107	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S10A	3/07/2014	14-29400_3958870	14-29400	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S10A	7/10/2014	14-43525_4072497	14-43525	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002

Project 1192
Client Wyndham City Council
Site Werribee

Table J1 - Groundwater Results

					PAH											Chlorinated Hydrocarbons																				
					Benzo(k)fluoranthene	Chrysene	Benzo[b+j]fluoranthene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	PAHs (Sum of total)	1,2,4-trichlorobenzene	1,1,1-trichloroethane	Hexachlorobutadiene	1,2,3,4-tetrachlorobenzene	1,2,3,5-Tetrachlorobenzene	1,2,3-trichlorobenzene	1,2,4,5-tetrachlorobenzene	1,3,5-Trichlorobenzene	1,3,5-trimethylbenzene	2-chloronaphthalene	Benzal Chloride	Benzotrichloride	Benzyl chloride	Bromomethane	Chloroethane	Chloromethane	Hexachlorocyclopentadiene	Hexachloroethane	Iodomethane	Pentachlorobenzene	Trichlorofluoromethane
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL																0.00001	0.001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001		0.001	0.00001	0.00001	0.00001				0.00001	0.00001		0.00001	0.001
ANZECC 2000 MW 90%												0.09				0.14																				
PCR_ADWG 2011																		0.0007											0.001							
ANZECC 2000 Stockwater																		0.0007											0.001							
Field ID	Sample Date	SampleCode	Lab No.	Sample Type																																
S10A	21/01/2015	15-04837_4195792	15-04837	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S10A	27/04/2015	15-20278_4312737	15-20278	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	<0.001	-	<0.001	<0.002
S10A	22/07/2015	15-33431_4411244	15-33431	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S11	7/11/2011	11-47070_2807632	11-47070	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	15/05/2012	12-23173_3037192	12-23173	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	16/01/2013	13-04504_3330649	13-04504	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S11	16/04/2013	13-18893_3440212	13-18893	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S11	11/07/2013	13-31027_3540745	13-31027	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S11	17/10/2013	13-45840_3656292	13-45840	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S11	8/01/2014	14-03010_3750704	14-03010	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S11	3/04/2014	14-16283_3853876	14-16283	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S11	3/07/2014	14-29400_3958871	14-29400	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S11	8/10/2014	14-43773_4073887	14-43773	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S11	14/01/2015	15-03810_4186957	15-03810	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S11	27/04/2015	15-20278_4312738	15-20278	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	<0.001	-	<0.001	<0.002
S11	21/07/2015	15-33269_4410002	15-33269	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S12	3/11/2011	11-46815_2804830	11-46815	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	16/05/2012	12-23337_3038592	12-23337	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	16/01/2013	13-04504_3330650	13-04504	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S12	17/04/2013	13-19065_3441392	13-19065	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S12	9/07/2013	13-30796_3538302	13-30796	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S12	17/10/2013	13-45840_3656293	13-45840	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S12	6/01/2014	14-02614_3748069	14-02614	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S12	2/04/2014	14-16107_3852469	14-16107	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S12	7/07/2014	14-29641_3961611	14-29641	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S12	8/10/2014	14-43773_4073888	14-43773	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S12	15/01/2015	15-03991_4188342	15-03991	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S12	23/04/2015	15-19781_4307984	15-19781	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	<0.001	-	<0.001	<0.002
S12	22/07/2015	15-33431_4411245	15-33431	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S13	4/11/2011	11-46925_2806228	11-46925	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	17/05/2012	12-23644_3041939	12-23644	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	14/01/2013	13-03801_3326693	13-03801	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S13	19/04/2013	13-19708_3447149	13-19708	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S13	12/07/2013	13-31104_3541616	13-31104	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S13	16/10/2013	13-45540_3654440	13-45540	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S13	6/01/2014	14-02614_3748070	14-02614	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S13	31/03/2014	14-15737_3848879	14-15737	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S13	4/07/2014	14-29468_3960074	14-29468	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S13	6/10/2014	14-43373_4071007	14-43373	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S13	12/01/2015	15-03259_4183490	15-03259	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S13	22/04/2015	15-19660_4306874	15-19660	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	<0.001	-	<0.001	<0.002
S13	20/07/2015	15-33119_4408706	15-33119	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S14	31/10/2011	11-46411_2802040	11-46411	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	16/05/2012	12-23337_3038593	12-23337	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	17/01/2013	13-04742_3332864	13-04742	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S14	18/04/2013	13-19313_3442830	13-19313	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S14	9/07/2013	13-30796_3538303	13-30796	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S14	14/10/2013	13-45140_3651478	13-45140	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S14	7/01/2014	14-02697_3748912	14-02697	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S14	2/04/2014	14-16107_3852470	14-16107	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S14	7/07/2014	14-29641_3961612	14-29641	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S14	9/10/2014	14-44165_4076403	14-44165	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S14	15/01/2015	15-03991_4188343	15-03991	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S14	28/04/2015	15-20348_4313233	15-20348	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	<0.001	-	<0.001	<0.002
S14	20/07/2015	15-33119_4408707	15-33119	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S15	31/10/2011	11-46411_2802041	11-46411	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	16/05/2012	12-23337_3038594	12-23337	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	17/01/2013	13-04742_3332865	13-04742	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S15	18/04/2013	13-19313_3442831	13-19313	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S15	9/07/2013	13-30796_3538304	13-30796	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S15	14/10/2013	13-45140_3651479	13-45140	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S15	7/01/2014	14-02697_3748913	14-02697	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S15	2/04/2014	14-16107_3852471	14-16107	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S15	8/07/2014	14-29641_3961615	14-29641	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S15	9/10/2014	14-44165_4076404	14-44165	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S15	15/01/2015	15-03991_4188344	15-03991	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S15	28/04/2015	15-20348_4313234	15-20348	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	<0.001	-	<0.001	<0.002
S15	22/07/2015	15-33431_4411246	15-33431	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S16	31/10/2011	11-46411_2802042	11-46411	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S16	16/05/2012	12-23337_3038595	12-23337	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S16	16/01/2013	13-04504_3330651	13-04504	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S16	18/04/2013	13-19313_3442832	13-19313	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S16	8/07/2013	13-30645_3536915	13-30645	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S16	14/10/2013	13-45140_3651480	13-45140	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S16	7/01/2014	14-02697_3748914	14-02697	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S16	3/04/2014	14-16283_3853877	14-16283	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002

Project 1192
Client Wyndham City Council
Site Werribee

Table J1 - Groundwater Results

					PAH											Chlorinated Hydrocarbons																				
					Benzo(k)fluoranthene	Chrysene	Benzo[b+j]fluoranthene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	PAHs (Sum of total)	1,2,4-trichlorobenzene	1,1,1-trichloroethane	Hexachlorobutadiene	1,2,3,4-tetrachlorobenzene	1,2,3,5-Tetrachlorobenzene	1,2,3-trichlorobenzene	1,2,4,5-tetrachlorobenzene	1,3,5-Trichlorobenzene	1,3,5-trimethylbenzene	2-chloronaphthalene	Benzal Chloride	Benzotrichloride	Benzyl chloride	Bromomethane	Chloroethane	Chloromethane	Hexachlorocyclopentadiene	Hexachloroethane	Iodomethane	Pentachlorobenzene	Trichlorofluoromethane
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL																0.00001	0.001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001		0.001	0.00001	0.00001	0.00001				0.00001	0.00001		0.00001	0.001
ANZECC 2000 MW 90%												0.09				0.14																				
PCR_ADWG 2011																		0.0007											0.001							
ANZECC 2000 Stockwater																		0.0007											0.001							
Field ID	**Sample Date**	**SampleCode**	**Lab No.**	**Sample Type**																																
S16	7/07/2014	14-29641_3961613	14-29641	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S16	9/10/2014	14-44165_4076405	14-44165	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S16	15/01/2015	15-03991_4188345	15-03991	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
S16	28/04/2015	15-20348_4313235	15-20348	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	<0.001	-	<0.001	<0.002
S16	21/07/2015	15-33269_4410003	15-33269	Normal	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN311011	31/10/2011	11-46411_2802043	11-46411	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN021111	2/11/2011	11-46545_2803164	11-46545	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN031111	3/11/2011	11-46815_2804831	11-46815	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN041111	4/11/2011	11-46925_2806229	11-46925	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN071111	7/11/2011	11-47070_2807633	11-47070	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN140512	14/05/2012	12-22913_3035435	12-22913	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN150512	15/05/2012	12-23173_3037194	12-23173	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN160512	16/05/2012	12-23337_3038596	12-23337	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN170512	17/05/2012	12-23644_3041940	12-23644	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN140113	14/01/2013	13-03801_3326694	13-03801	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN150113	15/01/2013	13-03903_3327430	13-03903	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN160113	16/01/2013	13-04504_3330653	13-04504	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN170113	17/01/2013	13-04742_3332866	13-04742	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN160413	16/04/2013	13-18893_3440213	13-18893	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN170413	17/04/2013	13-19065_3441394	13-19065	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN180413	18/04/2013	13-19313_3442833	13-19313	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN190413	19/04/2013	13-19708_3447150	13-19708	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN080713	8/07/2013	13-30645_3536916	13-30645	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN090713	9/07/2013	13-30796_3538305	13-30796	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN110713	11/07/2013	13-31027_3540746	13-31027	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN120713	12/07/2013	13-31104_3541618	13-31104	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN150713	15/07/2013	13-31496_3544458	13-31496	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN141013	14/10/2013	13-45140_3651481	13-45140	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN151013	15/10/2013	13-45346_3653046	13-45346	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN161013	16/10/2013	13-45540_3654442	13-45540	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN171013	17/10/2013	13-45840_3656294	13-45840	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN060114M	6/01/2014	14-02614_3748072	14-02614	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN060114P	6/01/2014	14-02614_3748071	14-02614	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN070114M	7/01/2014	14-02697_3748917	14-02697	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN070114P	7/01/2014	14-02697_3748916	14-02697	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN080114M	8/01/2014	14-03010_3750705	14-03010	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN080114P	8/01/2014	14-03010_3750706	14-03010	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN090114M	9/01/2014	14-03142_3752008	14-03142	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN090114P	9/01/2014	14-03142_3752007	14-03142	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN310314M	31/03/2014	14-15737_3848881	14-15737	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN310314P	31/03/2014	14-15737_3848880	14-15737	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN010414M	1/04/2014	14-15882_3850186	14-15882	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN010414P	1/04/2014	14-15882_3850185	14-15882	Rinsate	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN020414M	2/04/2014	14-16107_3852474	14-16107	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN020414P	2/04/2014	14-16107_3852473	14-16107	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RINM030414	3/04/2014	14-16283_3853879	14-16283	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RINP030414	3/04/2014	14-16283_3853878	14-16283	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN020714	2/07/2014	14-29185_3957498	14-29185	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN030714	3/07/2014	14-29400_3958873	14-29400	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN040714	4/07/2014	14-29468_3960075	14-29468	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN070714	7/07/2014	14-29641_3961614	14-29641	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN080714	8/07/2014	14-29641_3961616	14-29641	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN061014	6/10/2014	14-43373_4071008	14-43373	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN071014	7/10/2014	14-43525_4072500	14-43525	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN081014	8/10/2014	14-43773_4073889	14-43773	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN091014	9/10/2014	14-44165_4076406	14-44165	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN120115	12/01/2015	15-03259_4183491	15-03259	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN130115	13/01/2015	15-03411_4184552	15-03411	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN140115	14/01/2015	15-03810_4186952	15-03810	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN150115	15/01/2015	15-03991_4188346	15-03991	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN210115	21/01/2015	15-04837_4195793	15-04837	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN220415	22/04/2015	15-19660_4306875	15-19660	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	<0.001	-	<0.001	<0.002
RIN230415	23/04/2015	15-19781_4307986	15-19781	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	<0.001	-	<0.001	<0.002
RIN270415	27/04/2015	15-20278_4312739	15-20278	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	<0.001	-	<0.001	<0.002
RIN280415	28/04/2015	15-20348_4313236	15-20348	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**<0.0001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	<0.001	-	<0.001	<0.002
RIN200715	20/07/2015	15-33119_4408709	15-33119	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN210715	21/07/2015	15-33269_4410004	15-33269	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN220715	22/07/2015	15-33431_4411247	15-33431	Rinsate	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002
RIN230715	23/07/2015	15-33543_4412329	15-33543	Trip_B	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	<0.001	<0.002

(a) US EPA Regional Screening Levels (RSL) 2014, Criteria for Tap Water (TR: 1E-06 and THQ: 1.0)
(b) Low reliability values (95%) level of protection
(c) As adopted by AEA (2013) Audit Report (based on Table 3.3.2 of ANZECC
(d) WHO 2011 Drinking Water Guidelines - Provisional
(e) Low reliability trigger values (ANZECC 2000) generally Marine low reliablity
^ Converted from Alkalinity (Bicarbonate as $CaCO_3$) by a factor of 1.22
* Considered to be overly conservative to apply drinking water criteria based on aesthetics to assess primary contact recreation values. No health based criteria available. Consequently no criteria applied.
** Adopted from health based drinking water criteria of 0.5mg/L, multiplied by a factor of 10 to account for incidental ingestion.

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Table J1 - Groundwater Results

					Halogenated Vol. Organics																																		
					Carbon tetrachloride	Chlorobenzene	Chloroform	1,2-dichlorobenzene	1,4-dichlorobenzene	1,2-dichloroethane	1,2-Dichloroethene [cis]	1,2-Dichloroethene [trans]	1,1-dichloroethene	1,1,1,2-tetrachloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	Dichloromethane	Tetrachloroethene	Trichloroethene	Vinyl chloride	1,1-dichloroethane	1,1-dichloropropene	1,2,3-trichloropropane	1,2-dibromo-3-chloropropane	1,2-dibromoethane	1,2-dichloropropane	1,3-dichlorobenzene	1,3-Dichloropropane	2,2-dichloropropane	2-chlorotoluene	4-chlorotoluene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Chlorodibromomethane	cis-1,3-dichloropropene	Dibromomethane	trans-1,3-dichloropropene
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL					0.001	0.00001	0.001	0.00001	0.00001	0.00001	0.001	0.001	0.001	0.001	0.001	0.001	0.00002	0.00002	0.00001	0.00005	0.00001	0.001	0.001	0.001	0.001	0.001	0.0001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
ANZECC 2000 MW 90%						0.1 (e)			0.075(e)							5.8			0.33(e)	0.1(e)	0.7(e)					1.2(e)													
PCR_ADWG 2011					0.003	0.3		1.5	0.04	0.003	0.06	0.06	0.03				0.004	0.05	0.02 (d)	0.0003					0.001		0.02												
ANZECC 2000 Stockwater					0.003	0.3		1.5	0.04	0.003	0.06	0.06	0.03				0.004	0.05	0.02 (d)	0.0003					0.001		0.02												
Field ID	Sample Date	SampleCode	Lab No.	Sample Type																																			
S1	3/11/2011	11-46815_2804827	11-46815	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1	15/05/2012	12-23173_3037189	12-23173	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1	16/01/2013	13-04504_3330648	13-04504	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
160112	16/01/2013	13-04504_3330652	13-04504	Field_D	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S201	16/01/2013	M13-Ja06971	365703	Interlab_D	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S1	17/04/2013	13-19065_3441388	13-19065	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S1	9/07/2013	13-30796_3538300	13-30796	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S1	17/10/2013	13-45840_3656290	13-45840	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S1	6/01/2014	14-02614_3748068	14-02614	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S1	1/04/2014	14-15882_3850181	14-15882	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S1	2/07/2014	14-29185_3957496	14-29185	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S1	9/10/2014	14-44165_4076402	14-44165	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S1	15/01/2015	15-03991_4188341	15-03991	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S1	23/04/2015	15-19781_4307981	15-19781	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S230415	23/04/2015	15-19781_4307985	15-19781	Field_D	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S201	23/04/2015	M15-Ap18493	455170	Interlab_D	<0.001	<0.00001	<0.005	<0.001	<0.00001	<0.00001	0.00001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00002	<0.00002	0.00001	<0.00005	0.00001	-	<0.001	-	<0.001	<0.001	-	<0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S1	22/07/2015	15-33431_4411242	15-33431	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S2	31/10/2011	11-46411_2802039	11-46411	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	14/05/2012	12-22913_3035431	12-22913	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	17/01/2013	13-04742_3332862	13-04742	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S2	17/04/2013	13-19065_3441389	13-19065	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S2	11/07/2013	13-31027_3540742	13-31027	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S2	17/10/2013	13-45840_3656291	13-45840	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S2	7/01/2014	14-02697_3748910	14-02697	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S2	3/04/2014	14-16283_3853874	14-16283	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S2	2/07/2014	14-29185_3957497	14-29185	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S2	8/10/2014	14-43773_4073885	14-43773	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S2	13/01/2015	15-03411_4184549	15-03411	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S2	28/04/2015	15-20348_4313231	15-20348	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S2	22/07/2015	15-33431_4411243	15-33431	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S3	3/11/2011	11-46815_2804828	11-46815	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	16/05/2012	12-23337_3038591	12-23337	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	15/01/2013	13-03903_3327426	13-03903	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S3	18/04/2013	13-19313_3442829	13-19313	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S3	9/07/2013	13-30796_3538301	13-30796	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S3	16/10/2013	13-45540_3654438	13-45540	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S3	9/01/2014	14-03142_3752003	14-03142	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S3	3/04/2014	14-16283_3853875	14-16283	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S3	4/07/2014	14-29468_3960071	14-29468	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S3	7/10/2014	14-43525_4072498	14-43525	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S3	13/01/2015	15-03411_4184551	15-03411	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S3	23/04/2015	15-19781_4307982	15-19781	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S3	21/07/2015	15-33269_4409999	15-33269	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S4	7/11/2011	11-47070_2807630	11-47070	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	14/05/2012	12-22913_3035432	12-22913	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	17/01/2013	13-04742_3332863	13-04742	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S4	17/04/2013	13-19065_3441390	13-19065	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S4	15/07/2013	13-31496_3544456	13-31496	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S4	15/10/2013	13-45346_3653040	13-45346	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S4	8/01/2014	14-03010_3750701	14-03010	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S4	1/04/2014	14-15882_3850182	14-15882	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S4	3/07/2014	14-29400_3958868	14-29400	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
030714	3/07/2014	14-29400_3958872	14-29400	Field_D	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S204	3/07/2014	M14-JI05817	424198	Interlab_D	<0.001	<0.00001	<0.005	<0.001	<0.00001	0.00002	0.00002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00002	<0.00002	<0.001 - 0.00003	<0.00005	0.00009	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S4	7/10/2014	14-43525_4072499	14-43525	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S4	14/01/2015	15-03810_4186953	15-03810	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S4	27/04/2015	15-20278_4312735	15-20278	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S4	23/07/2015	15-33543_4412325	15-33543	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S5	2/11/2011	11-46545_2803160	11-46545	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	14/05/2012	12-22913_3035433	12-22913	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	15/01/2013	13-03903_3327427	13-03903	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S5	16/04/2013	13-18893_3440210	13-18893	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S5	15/07/2013	13-31496_3544457	13-31496	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S5	15/10/2013	13-45346_3653041	13-45346	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S5	8/01/2014	14-03010_3750702	14-03010	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S5	2/04/2014	14-16107_3852467	14-16107	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S205	2/04/2014	M14-Ap02919	414047	Interlab_D	<0.001	0.00004	<0.005	<0.001	<0.005 - 0.00059	0.00004	0.00029	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00002	<0.00002	<0.00001	0.00011	0.00016	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
020414	2/04/2014	14-16107_3852472	14-16107	Field_D	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S5	7/07/2014	14-29641_3961609	14-29641	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S5	8/10/2014	14-43773_4073886	14-43773	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S5	14/01/2015	15-03810_4186956	15-03810	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S5	27/04/2015	15-20278_4312736	15-20278	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S5	23/07/2015	15-33543_4412326	15-33543	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S230715	23/07/2015	15-33543_4412328	15-33543	Field_D	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S205	23/07/2015	M15-JI22233	466416	Interlab_D	<0.001	<0.00001	<0.005	<0.001	<0.005 - 0.00019	0.00002	0.00003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00002	<0.00002	<0.00001	<0.00005	0.00011	-	<0.001	-	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S6	3/11/2011	11-46815_2804829	11-46815	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6	17/05/2012	12-23644_3041937	12-23644	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Project 1192
Client Wyndham City Council
Site Werribee

Table J1 - Groundwater Results

					Halogenated Vol. Organics																																		
					Carbon tetrachloride	Chlorobenzene	Chloroform	1,2-dichlorobenzene	1,4-dichlorobenzene	1,2-dichloroethane	1,2-Dichloroethene [cis]	1,2-Dichloroethene [trans]	1,1-dichloroethene	1,1,1,2-tetrachloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	Dichloromethane	Tetrachloroethene	Trichloroethene	Vinyl chloride	1,1-dichloroethane	1,1-dichloropropene	1,2,3-trichloropropane	1,2-dibromo-3-chloropropane	1,2-dibromoethane	1,2-dichloropropane	1,3-dichlorobenzene	1,3-Dichloropropane	2,2-dichloropropane	2-chlorotoluene	4-chlorotoluene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Chlorodibromomethane	cis-1,3-dichloropropene	Dibromomethane	trans-1,3-dichloropropene
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL					0.001	0.00001	0.001	0.00001	0.00001	0.00001	0.001	0.001	0.001	0.001	0.001	0.001	0.00002	0.00002	0.00001	0.00005	0.00001	0.001	0.001	0.001	0.001	0.001	0.0001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
ANZECC 2000 MW 90%						0.1 (e)			0.075(e)							5.8			0.33(e)	0.1(e)	0.7(e)					1.2(e)													
PCR_ADWG 2011					0.003	0.3		1.5	0.04	0.003	0.06	0.06	0.03				0.004	0.05	0.02 (d)	0.0003					0.001		0.02												
ANZECC 2000 Stockwater					0.003	0.3		1.5	0.04	0.003	0.06	0.06	0.03				0.004	0.05	0.02 (d)	0.0003					0.001		0.02												
Field ID	Sample Date	SampleCode	Lab No.	Sample Type																																			
S6	14/01/2013	13-03801_3326691	13-03801	Normal	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S6	19/04/2013	13-19708_3447146	13-19708	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S6	12/07/2013	13-31104_3541613	13-31104	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S206	12/07/2013	M13-Jl10365	385951	Interlab_D	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
120713	12/07/2013	13-31104_3541617	13-31104	Field_D	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S6	16/10/2013	13-45540_3654441	13-45540	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S6	9/01/2014	14-03142_3752004	14-03142	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S6	31/03/2014	14-15737_3848877	14-15737	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S6	4/07/2014	14-29468_3960072	14-29468	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S6	6/10/2014	14-43373_4071005	14-43373	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S6	13/01/2015	15-03411_4184548	15-03411	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S6	22/04/2015	15-19660_4306872	15-19660	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S6	21/07/2015	15-33269_4410000	15-33269	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S7	7/11/2011	11-47070_2807631	11-47070	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	17/05/2012	12-23644_3041938	12-23644	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	14/01/2013	13-03801_3326692	13-03801	Normal	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S7	19/04/2013	13-19708_3447147	13-19708	Normal	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S7	12/07/2013	13-31104_3541614	13-31104	Normal	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S7	16/10/2013	13-45540_3654439	13-45540	Normal	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.0002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S7	9/01/2014	14-03142_3752005	14-03142	Normal	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S7	31/03/2014	14-15737_3848878	14-15737	Normal	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S7	4/07/2014	14-29468_3960073	14-29468	Normal	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S7	6/10/2014	14-43373_4071006	14-43373	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S7	13/01/2015	15-03411_4184550	15-03411	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S7	22/04/2015	15-19660_4306873	15-19660	Normal	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0002	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S7	20/07/2015	15-33119_4408705	15-33119	Normal	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S8	2/11/2011	11-46545_2803161	11-46545	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S208	2/11/2011	M11-No01704	317310	Interlab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S021111	2/11/2011	11-46545_2803163	11-46545	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S8	15/05/2012	12-23173_3037190	12-23173	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S8	17/04/2013	13-19065_3441391	13-19065	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S170413	17/04/2013	13-19065_3441393	13-19065	Field_D	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S208	17/04/2013	M13-Ap14190	376172	Interlab_D	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S8	12/07/2013	13-31104_3541615	13-31104	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S8	15/10/2013	13-45346_3653042	13-45346	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S8A	8/01/2014	14-03010_3750703	14-03010	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S8A	1/04/2014	14-15882_3850183	14-15882	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S8A	7/07/2014	14-29641_3961610	14-29641	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S8A	7/10/2014	14-43525_4072495	14-43525	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
071014	7/10/2014	14-43525_4072501	14-43525	Field_D	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S208A	7/10/2014	M14-Oc06798	434833	Interlab_D	<0.001	<0.00001	<0.005	<0.00001	<0.00001	<0.00001	<0.00001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00002	0.00014	0.00006	<0.00005	0.00014	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S8A	21/01/2015	15-04837_4195791	15-04837	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S8A	28/04/2015	15-20348_4313232	15-20348	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S8A	23/07/2015	15-33543_4412327	15-33543	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S9	2/11/2011	11-46545_2803162	11-46545	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	14/05/2012	12-22913_3035434	12-22913	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	15/01/2013	13-03903_3327428	13-03903	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S9	16/04/2013	13-18893_3440211	13-18893	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S9	11/07/2013	13-31027_3540743	13-31027	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S9	15/10/2013	13-45346_3653043	13-45346	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S209	15/10/2013	M13-Oc12519	396541	Interlab_D	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
151013	15/10/2013	13-45346_3653045	13-45346	Field_D	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S9	7/01/2014	14-02697_3748911	14-02697	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S209	7/01/2014	M14-Ja01360	405048	Interlab_D	<0.001	0.00003	<0.001	<0.001	<0.001 - 0.00051	0.00006	<0.00001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00002	<0.00002	<0.00001	<0.00005	0.00011	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S070114	7/01/2014	14-02697_3748915	14-02697	Field_D	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S9	1/04/2014	14-15882_3850184	14-15882	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S9	3/07/2014	14-29400_3958869	14-29400	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S9	7/10/2014	14-43525_4072496	14-43525	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S9	14/01/2015	15-03810_4186955	15-03810	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
140115A	14/01/2015	15-03810_4186954	15-03810	Field_D	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S209	14/01/2015	M15-Ja05179	444481	Interlab_D	<0.001	0.00001	<0.005	0.00002	<0.005 - 0.00026	0.00002	0.00002	<0.001	<0.001	<0.001	<0.001	<0.001	0.00007	<0.00002	<0.00001	<0.00005	0.00008	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S9	23/04/2015	15-19781_4307983	15-19781	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S9	21/07/2015	15-33269_4410001	15-33269	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S10	15/05/2012	12-23173_3037191	12-23173	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S210	15/05/2012	M12-My13990	337641	Interlab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S150512	15/05/2012	12-23173_3037193	12-23173	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S10	15/01/2013	13-03903_3327429	13-03903	Normal	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S10	19/04/2013	13-19708_3447148	13-19708	Normal	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.0002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S10	11/07/2013	13-31027_3540744	13-31027	Normal	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S10	15/10/2013	13-45346_3653044	13-45346	Normal	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S10A	9/01/2014	14-03142_3752006	14-03142	Normal	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S10A	2/04/2014	14-16107_3852468	14-16107	Normal	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S10A	3/07/2014	14-29400_3958870	14-29400	Normal	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S10A	7/10/2014	14-43525_4072497	14-43525	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Project 1192
Client Wyndham City Council
Site Werribee

Table J1 - Groundwater Results

					Halogenated Vol. Organics																																		
					Carbon tetrachloride	Chlorobenzene	Chloroform	1,2-dichlorobenzene	1,4-dichlorobenzene	1,2-dichloroethane	1,2-Dichloroethene [cis]	1,2-Dichloroethene [trans]	1,1-dichloroethene	1,1,1,2-tetrachloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	Dichloromethane	Tetrachloroethene	Trichloroethene	Vinyl chloride	1,1-dichloroethane	1,1-dichloropropene	1,2,3-trichloropropane	1,2-dibromo-3-chloropropane	1,2-dibromoethane	1,2-dichloropropane	1,3-dichlorobenzene	1,3-Dichloropropane	2,2-dichloropropane	2-chlorotoluene	4-chlorotoluene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Chlorodibromomethane	cis-1,3-dichloropropene	Dibromomethane	trans-1,3-dichloropropene
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL					0.001	0.00001	0.001	0.00001	0.00001	0.00001	0.001	0.001	0.001	0.001	0.001	0.001	0.00002	0.00002	0.00001	0.00005	0.00001	0.001	0.001	0.001	0.001	0.001	0.0001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
ANZECC 2000 MW 90%						0.1 (e)			0.075(e)							5.8			0.33(e)	0.1(e)	0.7(e)					1.2(e)													
PCR_ADWG 2011					0.003	0.3		1.5	0.04	0.003	0.06	0.06	0.03				0.004	0.05	0.02 (d)	0.0003					0.001		0.02												
ANZECC 2000 Stockwater					0.003	0.3		1.5	0.04	0.003	0.06	0.06	0.03				0.004	0.05	0.02 (d)	0.0003					0.001		0.02												
Field ID	Sample Date	SampleCode	Lab No.	Sample Type																																			
S10A	21/01/2015	15-04837_4195792	15-04837	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S10A	27/04/2015	15-20278_4312737	15-20278	Normal	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0002	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S10A	22/07/2015	15-33431_4411244	15-33431	Normal	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S11	7/11/2011	11-47070_2807632	11-47070	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	15/05/2012	12-23173_3037192	12-23173	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	16/01/2013	13-04504_3330649	13-04504	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S11	16/04/2013	13-18893_3440212	13-18893	Normal	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S11	11/07/2013	13-31027_3540745	13-31027	Normal	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S11	17/10/2013	13-45840_3656292	13-45840	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S11	8/01/2014	14-03010_3750704	14-03010	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S11	3/04/2014	14-16283_3853876	14-16283	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S11	3/07/2014	14-29400_3958871	14-29400	Normal	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S11	8/10/2014	14-43773_4073887	14-43773	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S11	14/01/2015	15-03810_4186957	15-03810	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S11	27/04/2015	15-20278_4312738	15-20278	Normal	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S11	21/07/2015	15-33269_4410002	15-33269	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S12	3/11/2011	11-46815_2804830	11-46815	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	16/05/2012	12-23337_3038592	12-23337	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	16/01/2013	13-04504_3330650	13-04504	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S12	17/04/2013	13-19065_3441392	13-19065	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S12	9/07/2013	13-30796_3538302	13-30796	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S12	17/10/2013	13-45840_3656293	13-45840	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S12	6/01/2014	14-02614_3748069	14-02614	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S12	2/04/2014	14-16107_3852469	14-16107	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S12	7/07/2014	14-29641_3961611	14-29641	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S12	8/10/2014	14-43773_4073888	14-43773	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S12	15/01/2015	15-03991_4188342	15-03991	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S12	23/04/2015	15-19781_4307984	15-19781	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S12	22/07/2015	15-33431_4411245	15-33431	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S13	4/11/2011	11-46925_2806228	11-46925	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	17/05/2012	12-23644_3041939	12-23644	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	14/01/2013	13-03801_3326693	13-03801	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S13	19/04/2013	13-19708_3447149	13-19708	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S13	12/07/2013	13-31104_3541616	13-31104	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S13	16/10/2013	13-45540_3654440	13-45540	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S13	6/01/2014	14-02614_3748070	14-02614	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S13	31/03/2014	14-15737_3848879	14-15737	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S13	4/07/2014	14-29468_3960074	14-29468	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S13	6/10/2014	14-43373_4071007	14-43373	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S13	12/01/2015	15-03259_4183490	15-03259	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S13	22/04/2015	15-19660_4306874	15-19660	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S13	20/07/2015	15-33119_4408706	15-33119	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S14	31/10/2011	11-46411_2802040	11-46411	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	16/05/2012	12-23337_3038593	12-23337	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	17/01/2013	13-04742_3332864	13-04742	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S14	18/04/2013	13-19313_3442830	13-19313	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.002	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S14	9/07/2013	13-30796_3538303	13-30796	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S14	14/10/2013	13-45140_3651478	13-45140	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S14	7/01/2014	14-02697_3748912	14-02697	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S14	2/04/2014	14-16107_3852470	14-16107	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S14	7/07/2014	14-29641_3961612	14-29641	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S14	9/10/2014	14-44165_4076403	14-44165	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S14	15/01/2015	15-03991_4188343	15-03991	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S14	28/04/2015	15-20348_4313233	15-20348	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S14	20/07/2015	15-33119_4408707	15-33119	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S15	31/10/2011	11-46411_2802041	11-46411	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	16/05/2012	12-23337_3038594	12-23337	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	17/01/2013	13-04742_3332865	13-04742	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S15	18/04/2013	13-19313_3442831	13-19313	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S15	9/07/2013	13-30796_3538304	13-30796	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S15	14/10/2013	13-45140_3651479	13-45140	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S15	7/01/2014	14-02697_3748913	14-02697	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S15	2/04/2014	14-16107_3852471	14-16107	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S15	8/07/2014	14-29641_3961615	14-29641	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S15	9/10/2014	14-44165_4076404	14-44165	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S15	15/01/2015	15-03991_4188344	15-03991	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S15	28/04/2015	15-20348_4313234	15-20348	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S15	22/07/2015	15-33431_4411246	15-33431	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S16	31/10/2011	11-46411_2802042	11-46411	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S16	16/05/2012	12-23337_3038595	12-23337	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S16	16/01/2013	13-04504_3330651	13-04504	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S16	18/04/2013	13-19313_3442832	13-19313	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S16	8/07/2013	13-30645_3536915	13-30645	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S16	14/10/2013	13-45140_3651480	13-45140	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S16	7/01/2014	14-02697_3748914	14-02697	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S16	3/04/2014	14-16283_3853877	14-16283	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Project 1192
Client Wyndham City Council
Site Werribee

Table J1 - Groundwater Results

					Halogenated Vol. Organics																																		
					Carbon tetrachloride	Chlorobenzene	Chloroform	1,2-dichlorobenzene	1,4-dichlorobenzene	1,2-dichloroethane	1,2-Dichloroethene [cis]	1,2-Dichloroethene [trans]	1,1-dichloroethene	1,1,1,2-tetrachloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	Dichloromethane	Tetrachloroethene	Trichloroethene	Vinyl chloride	1,1-dichloroethane	1,1-dichloropropene	1,2,3-trichloropropane	1,2-dibromo-3-chloropropane	1,2-dibromoethane	1,2-dichloropropane	1,3-dichlorobenzene	1,3-Dichloropropane	2,2-dichloropropane	2-chlorotoluene	4-chlorotoluene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Chlorodibromomethane	cis-1,3-dichloropropene	Dibromomethane	trans-1,3-dichloropropene
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL					0.001	0.00001	0.001	0.00001	0.00001	0.00001	0.001	0.001	0.001	0.001	0.001	0.001	0.00002	0.00002	0.00001	0.00005	0.00001	0.001	0.001	0.001	0.001	0.001	0.0001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
ANZECC 2000 MW 90%						0.1 (e)			0.075(e)							5.8			0.33(e)	0.1(e)	0.7(e)					1.2(e)													
PCR_ADWG 2011					0.003	0.3		1.5	0.04	0.003	0.06	0.06	0.03				0.004	0.05	0.02 (d)	0.0003					0.001		0.02												
ANZECC 2000 Stockwater					0.003	0.3		1.5	0.04	0.003	0.06	0.06	0.03				0.004	0.05	0.02 (d)	0.0003					0.001		0.02												
Field ID	Sample Date	SampleCode	Lab No.	Sample Type																																			
S16	7/07/2014	14-29641_3961613	14-29641	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S16	9/10/2014	14-44165_4076405	14-44165	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S16	15/01/2015	15-03991_4188345	15-03991	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S16	28/04/2015	15-20348_4313235	15-20348	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S16	21/07/2015	15-33269_4410003	15-33269	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN311011	31/10/2011	11-46411_2802043	11-46411	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN021111	2/11/2011	11-46545_2803164	11-46545	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN031111	3/11/2011	11-46815_2804831	11-46815	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN041111	4/11/2011	11-46925_2806229	11-46925	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN071111	7/11/2011	11-47070_2807633	11-47070	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN140512	14/05/2012	12-22913_3035435	12-22913	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN150512	15/05/2012	12-23173_3037194	12-23173	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN160512	16/05/2012	12-23337_3038596	12-23337	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN170512	17/05/2012	12-23644_3041940	12-23644	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN140113	14/01/2013	13-03801_3326694	13-03801	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN150113	15/01/2013	13-03903_3327430	13-03903	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN160113	16/01/2013	13-04504_3330653	13-04504	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN170113	17/01/2013	13-04742_3332866	13-04742	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN160413	16/04/2013	13-18893_3440213	13-18893	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN170413	17/04/2013	13-19065_3441394	13-19065	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN180413	18/04/2013	13-19313_3442833	13-19313	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN190413	19/04/2013	13-19708_3447150	13-19708	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN080713	8/07/2013	13-30645_3536916	13-30645	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN090713	9/07/2013	13-30796_3538305	13-30796	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN110713	11/07/2013	13-31027_3540746	13-31027	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN120713	12/07/2013	13-31104_3541618	13-31104	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN150713	15/07/2013	13-31496_3544458	13-31496	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN141013	14/10/2013	13-45140_3651481	13-45140	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN151013	15/10/2013	13-45346_3653046	13-45346	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN161013	16/10/2013	13-45540_3654442	13-45540	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN171013	17/10/2013	13-45840_3656294	13-45840	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN060114M	6/01/2014	14-02614_3748072	14-02614	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN060114P	6/01/2014	14-02614_3748071	14-02614	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN070114M	7/01/2014	14-02697_3748917	14-02697	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN070114P	7/01/2014	14-02697_3748916	14-02697	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN080114M	8/01/2014	14-03010_3750705	14-03010	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN080114P	8/01/2014	14-03010_3750706	14-03010	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN090114M	9/01/2014	14-03142_3752008	14-03142	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN090114P	9/01/2014	14-03142_3752007	14-03142	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN310314M	31/03/2014	14-15737_3848881	14-15737	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN310314P	31/03/2014	14-15737_3848880	14-15737	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN010414M	1/04/2014	14-15882_3850186	14-15882	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN010414P	1/04/2014	14-15882_3850185	14-15882	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN020414M	2/04/2014	14-16107_3852474	14-16107	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN020414P	2/04/2014	14-16107_3852473	14-16107	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RINM030414	3/04/2014	14-16283_3853879	14-16283	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RINP030414	3/04/2014	14-16283_3853878	14-16283	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN020714	2/07/2014	14-29185_3957498	14-29185	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN030714	3/07/2014	14-29400_3958873	14-29400	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN040714	4/07/2014	14-29468_3960075	14-29468	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN070714	7/07/2014	14-29641_3961614	14-29641	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN080714	8/07/2014	14-29641_3961616	14-29641	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN061014	6/10/2014	14-43373_4071008	14-43373	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN071014	7/10/2014	14-43525_4072500	14-43525	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN081014	8/10/2014	14-43773_4073889	14-43773	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN091014	9/10/2014	14-44165_4076406	14-44165	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN120115	12/01/2015	15-03259_4183491	15-03259	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN130115	13/01/2015	15-03411_4184552	15-03411	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN140115	14/01/2015	15-03810_4186952	15-03810	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN150115	15/01/2015	15-03991_4188346	15-03991	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN210115	21/01/2015	15-04837_4195793	15-04837	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN220415	22/04/2015	15-19660_4306875	15-19660	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN230415	23/04/2015	15-19781_4307986	15-19781	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN270415	27/04/2015	15-20278_4312739	15-20278	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN280415	28/04/2015	15-20348_4313236	15-20348	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN200715	20/07/2015	15-33119_4408709	15-33119	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN210715	21/07/2015	15-33269_4410004	15-33269	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN220715	22/07/2015	15-33431_4411247	15-33431	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN230715	23/07/2015	15-33543_4412329	15-33543	Trip_B	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

(a) US EPA Regional Screening Levels (RSL) 2014. Criteria for Tap Water (TR: 1E-06 and THQ: 1,0)
(b) Low reliability values (95%) level of protection
(c) As adopted by AEA (2013) Audit Report (based on Table 3.3.2 of ANZECC
(d) WHO 2011 Drinking Water Guidelines - Provisional
(e) Low reliability trigger values (ANZECC 2000) generally Marine low reliablity
^ Converted from Alkalinity (Bicarbonate as CaCO3) by a factor of 1.22
* Considered to be overly conservative to apply drinking water criteria based on aesthetics to assess primary contact recreation values. No health based criteria available. Consequently no criteria applied.

** Adopted from health based drinking water criteria of 0.5mg/L, multiplied by a factor of 10 to account for incidental ingestion.

Project 1192
Client Wyndham City Council
Site Werribee

Table J1 - Groundwater Results

						Other Organics SVOC & VOC																														OCP											
					1,3-dichlorobenzene	1-Chloronaphthalene	1-naphthylamine	2-methylnaphthalene	2-naphthylamine	2-nitroaniline	2-Picoline	3,3-Dichlorobenzidine	4-(dimethylamino) azobenzene	4-aminobiphenyl	4-bromophenyl phenyl ether	4-chlorophenyl phenyl ether	7,12-dimethylbenz(a)anthracene	Acetophenone	Allyl chloride	Aniline	Bis(2-chloroethoxy) methane	Bis(2-chloroisopropyl) ether	Carbon disulfide	Dibenz(a,j)acridine	Dibenzofuran	Dichlorodifluoromethane	Diphenylamine	Ethyl acetate	Methane	N-nitrosodi-n-butylamine	N-nitrosodi-n-propylamine	N-nitrosopiperidine	Pentachloronitrobenzene	Trifluralin	Vinyl acetate	a-BHC	b-BHC	Chlordane (cis)	Chlordane (trans)	Aldrin	4,4-DDE	Hexachlorobenzene	g-BHC (Lindane)	d-BHC	Endrin	Endrin aldehyde	Heptachlor
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL					0.001																								0.01							0.001	0.001	0.001	0.001	0.001	0.001	0.00001	0.001	0.001	0.001	0.001	0.001
ANZECC 2000 MW 90%																																													1E-05		
PCR_ADWG 2011					0.02																																						0.01				0.0003
ANZECC 2000 Stockwater					0.02																																						0.01				0.0003
Field ID	**Sample Date**	**SampleCode**	**Lab No.**	**Sample Type**																																											
S1	3/11/2011	11-46815_2804827	11-46815	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1	15/05/2012	12-23173_3037189	12-23173	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1	16/01/2013	13-04504_3330648	13-04504	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
160112	16/01/2013	13-04504_3330652	13-04504	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S201	16/01/2013	M13-Ja06971	365703	Interlab_D	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.005	<0.005	<0.001	<0.005	<0.005	<0.001	<0.005	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	<0.005	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
S1	17/04/2013	13-19065_3441388	13-19065	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1	9/07/2013	13-30796_3538300	13-30796	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1	17/10/2013	13-45840_3656290	13-45840	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1	6/01/2014	14-02614_3748068	14-02614	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1	1/04/2014	14-15882_3850181	14-15882	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1	2/07/2014	14-29185_3957496	14-29185	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1	9/10/2014	14-44165_4076402	14-44165	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1	15/01/2015	15-03991_4188341	15-03991	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1	23/04/2015	15-19781_4307981	15-19781	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S230415	23/04/2015	15-19781_4307985	15-19781	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S201	23/04/2015	M15-Ap18493	455170	Interlab_D	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
S1	22/07/2015	15-33431_4411242	15-33431	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	31/10/2011	11-46411_2802039	11-46411	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	14/05/2012	12-22913_3035431	12-22913	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	17/01/2013	13-04742_3332862	13-04742	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S2	17/04/2013	13-19065_3441389	13-19065	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	11/07/2013	13-31027_3540742	13-31027	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	17/10/2013	13-45840_3656291	13-45840	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	7/01/2014	14-02697_3748910	14-02697	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	3/04/2014	14-16283_3853874	14-16283	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	2/07/2014	14-29185_3957497	14-29185	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	8/10/2014	14-43773_4073885	14-43773	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	13/01/2015	15-03411_4184549	15-03411	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	28/04/2015	15-20348_4313231	15-20348	Normal	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	22/07/2015	15-33431_4411243	15-33431	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	3/11/2011	11-46815_2804828	11-46815	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	16/05/2012	12-23337_3038591	12-23337	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	15/01/2013	13-03903_3327426	13-03903	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S3	18/04/2013	13-19313_3442829	13-19313	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	9/07/2013	13-30796_3538301	13-30796	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	16/10/2013	13-45540_3654438	13-45540	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	9/01/2014	14-03142_3752003	14-03142	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	3/04/2014	14-16283_3853875	14-16283	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	4/07/2014	14-29468_3960071	14-29468	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	7/10/2014	14-43525_4072498	14-43525	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	13/01/2015	15-03411_4184551	15-03411	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	23/04/2015	15-19781_4307982	15-19781	Normal	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	21/07/2015	15-33269_4409999	15-33269	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	7/11/2011	11-47070_2807630	11-47070	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	14/05/2012	12-22913_3035432	12-22913	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	17/01/2013	13-04742_3332863	13-04742	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S4	17/04/2013	13-19065_3441390	13-19065	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	15/07/2013	13-31496_3544456	13-31496	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	15/10/2013	13-45346_3653040	13-45346	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	8/01/2014	14-03010_3750701	14-03010	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	1/04/2014	14-15882_3850182	14-15882	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	3/07/2014	14-29400_3958868	14-29400	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
030714	3/07/2014	14-29400_3958872	14-29400	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S204	3/07/2014	M14-Jl05817	424198	Interlab_D	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.005	<0.005	<0.001	<0.005	<0.005	<0.001	<0.005	<1	-	<0.005	<0.005	<0.005	<0.005	<0.005	<2.5	<0.005	<0.005	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
S4	7/10/2014	14-43525_4072499	14-43525	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	14/01/2015	15-03810_4186953	15-03810	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	27/04/2015	15-20278_4312735	15-20278	Normal	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	23/07/2015	15-33543_4412325	15-33543	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	2/11/2011	11-46545_2803160	11-46545	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	14/05/2012	12-22913_3035433	12-22913	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	15/01/2013	13-03903_3327427	13-03903	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S5	16/04/2013	13-18893_3440210	13-18893	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	15/07/2013	13-31496_3544457	13-31496	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	15/10/2013	13-45346_3653041	13-45346	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	8/01/2014	14-03010_3750702	14-03010	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	2/04/2014	14-16107_3852467	14-16107	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S205	2/04/2014	M14-Ap02919	414047	Interlab_D	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.005	<0.005	<0.001	<0.005	<0.005	<0.001	<0.005	-	0.84	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	<0.005	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
020414	2/04/2014	14-16107_3852472	14-16107	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	7/07/2014	14-29641_3961609	14-29641	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	8/10/2014	14-43773_4073886	14-43773	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	14/01/2015	15-03810_4186956	15-03810	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	27/04/2015	15-20278_4312736	15-20278	Normal	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	23/07/2015	15-33543_4412326	15-33543	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S230715	23/07/2015	15-33543_4412328	15-33543	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S205	23/07/2015	M15-Jl22233	466416	Interlab_D	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.005	<0.005	<0.001	<0.005	<0.005	<0.001	<0.005	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	<0.005	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
S6	3/11/2011	11-46815_2804829	11-46815	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6	17/05/2012	12-23644_3041937	12-23644	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Project 1192
Client Wyndham City Council
Site Werribee

Table J1 - Groundwater Results

						Other Organics SVOC & VOC																									OCP											
					1,3-dichlorobenzene	1-Chloronaphthalene	1-naphthylamine	2-methylnaphthalene	2-naphthylamine	2-nitroaniline	2-Picoline	3,3-Dichlorobenzidine	4-(dimethylamino) azobenzene	4-aminobiphenyl	4-bromophenyl phenyl ether	4-chlorophenyl phenyl ether	7,12-dimethylbenz(a)anthracene	Acetophenone	Allyl chloride	Aniline	Bis(2-chloroethoxy) methane	Bis(2-chloroisopropyl) ether	Carbon disulfide	Dibenz(a,j)acridine	Dibenzofuran	Dichlorodifluoromethane	Diphenylamine	Ethyl acetate	Methane	N-nitrosodi-n-butylamine	N-nitrosodi-n-propylamine	N-nitrosopiperidine	Pentachloronitrobenzene	Trifluralin	Vinyl acetate	a-BHC	b-BHC	Chlordane (cis)	Chlordane (trans)	Aldrin	4,4-DDE	Hexachlorobenzene	g-BHC (Lindane)	d-BHC	Endrin	Endrin aldehyde	Heptachlor
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL					0.001																								0.01							0.001	0.001	0.001	0.001	0.001	0.001	0.00001	0.001	0.001	0.001	0.001	0.001
ANZECC 2000 MW 90%																																													1E-05		
PCR_ADWG 2011					0.02																																						0.01				0.0003
ANZECC 2000 Stockwater					0.02																																						0.01				0.0003
Field ID	**Sample Date**	**SampleCode**	**Lab No.**	**Sample Type**																																											
S6	14/01/2013	13-03801_3326691	13-03801	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S6	19/04/2013	13-19708_3447146	13-19708	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6	12/07/2013	13-31104_3541613	13-31104	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S206	12/07/2013	M13-JI10365	385951	Interlab_D	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.005	<0.005	<0.001	<0.005	<0.005	<0.001	<0.005	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	<0.005	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
120713	12/07/2013	13-31104_3541617	13-31104	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6	16/10/2013	13-45540_3654441	13-45540	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6	9/01/2014	14-03142_3752004	14-03142	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6	31/03/2014	14-15737_3848877	14-15737	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6	4/07/2014	14-29468_3960072	14-29468	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6	6/10/2014	14-43373_4071005	14-43373	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6	13/01/2015	15-03411_4184548	15-03411	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6	22/04/2015	15-19660_4306872	15-19660	Normal	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6	21/07/2015	15-33269_4410000	15-33269	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	7/11/2011	11-47070_2807631	11-47070	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	17/05/2012	12-23644_3041938	12-23644	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	14/01/2013	13-03801_3326692	13-03801	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S7	19/04/2013	13-19708_3447147	13-19708	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	12/07/2013	13-31104_3541614	13-31104	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	16/10/2013	13-45540_3654439	13-45540	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	9/01/2014	14-03142_3752005	14-03142	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	31/03/2014	14-15737_3848878	14-15737	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	4/07/2014	14-29468_3960073	14-29468	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	6/10/2014	14-43373_4071006	14-43373	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	13/01/2015	15-03411_4184550	15-03411	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	22/04/2015	15-19660_4306873	15-19660	Normal	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	20/07/2015	15-33119_4408705	15-33119	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S8	2/11/2011	11-46545_2803161	11-46545	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S208	2/11/2011	M11-No01704	317310	Interlab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S021111	2/11/2011	11-46545_2803163	11-46545	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S8	15/05/2012	12-23173_3037190	12-23173	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S8	17/04/2013	13-19065_3441391	13-19065	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S170413	17/04/2013	13-19065_3441393	13-19065	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S208	17/04/2013	M13-Ap14190	376172	Interlab_D	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.005	<0.005	<0.001	<0.005	<0.005	<0.001	<0.005	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	<0.005	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
S8	12/07/2013	13-31104_3541615	13-31104	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S8	15/10/2013	13-45346_3653042	13-45346	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S8A	8/01/2014	14-03010_3750703	14-03010	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S8A	1/04/2014	14-15882_3850183	14-15882	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S8A	7/07/2014	14-29641_3961610	14-29641	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S8A	7/10/2014	14-43525_4072495	14-43525	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
071014	7/10/2014	14-43525_4072501	14-43525	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S208A	7/10/2014	M14-Oc06798	434833	Interlab_D	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.005	<0.005	<0.001	<0.005	<0.005	<0.001	<0.005	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	<0.005	-	-	<0.005	<0.005	<0.0001	<0.005	<0.005	<0.005	<0.005	<0.005
S8A	21/01/2015	15-04837_4195791	15-04837	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S8A	28/04/2015	15-20348_4313232	15-20348	Normal	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S8A	23/07/2015	15-33543_4412327	15-33543	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	2/11/2011	11-46545_2803162	11-46545	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	14/05/2012	12-22913_3035434	12-22913	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	15/01/2013	13-03903_3327428	13-03903	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S9	16/04/2013	13-18893_3440211	13-18893	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	11/07/2013	13-31027_3540743	13-31027	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	15/10/2013	13-45346_3653043	13-45346	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S209	15/10/2013	M13-Oc12519	396541	Interlab_D	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.005	<0.005	<0.001	<0.005	<0.005	<0.001	<0.005	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	<0.005	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
151013	15/10/2013	13-45346_3653045	13-45346	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	7/01/2014	14-02697_3748911	14-02697	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S209	7/01/2014	M14-Ja01360	405048	Interlab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0001	-	-	-	-	-
S070114	7/01/2014	14-02697_3748915	14-02697	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	1/04/2014	14-15882_3850184	14-15882	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	3/07/2014	14-29400_3958869	14-29400	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	7/10/2014	14-43525_4072496	14-43525	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	14/01/2015	15-03810_4186955	15-03810	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140115A	14/01/2015	15-03810_4186954	15-03810	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S209	14/01/2015	M15-Ja05179	444481	Interlab_D		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.005	<0.005	<0.001	<0.005	<0.005	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
S9	23/04/2015	15-19781_4307983	15-19781	Normal	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	21/07/2015	15-33269_4410001	15-33269	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S10	15/05/2012	12-23173_3037191	12-23173	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S210	15/05/2012	M12-My13990	337641	Interlab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S150512	15/05/2012	12-23173_3037193	12-23173	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S10	15/01/2013	13-03903_3327429	13-03903	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S10	19/04/2013	13-19708_3447148	13-19708	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S10	11/07/2013	13-31027_3540744	13-31027	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S10	15/10/2013	13-45346_3653044	13-45346	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S10A	9/01/2014	14-03142_3752006	14-03142	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S10A	2/04/2014	14-16107_3852468	14-16107	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S10A	3/07/2014	14-29400_3958870	14-29400	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S10A	7/10/2014	14-43525_4072497	14-43525	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Project 1192
Client Wyndham City Council
Site Werribee

Table J1 - Groundwater Results

						Other Organics SVOC & VOC																														OCP											
					1,3-dichlorobenzene	1-Chloronaphthalene	1-naphthylamine	2-methylnaphthalene	2-naphthylamine	2-nitroaniline	2-Picoline	3,3-Dichlorobenzidine	4-(dimethylamino) azobenzene	4-aminobiphenyl	4-bromophenyl phenyl ether	4-chlorophenyl phenyl ether	7,12-dimethylbenz(a)anthracene	Acetophenone	Allyl chloride	Aniline	Bis(2-chloroethoxy) methane	Bis(2-chloroisopropyl) ether	Carbon disulfide	Dibenz(a,j)acridine	Dibenzofuran	Dichlorodifluoromethane	Diphenylamine	Ethyl acetate	Methane	N-nitrosodi-n-butylamine	N-nitrosodi-n-propylamine	N-nitrosopiperidine	Pentachloronitrobenzene	Trifluralin	Vinyl acetate	a-BHC	b-BHC	Chlordane (cis)	Chlordane (trans)	Aldrin	4,4-DDE	Hexachlorobenzene	g-BHC (Lindane)	d-BHC	Endrin	Endrin aldehyde	Heptachlor
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL					0.001																								0.01							0.001	0.001	0.001	0.001	0.001	0.001	0.00001	0.001	0.001	0.001	0.001	0.001
ANZECC 2000 MW 90%																																													1E-05		
PCR_ADWG 2011					0.02																																						0.01				0.0003
ANZECC 2000 Stockwater					0.02																																						0.01				0.0003
Field ID	Sample Date	SampleCode	Lab No.	Sample Type																																											
S10A	21/01/2015	15-04837_4195792	15-04837	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S10A	27/04/2015	15-20278_4312737	15-20278	Normal	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S10A	22/07/2015	15-33431_4411244	15-33431	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	7/11/2011	11-47070_2807632	11-47070	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	15/05/2012	12-23173_3037192	12-23173	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	16/01/2013	13-04504_3330649	13-04504	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S11	16/04/2013	13-18893_3440212	13-18893	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	11/07/2013	13-31027_3540745	13-31027	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	17/10/2013	13-45840_3656292	13-45840	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	8/01/2014	14-03010_3750704	14-03010	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	3/04/2014	14-16283_3853876	14-16283	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	3/07/2014	14-29400_3958871	14-29400	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	8/10/2014	14-43773_4073887	14-43773	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	14/01/2015	15-03810_4186957	15-03810	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	27/04/2015	15-20278_4312738	15-20278	Normal	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	21/07/2015	15-33269_4410002	15-33269	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	3/11/2011	11-46815_2804830	11-46815	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	16/05/2012	12-23337_3038592	12-23337	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	16/01/2013	13-04504_3330650	13-04504	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S12	17/04/2013	13-19065_3441392	13-19065	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	9/07/2013	13-30796_3538302	13-30796	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	17/10/2013	13-45840_3656293	13-45840	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	6/01/2014	14-02614_3748069	14-02614	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	2/04/2014	14-16107_3852469	14-16107	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	7/07/2014	14-29641_3961611	14-29641	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	8/10/2014	14-43773_4073888	14-43773	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	15/01/2015	15-03991_4188342	15-03991	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	23/04/2015	15-19781_4307984	15-19781	Normal	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	22/07/2015	15-33431_4411245	15-33431	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	4/11/2011	11-46925_2806228	11-46925	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	17/05/2012	12-23644_3041939	12-23644	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	14/01/2013	13-03801_3326693	13-03801	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S13	19/04/2013	13-19708_3447149	13-19708	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	12/07/2013	13-31104_3541616	13-31104	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	16/10/2013	13-45540_3654440	13-45540	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	6/01/2014	14-02614_3748070	14-02614	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	31/03/2014	14-15737_3848879	14-15737	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	4/07/2014	14-29468_3960074	14-29468	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	6/10/2014	14-43373_4071007	14-43373	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	12/01/2015	15-03259_4183490	15-03259	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	22/04/2015	15-19660_4306874	15-19660	Normal	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	20/07/2015	15-33119_4408706	15-33119	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	31/10/2011	11-46411_2802040	11-46411	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	16/05/2012	12-23337_3038593	12-23337	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	17/01/2013	13-04742_3332864	13-04742	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S14	18/04/2013	13-19313_3442830	13-19313	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	9/07/2013	13-30796_3538303	13-30796	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	14/10/2013	13-45140_3651478	13-45140	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	7/01/2014	14-02697_3748912	14-02697	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	2/04/2014	14-16107_3852470	14-16107	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	7/07/2014	14-29641_3961612	14-29641	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	9/10/2014	14-44165_4076403	14-44165	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	15/01/2015	15-03991_4188343	15-03991	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	28/04/2015	15-20348_4313233	15-20348	Normal	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	20/07/2015	15-33119_4408707	15-33119	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	31/10/2011	11-46411_2802041	11-46411	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	16/05/2012	12-23337_3038594	12-23337	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	17/01/2013	13-04742_3332865	13-04742	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S15	18/04/2013	13-19313_3442831	13-19313	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	9/07/2013	13-30796_3538304	13-30796	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	14/10/2013	13-45140_3651479	13-45140	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	7/01/2014	14-02697_3748913	14-02697	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	2/04/2014	14-16107_3852471	14-16107	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	8/07/2014	14-29641_3961615	14-29641	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	9/10/2014	14-44165_4076404	14-44165	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	15/01/2015	15-03991_4188344	15-03991	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	28/04/2015	15-20348_4313234	15-20348	Normal	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	22/07/2015	15-33431_4411246	15-33431	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S16	31/10/2011	11-46411_2802042	11-46411	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S16	16/05/2012	12-23337_3038595	12-23337	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S16	16/01/2013	13-04504_3330651	13-04504	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
S16	18/04/2013	13-19313_3442832	13-19313	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S16	8/07/2013	13-30645_3536915	13-30645	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S16	14/10/2013	13-45140_3651480	13-45140	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S16	7/01/2014	14-02697_3748914	14-02697	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S16	3/04/2014	14-16283_3853877	14-16283	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Project 1192
Client Wyndham City Council
Site Werribee

Table J1 - Groundwater Results

						Other Organics SVOC & VOC																									OCP												
					1,3-dichlorobenzene	1-Chloronaphthalene	1-naphthylamine	2-methylnaphthalene	2-naphthylamine	2-nitroaniline	2-Picoline	3,3-Dichlorobenzidine	4-(dimethylamino) azobenzene	4-aminobiphenyl	4-bromophenyl phenyl ether	4-chlorophenyl phenyl ether	7,12-dimethylbenz(a)anthracene	Acetophenone	Allyl chloride	Aniline	Bis(2-chloroethoxy) methane	Bis(2-chloroisopropyl) ether	Carbon disulfide	Dibenz(a,j)acridine	Dibenzofuran	Dichlorodifluoromethane	Diphenylamine	Ethyl acetate	Methane	N-nitrosodi-n-butylamine	N-nitrosodi-n-propylamine	N-nitrosopiperidine	Pentachloronitrobenzene	Trifluralin	Vinyl acetate	a-BHC	b-BHC	Chlordane (cis)	Chlordane (trans)	Aldrin	4,4-DDE	Hexachlorobenzene	g-BHC (Lindane)	d-BHC	Endrin	Endrin aldehyde	Heptachlor
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL					0.001																								0.01							0.001	0.001	0.001	0.001	0.001	0.001	0.00001	0.001	0.001	0.001	0.001	0.001
ANZECC 2000 MW 90%																																													1E-05		
PCR_ADWG 2011					0.02																																						0.01				0.0003
ANZECC 2000 Stockwater					0.02																																						0.01				0.0003
Field ID	Sample Date	SampleCode	Lab No.	Sample Type																																											
S16	7/07/2014	14-29641_3961613	14-29641	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S16	9/10/2014	14-44165_4076405	14-44165	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S16	15/01/2015	15-03991_4188345	15-03991	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S16	28/04/2015	15-20348_4313235	15-20348	Normal	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S16	21/07/2015	15-33269_4410003	15-33269	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN311011	31/10/2011	11-46411_2802043	11-46411	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN021111	2/11/2011	11-46545_2803164	11-46545	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN031111	3/11/2011	11-46815_2804831	11-46815	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN041111	4/11/2011	11-46925_2806229	11-46925	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN071111	7/11/2011	11-47070_2807633	11-47070	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN140512	14/05/2012	12-22913_3035435	12-22913	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN150512	15/05/2012	12-23173_3037194	12-23173	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN160512	16/05/2012	12-23337_3038596	12-23337	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN170512	17/05/2012	12-23644_3041940	12-23644	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN140113	14/01/2013	13-03801_3326694	13-03801	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN150113	15/01/2013	13-03903_3327430	13-03903	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN160113	16/01/2013	13-04504_3330653	13-04504	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN170113	17/01/2013	13-04742_3332866	13-04742	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RIN160413	16/04/2013	13-18893_3440213	13-18893	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN170413	17/04/2013	13-19065_3441394	13-19065	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN180413	18/04/2013	13-19313_3442833	13-19313	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN190413	19/04/2013	13-19708_3447150	13-19708	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN080713	8/07/2013	13-30645_3536916	13-30645	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN090713	9/07/2013	13-30796_3538305	13-30796	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN110713	11/07/2013	13-31027_3540746	13-31027	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN120713	12/07/2013	13-31104_3541618	13-31104	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN150713	15/07/2013	13-31496_3544458	13-31496	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN141013	14/10/2013	13-45140_3651481	13-45140	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN151013	15/10/2013	13-45346_3653046	13-45346	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN161013	16/10/2013	13-45540_3654442	13-45540	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN171013	17/10/2013	13-45840_3656294	13-45840	Rinsate	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN060114M	6/01/2014	14-02614_3748072	14-02614	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN060114P	6/01/2014	14-02614_3748071	14-02614	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN070114M	7/01/2014	14-02697_3748917	14-02697	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN070114P	7/01/2014	14-02697_3748916	14-02697	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN080114M	8/01/2014	14-03010_3750705	14-03010	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN080114P	8/01/2014	14-03010_3750706	14-03010	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN090114M	9/01/2014	14-03142_3752008	14-03142	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN090114P	9/01/2014	14-03142_3752007	14-03142	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN310314M	31/03/2014	14-15737_3848881	14-15737	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN310314P	31/03/2014	14-15737_3848880	14-15737	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN010414M	1/04/2014	14-15882_3850186	14-15882	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN010414P	1/04/2014	14-15882_3850185	14-15882	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN020414M	2/04/2014	14-16107_3852474	14-16107	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN020414P	2/04/2014	14-16107_3852473	14-16107	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RINM030414	3/04/2014	14-16283_3853879	14-16283	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RINP030414	3/04/2014	14-16283_3853878	14-16283	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN020714	2/07/2014	14-29185_3957498	14-29185	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN030714	3/07/2014	14-29400_3958873	14-29400	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN040714	4/07/2014	14-29468_3960075	14-29468	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN070714	7/07/2014	14-29641_3961614	14-29641	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN080714	8/07/2014	14-29641_3961616	14-29641	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN061014	6/10/2014	14-43373_4071008	14-43373	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN071014	7/10/2014	14-43525_4072500	14-43525	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN081014	8/10/2014	14-43773_4073889	14-43773	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN091014	9/10/2014	14-44165_4076406	14-44165	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN120115	12/01/2015	15-03259_4183491	15-03259	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN130115	13/01/2015	15-03411_4184552	15-03411	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN140115	14/01/2015	15-03810_4186952	15-03810	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN150115	15/01/2015	15-03991_4188346	15-03991	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN210115	21/01/2015	15-04837_4195793	15-04837	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN220415	22/04/2015	15-19660_4306875	15-19660	Rinsate	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN230415	23/04/2015	15-19781_4307986	15-19781	Rinsate	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN270415	27/04/2015	15-20278_4312739	15-20278	Rinsate	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN280415	28/04/2015	15-20348_4313236	15-20348	Rinsate	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN200715	20/07/2015	15-33119_4408709	15-33119	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN210715	21/07/2015	15-33269_4410004	15-33269	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN220715	22/07/2015	15-33431_4411247	15-33431	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN230715	23/07/2015	15-33543_4412329	15-33543	Trip_B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

(a) US EPA Regional Screening Levels (RSL) 2014, Criteria for Tap Water (TR: 1E-06 and THQ: 1.0)
(b) Low reliability values (95%) level of protection
(c) As adopted by AEA (2013) Audit Report (based on Table 3.3.2 of ANZECC
(d) WHO 2011 Drinking Water Guidelines - Provisional
(e) Low reliability trigger values (ANZECC 2000) generally Marine low reliablity
^ Converted from Alkalinity (Bicarbonate as CaCO3) by a factor of 1.22
* Considered to be overly conservative to apply drinking water criteria based on aesthetics to assess primary contact recreation values. No health based criteria available. Consequently no criteria applied.
** Adopted from health based drinking water criteria of 0.5mg/L, multiplied by a factor of 10 to account for incidental ingestion.

Project 1192
Client Wyndham City Council
Site Werribee

Table J1 - Groundwater Results

					OCP											PCB								Phenols Halogenated						Phenols Halogenated					Phenols Non-Halogenated							
Field ID	Sample Date	SampleCode	Lab No.	Sample Type	Heptachlor epoxide	Methoxychlor	Endosulfan I	Endosulfan II	Endosulfan sulphate	DDT	DDD	DDT+DDE+DDD	Dieldrin	Aldrin + Dieldrin	Endrin ketone	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Sum of total)	2,3,4,5-tetrachlorophenol	2,3,4,6-tetrachlorophenol	2,3,5,6-Tetrachlorophenol	2,4,5-trichlorophenol	2,4,6-trichlorophenol	2,4-dichlorophenol	2,6-dichlorophenol	2-chlorophenol	4-chloro-3-methylphenol	Pentachlorophenol	Phenols (Total Halogenated)	tetrachlorophenols	2,4-dimethylphenol	2,4-dinitrophenol	2-methylphenol	2-nitrophenol	3-&4-methylphenol	3-Methylphenol	4,6-Dinitro-2-methylphenol
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL					0.001	0.001	0.001	0.001	0.001	0.001	0.001		0.001		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.0001	0.001	0.001	0.001	0.001	0.001	0.0006	0.0006	0.0006	0.001	0.001	0.001		0.0006		0.0006	0.001		0.001	
ANZECC 2000 MW 90%																																	0.033									
PCR_ADWG 2011										0.009				0.0003														0.02	0.2		0.3		0.01									
ANZECC 2000 Stockwater										0.009				0.0003														0.02	0.2		0.3		0.1									
S1	3/11/2011	11-46815_2804827	11-46815	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1	15/05/2012	12-23173_3037189	12-23173	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1	16/01/2013	13-04504_3330648	13-04504	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
160112	16/01/2013	13-04504_3330652	13-04504	Field_D	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S201	16/01/2013	M13-Ja06971	365703	Interlab_D	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.015	<0.005	<0.01	<0.005	-	-	-	-	-	-	-	-	-	<0.01	-	<0.01	<0.01	<0.003	<0.003	<0.003	<0.01	<0.01	-	-	<0.003	<0.03	<0.003	<0.01	<0.006	-	<0.03
S1	17/04/2013	13-19065_3441388	13-19065	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S1	9/07/2013	13-30796_3538300	13-30796	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S1	17/10/2013	13-45840_3656290	13-45840	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S1	6/01/2014	14-02614_3748068	14-02614	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S1	1/04/2014	14-15882_3850181	14-15882	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S1	2/07/2014	14-29185_3957496	14-29185	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S1	9/10/2014	14-44165_4076402	14-44165	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S1	15/01/2015	15-03991_4188341	15-03991	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S1	23/04/2015	15-19781_4307981	15-19781	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S230415	23/04/2015	15-19781_4307985	15-19781	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S201	23/04/2015	M15-Ap18493	455170	Interlab_D	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	-	<0.005	-	-	-	-	-	-	-	-	-	<0.01	-	<0.01	<0.01	<0.003	<0.003	<0.003	<0.01	<0.01	-	-	<0.003	<0.03	<0.003	<0.01	<0.006	-	<0.03
S1	22/07/2015	15-33431_4411242	15-33431	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S2	31/10/2011	11-46411_2802039	11-46411	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	14/05/2012	12-22913_3035431	12-22913	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	17/01/2013	13-04742_3332862	13-04742	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S2	17/04/2013	13-19065_3441389	13-19065	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S2	11/07/2013	13-31027_3540742	13-31027	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S2	17/10/2013	13-45840_3656291	13-45840	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S2	7/01/2014	14-02697_3748910	14-02697	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S2	3/04/2014	14-16283_3853874	14-16283	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S2	2/07/2014	14-29185_3957497	14-29185	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S2	8/10/2014	14-43773_4073885	14-43773	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S2	13/01/2015	15-03411_4184549	15-03411	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S2	28/04/2015	15-20348_4313231	15-20348	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S2	22/07/2015	15-33431_4411243	15-33431	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S3	3/11/2011	11-46815_2804828	11-46815	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	16/05/2012	12-23337_3038591	12-23337	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	15/01/2013	13-03903_3327426	13-03903	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S3	18/04/2013	13-19313_3442829	13-19313	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S3	9/07/2013	13-30796_3538301	13-30796	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S3	16/10/2013	13-45540_3654438	13-45540	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S3	9/01/2014	14-03142_3752003	14-03142	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S3	3/04/2014	14-16283_3853875	14-16283	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S3	4/07/2014	14-29468_3960071	14-29468	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S3	7/10/2014	14-43525_4072498	14-43525	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S3	13/01/2015	15-03411_4184551	15-03411	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S3	23/04/2015	15-19781_4307982	15-19781	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S3	21/07/2015	15-33269_4409999	15-33269	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S4	7/11/2011	11-47070_2807630	11-47070	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	14/05/2012	12-22913_3035432	12-22913	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	17/01/2013	13-04742_3332863	13-04742	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S4	17/04/2013	13-19065_3441390	13-19065	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S4	15/07/2013	13-31496_3544456	13-31496	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S4	15/10/2013	13-45346_3653040	13-45346	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S4	8/01/2014	14-03010_3750701	14-03010	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S4	1/04/2014	14-15882_3850182	14-15882	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S4	3/07/2014	14-29400_3958868	14-29400	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
030714	3/07/2014	14-29400_3958872	14-29400	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S204	3/07/2014	M14-JI05817	424198	Interlab_D	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	-	<0.005	-	-	-	-	-	-	-	-	-	<0.01	-	<0.01	<0.01	<0.003	<0.003	<0.003	<0.01	<0.01	-	-	<0.003	<0.03	<0.003	<0.01	<0.006	-	<0.03
S4	7/10/2014	14-43525_4072499	14-43525	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S4	14/01/2015	15-03810_4186953	15-03810	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S4	27/04/2015	15-20278_4312735	15-20278	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S4	23/07/2015	15-33543_4412325	15-33543	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S5	2/11/2011	11-46545_2803160	11-46545	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	14/05/2012	12-22913_3035433	12-22913	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	15/01/2013	13-03903_3327427	13-03903	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S5	16/04/2013	13-18893_3440210	13-18893	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S5	15/07/2013	13-31496_3544457	13-31496	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S5	15/10/2013	13-45346_3653041	13-45346	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S5	8/01/2014	14-03010_3750702	14-03010	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S5	2/04/2014	14-16107_3852467	14-16107	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S205	2/04/2014	M14-Ap02919	414047	Interlab_D	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.015	<0.005	<0.01	<0.005	-	-	-	-	-	-	-	-	-	<0.01	-	<0.01	<0.01	<0.003	<0.003	<0.003	<0.01	<0.01	-	-	<0.003	<0.03	<0.003	<0.01	<0.006	-	<0.03
020414	2/04/2014	14-16107_3852472	14-16107	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S5	7/07/2014	14-29641_3961609	14-29641	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S5	8/10/2014	14-43773_4073886	14-43773	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S5	14/01/2015	15-03810_4186956	15-03810	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S5	27/04/2015	15-20278_4312736	15-20278	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S5	23/07/2015	15-33543_4412326	15-33543	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S230715	23/07/2015	15-33543_4412328	15-33543	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S205	23/07/2015	M15-JI22233	466416	Interlab_D	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	-	<0.005	-	-	-	-	-	-	-	-	-	<0.01	-	<0.01	<0.01	<0.003	<0.003	<0.003	<0.01	<0.01	-	-	<0.003	<0.03	<0.003	<0.01	<0.006	-	<0.03
S6	3/11/2011	11-46815_2804829	11-46815	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6	17/05/2012	12-23644_3041937	12-23644	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Project 1192
Client Wyndham City Council
Site Werribee

Table J1 - Groundwater Results

					OCP											PCB								Phenols Halogenated						Phenols Halogenated					Phenols Non-Halogenated							
					Heptachlor epoxide	Methoxychlor	Endosulfan I	Endosulfan II	Endosulfan sulphate	DDT	DDD	DDT+DDE+DDD	Dieldrin	Aldrin + Dieldrin	Endrin ketone	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Sum of total)	2,3,4,5-tetrachlorophenol	2,3,4,6-tetrachlorophenol	2,3,5,6-Tetrachlorophenol	2,4,5-trichlorophenol	2,4,6-trichlorophenol	2,4-dichlorophenol	2,6-dichlorophenol	2-chlorophenol	4-chloro-3-methylphenol	Pentachlorophenol	Phenols (Total Halogenated)	tetrachlorophenols	2,4-dimethylphenol	2,4-dinitrophenol	2-methylphenol	2-nitrophenol	3-&4-methylphenol	3-Methylphenol	4,6-Dinitro-2-methylphenol
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL					0.001	0.001	0.001	0.001	0.001	0.001	0.001		0.001		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.0001	0.001	0.001	0.001	0.001	0.001	0.0006	0.0006	0.0006	0.001	0.001	0.001		0.0006		0.0006	0.001		0.001	
ANZECC 2000 MW 90%																																	0.033									
PCR_ADWG 2011										0.009				0.0003														0.02	0.2		0.3		0.01									
ANZECC 2000 Stockwater										0.009				0.0003														0.02	0.2		0.3		0.1									
Field ID	Sample Date	SampleCode	Lab No.	Sample Type																																						
S6	14/01/2013	13-03801_3326691	13-03801	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S6	19/04/2013	13-19708_3447146	13-19708	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S6	12/07/2013	13-31104_3541613	13-31104	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S206	12/07/2013	M13-Jl10365	385951	Interlab_D	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.015	<0.005	<0.01	<0.005	-	-	-	-	-	-	-	-	-	<0.01	-	<0.01	<0.01	<0.003	<0.003	<0.003	<0.01	<0.01	-	-	<0.003	<0.03	<0.003	<0.01	<0.006	-	<0.03
120713	12/07/2013	13-31104_3541617	13-31104	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S6	16/10/2013	13-45540_3654441	13-45540	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S6	9/01/2014	14-03142_3752004	14-03142	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S6	31/03/2014	14-15737_3848877	14-15737	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S6	4/07/2014	14-29468_3960072	14-29468	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S6	6/10/2014	14-43373_4071005	14-43373	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S6	13/01/2015	15-03411_4184548	15-03411	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S6	22/04/2015	15-19660_4306872	15-19660	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S6	21/07/2015	15-33269_4410000	15-33269	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S7	7/11/2011	11-47070_2807631	11-47070	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	17/05/2012	12-23644_3041938	12-23644	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	14/01/2013	13-03801_3326692	13-03801	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S7	19/04/2013	13-19708_3447147	13-19708	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S7	12/07/2013	13-31104_3541614	13-31104	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S7	16/10/2013	13-45540_3654439	13-45540	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S7	9/01/2014	14-03142_3752005	14-03142	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S7	31/03/2014	14-15737_3848878	14-15737	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S7	4/07/2014	14-29468_3960073	14-29468	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S7	6/10/2014	14-43373_4071006	14-43373	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S7	13/01/2015	15-03411_4184550	15-03411	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S7	22/04/2015	15-19660_4306873	15-19660	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S7	20/07/2015	15-33119_4408705	15-33119	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S8	2/11/2011	11-46545_2803161	11-46545	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S208	2/11/2011	M11-No01704	317310	Interlab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S021111	2/11/2011	11-46545_2803163	11-46545	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S8	15/05/2012	12-23173_3037190	12-23173	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S8	17/04/2013	13-19065_3441391	13-19065	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S170413	17/04/2013	13-19065_3441393	13-19065	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S208	17/04/2013	M13-Ap14190	376172	Interlab_D	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.015	<0.005	<0.01	<0.005	-	-	-	-	-	-	-	-	-	<0.01	-	<0.01	<0.01	<0.003	<0.003	<0.003	<0.01	<0.01	-	-	<0.003	<0.03	<0.003	<0.01	<0.006	-	<0.03
S8	12/07/2013	13-31104_3541615	13-31104	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S8	15/10/2013	13-45346_3653042	13-45346	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S8A	8/01/2014	14-03010_3750703	14-03010	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S8A	1/04/2014	14-15882_3850183	14-15882	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S8A	7/07/2014	14-29641_3961610	14-29641	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S8A	7/10/2014	14-43525_4072495	14-43525	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
071014	7/10/2014	14-43525_4072501	14-43525	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S208A	7/10/2014	M14-Oc06798	434833	Interlab_D	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	-	<0.005	-	-	-	-	-	-	-	-	-	<0.01	-	<0.01	<0.01	<0.003	<0.003	<0.003	<0.01	<0.01	<0.01	-	<0.003	<0.03	<0.003	<0.01	<0.006	-	<0.03
S8A	21/01/2015	15-04837_4195791	15-04837	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S8A	28/04/2015	15-20348_4313232	15-20348	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S8A	23/07/2015	15-33543_4412327	15-33543	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S9	2/11/2011	11-46545_2803162	11-46545	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	14/05/2012	12-22913_3035434	12-22913	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	15/01/2013	13-03903_3327428	13-03903	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S9	16/04/2013	13-18893_3440211	13-18893	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S9	11/07/2013	13-31027_3540743	13-31027	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S9	15/10/2013	13-45346_3653043	13-45346	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S209	15/10/2013	M13-Oc12519	396541	Interlab_D	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.015	<0.005	<0.01	<0.005	-	-	-	-	-	-	-	-	-	<0.01	-	<0.01	<0.01	<0.003	<0.003	<0.003	<0.01	<0.01	-	-	<0.003	<0.03	<0.003	<0.01	<0.006	-	<0.03
151013	15/10/2013	13-45346_3653045	13-45346	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S9	7/01/2014	14-02697_3748911	14-02697	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S209	7/01/2014	M14-Ja01360	405046	Interlab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0015	<0.0015	<0.0006	<0.0006	<0.0006	<0.0015	<0.0015	<0.0015	<0.006	<0.0006	<0.006	<0.0006	<0.0015	<0.0002	-	<0.006
S070114	7/01/2014	14-02697_3748915	14-02697	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S9	1/04/2014	14-15882_3850184	14-15882	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S9	3/07/2014	14-29400_3958869	14-29400	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S9	7/10/2014	14-43525_4072496	14-43525	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S9	14/01/2015	15-03810_4186955	15-03810	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
140115A	14/01/2015	15-03810_4186954	15-03810	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S209	14/01/2015	M15-Ja05179	444481	Interlab_D	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	-	<0.005	-	<0.01	<0.01	<0.003	<0.003	<0.003	<0.01	<0.01	-	<0.01	-	<0.01	<0.01	<0.003	<0.003	<0.003	<0.01	<0.01	-	-	<0.003	<0.03	<0.003	<0.01	<0.006	-	<0.03
S9	23/04/2015	15-19781_4307983	15-19781	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S9	21/07/2015	15-33269_4410001	15-33269	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S10	15/05/2012	12-23173_3037191	12-23173	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S210	15/05/2012	M12-My13990	337641	Interlab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S150512	15/05/2012	12-23173_3037193	12-23173	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S10	15/01/2013	13-03903_3327429	13-03903	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S10	19/04/2013	13-19708_3447148	13-19708	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S10	11/07/2013	13-31027_3540744	13-31027	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S10	15/10/2013	13-45346_3653044	13-45346	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S10A	9/01/2014	14-03142_3752006	14-03142	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S10A	2/04/2014	14-16107_3852468	14-16107	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S10A	3/07/2014	14-29400_3958870	14-29400	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S10A	7/10/2014	14-43525_4072497	14-43525	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-

Project 1192
Client Wyndham City Council
Site Werribee

Table J1 - Groundwater Results

					OCP											PCB								Phenols Halogenated						Phenols Halogenated					Phenols Non-Halogenated							
					Heptachlor epoxide	Methoxychlor	Endosulfan I	Endosulfan II	Endosulfan sulphate	DDT	DDD	DDT+DDE+DDD	Dieldrin	Aldrin + Dieldrin	Endrin ketone	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Sum of total)	2,3,4,5-tetrachlorophenol	2,3,4,6-tetrachlorophenol	2,3,5,6-Tetrachlorophenol	2,4,5-trichlorophenol	2,4,6-trichlorophenol	2,4-dichlorophenol	2,6-dichlorophenol	2-chlorophenol	4-chloro-3-methylphenol	Pentachlorophenol	Phenols (Total Halogenated)	tetrachlorophenols	2,4-dimethylphenol	2,4-dinitrophenol	2-methylphenol	2-nitrophenol	3-&4-methylphenol	3-Methylphenol	4,6-Dinitro-2-methylphenol
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL					0.001	0.001	0.001	0.001	0.001	0.001	0.001		0.001		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.0001	0.001	0.001	0.001	0.001	0.001	0.0006	0.0006	0.0006	0.001	0.001	0.001		0.0006		0.0006	0.001		0.001	
ANZECC 2000 MW 90%																																	0.033									
PCR_ADWG 2011										0.009				0.0003														0.02	0.2		0.3		0.01									
ANZECC 2000 Stockwater										0.009				0.0003														0.02	0.2		0.3		0.1									
Field ID	Sample Date	SampleCode	Lab No.	Sample Type																																						
S10A	21/01/2015	15-04837_4195792	15-04837	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S10A	27/04/2015	15-20278_4312737	15-20278	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S10A	22/07/2015	15-33431_4411244	15-33431	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S11	7/11/2011	11-47070_2807632	11-47070	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	15/05/2012	12-23173_3037192	12-23173	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	16/01/2013	13-04504_3330649	13-04504	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S11	16/04/2013	13-18893_3440212	13-18893	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S11	11/07/2013	13-31027_3540745	13-31027	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S11	17/10/2013	13-45840_3656292	13-45840	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S11	8/01/2014	14-03010_3750704	14-03010	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S11	3/04/2014	14-16283_3853876	14-16283	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S11	3/07/2014	14-29400_3958871	14-29400	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S11	8/10/2014	14-43773_4073887	14-43773	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S11	14/01/2015	15-03810_4186957	15-03810	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S11	27/04/2015	15-20278_4312738	15-20278	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S11	21/07/2015	15-33269_4410002	15-33269	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S12	3/11/2011	11-46815_2804830	11-46815	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	16/05/2012	12-23337_3038592	12-23337	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	16/01/2013	13-04504_3330650	13-04504	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S12	17/04/2013	13-19065_3441392	13-19065	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S12	9/07/2013	13-30796_3538302	13-30796	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S12	17/10/2013	13-45840_3656293	13-45840	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S12	6/01/2014	14-02614_3748069	14-02614	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S12	2/04/2014	14-16107_3852469	14-16107	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S12	7/07/2014	14-29641_3961611	14-29641	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S12	8/10/2014	14-43773_4073888	14-43773	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S12	15/01/2015	15-03991_4188342	15-03991	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S12	23/04/2015	15-19781_4307984	15-19781	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S12	22/07/2015	15-33431_4411245	15-33431	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S13	4/11/2011	11-46925_2806228	11-46925	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	17/05/2012	12-23644_3041939	12-23644	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	14/01/2013	13-03801_3326693	13-03801	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S13	19/04/2013	13-19708_3447149	13-19708	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S13	12/07/2013	13-31104_3541616	13-31104	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S13	16/10/2013	13-45540_3654440	13-45540	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S13	6/01/2014	14-02614_3748070	14-02614	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S13	31/03/2014	14-15737_3848879	14-15737	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S13	4/07/2014	14-29468_3960074	14-29468	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S13	6/10/2014	14-43373_4071007	14-43373	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S13	12/01/2015	15-03259_4183490	15-03259	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S13	22/04/2015	15-19660_4306874	15-19660	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S13	20/07/2015	15-33119_4408706	15-33119	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S14	31/10/2011	11-46411_2802040	11-46411	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	16/05/2012	12-23337_3038593	12-23337	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	17/01/2013	13-04742_3332864	13-04742	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S14	18/04/2013	13-19313_3442830	13-19313	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S14	9/07/2013	13-30796_3538303	13-30796	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S14	14/10/2013	13-45140_3651478	13-45140	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S14	7/01/2014	14-02697_3748912	14-02697	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S14	2/04/2014	14-16107_3852470	14-16107	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S14	7/07/2014	14-29641_3961612	14-29641	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S14	9/10/2014	14-44165_4076403	14-44165	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S14	15/01/2015	15-03991_4188343	15-03991	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S14	28/04/2015	15-20348_4313233	15-20348	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S14	20/07/2015	15-33119_4408707	15-33119	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S15	31/10/2011	11-46411_2802041	11-46411	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	16/05/2012	12-23337_3038594	12-23337	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	17/01/2013	13-04742_3332865	13-04742	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S15	18/04/2013	13-19313_3442831	13-19313	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S15	9/07/2013	13-30796_3538304	13-30796	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S15	14/10/2013	13-45140_3651479	13-45140	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S15	7/01/2014	14-02697_3748913	14-02697	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S15	2/04/2014	14-16107_3852471	14-16107	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S15	8/07/2014	14-29641_3961615	14-29641	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S15	9/10/2014	14-44165_4076404	14-44165	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S15	15/01/2015	15-03991_4188344	15-03991	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S15	28/04/2015	15-20348_4313234	15-20348	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S15	22/07/2015	15-33431_4411246	15-33431	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S16	31/10/2011	11-46411_2802042	11-46411	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S16	16/05/2012	12-23337_3038595	12-23337	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S16	16/01/2013	13-04504_3330651	13-04504	Normal	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S16	18/04/2013	13-19313_3442832	13-19313	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S16	8/07/2013	13-30645_3536915	13-30645	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S16	14/10/2013	13-45140_3651480	13-45140	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S16	7/01/2014	14-02697_3748914	14-02697	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S16	3/04/2014	14-16283_3853877	14-16283	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-

Project 1192
Client Wyndham City Council
Site Werribee

Table J1 - Groundwater Results

					OCP											PCB								Phenols Halogenated						Phenols Halogenated					Phenols Non-Halogenated							
					Heptachlor epoxide	Methoxychlor	Endosulfan I	Endosulfan II	Endosulfan sulphate	DDT	DDD	DDT+DDE+DDD	Dieldrin	Aldrin + Dieldrin	Endrin ketone	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Sum of total)	2,3,4,5-tetrachlorophenol	2,3,4,6-tetrachlorophenol	2,3,5,6-Tetrachlorophenol	2,4,5-trichlorophenol	2,4,6-trichlorophenol	2,4-dichlorophenol	2,6-dichlorophenol	2-chlorophenol	4-chloro-3-methylphenol	Pentachlorophenol	Phenols (Total Halogenated)	tetrachlorophenols	2,4-dimethylphenol	2,4-dinitrophenol	2-methylphenol	2-nitrophenol	3-&4-methylphenol	3-Methylphenol	4,6-Dinitro-2-methylphenol
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL					0.001	0.001	0.001	0.001	0.001	0.001	0.001		0.001		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.0001	0.001	0.001	0.001	0.001	0.001	0.0006	0.0006	0.0006	0.001	0.001	0.001		0.0006		0.0006	0.001		0.001	
ANZECC 2000 MW 90%																																	0.033									
PCR_ADWG 2011										0.009				0.0003														0.02	0.2		0.3		0.01									
ANZECC 2000 Stockwater										0.009				0.0003														0.02	0.2		0.3		0.1									
Field ID	Sample Date	SampleCode	Lab No.	Sample Type																																						
S16	7/07/2014	14-29641_3961613	14-29641	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S16	9/10/2014	14-44165_4076405	14-44165	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S16	15/01/2015	15-03991_4188345	15-03991	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S16	28/04/2015	15-20348_4313235	15-20348	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
S16	21/07/2015	15-33269_4410003	15-33269	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN311011	31/10/2011	11-46411_2802043	11-46411	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN021111	2/11/2011	11-46545_2803164	11-46545	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN031111	3/11/2011	11-46815_2804831	11-46815	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN041111	4/11/2011	11-46925_2806229	11-46925	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN071111	7/11/2011	11-47070_2807633	11-47070	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN140512	14/05/2012	12-22913_3035435	12-22913	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN150512	15/05/2012	12-23173_3037194	12-23173	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN160512	16/05/2012	12-23337_3038596	12-23337	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN170512	17/05/2012	12-23644_3041940	12-23644	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN140113	14/01/2013	13-03801_3326694	13-03801	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN150113	15/01/2013	13-03903_3327430	13-03903	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN160113	16/01/2013	13-04504_3330653	13-04504	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN170113	17/01/2013	13-04742_3332866	13-04742	Rinsate	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN160413	16/04/2013	13-18893_3440213	13-18893	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN170413	17/04/2013	13-19065_3441394	13-19065	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN180413	18/04/2013	13-19313_3442833	13-19313	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN190413	19/04/2013	13-19708_3447150	13-19708	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN080713	8/07/2013	13-30645_3536916	13-30645	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN090713	9/07/2013	13-30796_3538305	13-30796	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN110713	11/07/2013	13-31027_3540746	13-31027	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN120713	12/07/2013	13-31104_3541618	13-31104	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN150713	15/07/2013	13-31496_3544458	13-31496	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN141013	14/10/2013	13-45140_3651481	13-45140	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN151013	15/10/2013	13-45346_3653046	13-45346	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN161013	16/10/2013	13-45540_3654442	13-45540	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN171013	17/10/2013	13-45840_3656294	13-45840	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN060114M	6/01/2014	14-02614_3748072	14-02614	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN060114P	6/01/2014	14-02614_3748071	14-02614	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN070114M	7/01/2014	14-02697_3748917	14-02697	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN070114P	7/01/2014	14-02697_3748916	14-02697	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN080114M	8/01/2014	14-03010_3750705	14-03010	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN080114P	8/01/2014	14-03010_3750706	14-03010	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN090114M	9/01/2014	14-03142_3752008	14-03142	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN090114P	9/01/2014	14-03142_3752007	14-03142	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN310314M	31/03/2014	14-15737_3848881	14-15737	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN310314P	31/03/2014	14-15737_3848880	14-15737	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN010414M	1/04/2014	14-15882_3850186	14-15882	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN010414P	1/04/2014	14-15882_3850185	14-15882	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN020414M	2/04/2014	14-16107_3852474	14-16107	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN020414P	2/04/2014	14-16107_3852473	14-16107	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RINM030414	3/04/2014	14-16283_3853879	14-16283	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RINP030414	3/04/2014	14-16283_3853878	14-16283	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN020714	2/07/2014	14-29185_3957498	14-29185	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN030714	3/07/2014	14-29400_3958873	14-29400	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN040714	4/07/2014	14-29468_3960075	14-29468	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN070714	7/07/2014	14-29641_3961614	14-29641	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN080714	8/07/2014	14-29641_3961616	14-29641	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN061014	6/10/2014	14-43373_4071008	14-43373	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN071014	7/10/2014	14-43525_4072500	14-43525	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN081014	8/10/2014	14-43773_4073889	14-43773	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN091014	9/10/2014	14-44165_4076406	14-44165	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN120115	12/01/2015	15-03259_4183491	15-03259	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.002	-	<0.001	<0.001	-	<0.002	-
RIN130115	13/01/2015	15-03411_4184552	15-03411	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.003	-	<0.001	<0.001	-	<0.003	-
RIN140115	14/01/2015	15-03810_4186952	15-03810	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.004	-	<0.001	<0.001	-	<0.004	-
RIN150115	15/01/2015	15-03991_4188346	15-03991	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.005	-	<0.001	<0.001	-	<0.005	-
RIN210115	21/01/2015	15-04837_4195793	15-04837	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.006	-	<0.001	<0.001	-	<0.006	-
RIN220415	22/04/2015	15-19660_4306875	15-19660	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN230415	23/04/2015	15-19781_4307986	15-19781	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN270415	27/04/2015	15-20278_4312739	15-20278	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN280415	28/04/2015	15-20348_4313236	15-20348	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN200715	20/07/2015	15-33119_4408709	15-33119	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN210715	21/07/2015	15-33269_4410004	15-33269	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN220715	22/07/2015	15-33431_4411247	15-33431	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-
RIN230715	23/07/2015	15-33543_4412329	15-33543	Trip_B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001	-

(a) US EPA Regional Screening Levels (RSL) 2014. Criteria for Tap Water (TR: 1E-06 and THQ: 1.0)
(b) Low reliability values (95%) level of protection
(c) As adopted by AEA (2013) Audit Report (based on Table 3.3.2 of ANZECC
(d) WHO 2011 Drinking Water Guidelines - Provisional
(e) Low reliability trigger values (ANZECC 2000) generally Marine low reliablity
^ Converted from Alkalinity (Bicarbonate as CaCO3) by a factor of 1.22
* Considered to be overly conservative to apply drinking water criteria based on aesthetics to assess primary contact recreation values. No health based criteria available. Consequently no criteria applied.

** Adopted from health based drinking water criteria of 0.5mg/L, multiplied by a factor of 10 to account for incidental ingestion.

Project 1192
Client Wyndham City Council
Site Werribee

Table J1 - Groundwater Results

					Phenols Non-Halogenated						Solvents							Explosives			Phthalates						Herbicides	Alcohols				
					4,6-Dinitro-o-cyclohexyl phenol	4-methylphenol	4-nitrophenol	Dinoseb	Phenol	Phenols (Total Non Halogenated)	Methyl Ethyl Ketone	2-Ethyl Hexyl Acrylate	4-Methyl-2-pentanone	Acetone	Acrylonitrile	Hexane	2-Propanol	2,4-Dinitrotoluene	2,6-dinitrotoluene	Nitrobenzene	Bis(2-ethylhexyl) phthalate	Butyl benzyl phthalate	Diethylphthalate	Dimethyl phthalate	Di-n-butyl phthalate	Di-n-octyl phthalate	Pronamide	1-Butanol	Ethanol	Isobutanol	Methanol	1-Propanol
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL						0.001	0.001		0.0006	0.001	0.001	0.01	0.001	0.001	0.001		0.01															
ANZECC 2000 MW 90%									0.52																							
PCR_ADWG 2011																																
ANZECC 2000 Stockwater																																
Field ID	Sample Date	SampleCode	Lab No.	Sample Type																												
S1	3/11/2011	11-46815_2804827	11-46815	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1	15/05/2012	12-23173_3037189	12-23173	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1	16/01/2013	13-04504_3330648	13-04504	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
160112	16/01/2013	13-04504_3330652	13-04504	Field_D	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S201	16/01/2013	M13-Ja06971	365703	Interlab_D	-	-	<0.03	-	<0.003	-	<0.001	-	<0.001	<0.001	-	-	-	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	-	-	-	-
S1	17/04/2013	13-19065_3441388	13-19065	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1	9/07/2013	13-30796_3538300	13-30796	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1	17/10/2013	13-45840_3656290	13-45840	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1	6/01/2014	14-02614_3748068	14-02614	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1	1/04/2014	14-15882_3850181	14-15882	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1	2/07/2014	14-29185_3957496	14-29185	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1	9/10/2014	14-44165_4076402	14-44165	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1	15/01/2015	15-03991_4188341	15-03991	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1	23/04/2015	15-19781_4307981	15-19781	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S230415	23/04/2015	15-19781_4307985	15-19781	Field_D	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S201	23/04/2015	M15-Ap18493	455170	Interlab_D	-	-	<0.03	-	<0.003	-	<0.001	-	<0.001	<0.001	-	-	<5	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	-	-	-	-
S1	22/07/2015	15-33431_4411242	15-33431	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	31/10/2011	11-46411_2802039	11-46411	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	14/05/2012	12-22913_3035431	12-22913	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	17/01/2013	13-04742_3332862	13-04742	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	17/04/2013	13-19065_3441389	13-19065	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	11/07/2013	13-31027_3540742	13-31027	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	17/10/2013	13-45840_3656291	13-45840	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	7/01/2014	14-02697_3748910	14-02697	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	3/04/2014	14-16283_3853874	14-16283	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	2/07/2014	14-29185_3957497	14-29185	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	8/10/2014	14-43773_4073885	14-43773	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	13/01/2015	15-03411_4184549	15-03411	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	28/04/2015	15-20348_4313231	15-20348	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	22/07/2015	15-33431_4411243	15-33431	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	3/11/2011	11-46815_2804828	11-46815	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	16/05/2012	12-23337_3038591	12-23337	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	15/01/2013	13-03903_3327426	13-03903	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	18/04/2013	13-19313_3442829	13-19313	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	9/07/2013	13-30796_3538301	13-30796	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	16/10/2013	13-45540_3654438	13-45540	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	9/01/2014	14-03142_3752003	14-03142	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	3/04/2014	14-16283_3853875	14-16283	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	4/07/2014	14-29468_3960071	14-29468	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	7/10/2014	14-43525_4072498	14-43525	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	13/01/2015	15-03411_4184551	15-03411	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	23/04/2015	15-19781_4307982	15-19781	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	21/07/2015	15-33269_4409999	15-33269	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	7/11/2011	11-47070_2807630	11-47070	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	14/05/2012	12-22913_3035432	12-22913	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	17/01/2013	13-04742_3332863	13-04742	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	17/04/2013	13-19065_3441390	13-19065	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	15/07/2013	13-31496_3544456	13-31496	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	15/10/2013	13-45346_3653040	13-45346	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	8/01/2014	14-03010_3750701	14-03010	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	1/04/2014	14-15882_3850182	14-15882	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	3/07/2014	14-29400_3958868	14-29400	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
030714	3/07/2014	14-29400_3958872	14-29400	Field_D	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S204	3/07/2014	M14-Jl05817	424198	Interlab_D	-	-	<0.03	-	<0.003	-	<0.001	<0.5	<0.001	<0.001	<0.001	<0.05	<5	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	-	-	-	-
S4	7/10/2014	14-43525_4072499	14-43525	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	14/01/2015	15-03810_4186953	15-03810	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	27/04/2015	15-20278_4312735	15-20278	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	23/07/2015	15-33543_4412325	15-33543	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	2/11/2011	11-46545_2803160	11-46545	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	14/05/2012	12-22913_3035433	12-22913	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	15/01/2013	13-03903_3327427	13-03903	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	16/04/2013	13-18893_3440210	13-18893	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	15/07/2013	13-31496_3544457	13-31496	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	15/10/2013	13-45346_3653041	13-45346	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	8/01/2014	14-03010_3750702	14-03010	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	2/04/2014	14-16107_3852467	14-16107	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S205	2/04/2014	M14-Ap02919	414047	Interlab_D	-	-	<0.03	-	<0.003	-	<0.001	-	<0.001	<0.001	-	-	-	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	-	-	-	-
020414	2/04/2014	14-16107_3852472	14-16107	Field_D	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	7/07/2014	14-29641_3961609	14-29641	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	8/10/2014	14-43773_4073886	14-43773	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	14/01/2015	15-03810_4186956	15-03810	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	27/04/2015	15-20278_4312736	15-20278	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5	23/07/2015	15-33543_4412326	15-33543	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S230715	23/07/2015	15-33543_4412328	15-33543	Field_D	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S205	23/07/2015	M15-Jl22233	466416	Interlab_D	-	-	<0.03	-	<0.003	-	<0.001	-	<0.001	<0.001	-	-	<5	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<5	<5	<5	<5	<5
S6	3/11/2011	11-46815_2804829	11-46815	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6	17/05/2012	12-23644_3041937	12-23644	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Project 1192
Client Wyndham City Council
Site Werribee

Table J1 - Groundwater Results

					Phenols Non-Halogenated						Solvents							Explosives			Phthalates						Herbicides	Alcohols				
					4,6-Dinitro-o-cyclohexyl phenol	4-methylphenol	4-nitrophenol	Dinoseb	Phenol	Phenols (Total Non Halogenated)	Methyl Ethyl Ketone	2-Ethyl Hexyl Acrylate	4-Methyl-2-pentanone	Acetone	Acrylonitrile	Hexane	2-Propanol	2,4-Dinitrotoluene	2,6-dinitrotoluene	Nitrobenzene	Bis(2-ethylhexyl) phthalate	Butyl benzyl phthalate	Diethylphthalate	Dimethyl phthalate	Di-n-butyl phthalate	Di-n-octyl phthalate	Pronamide	1-Butanol	Ethanol	Isobutanol	Methanol	1-Propanol
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL						0.001	0.001		0.0006	0.001	0.001	0.01	0.001	0.001	0.001		0.01															
ANZECC 2000 MW 90%									0.52																							
PCR_ADWG 2011																																
ANZECC 2000 Stockwater																																
Field ID	Sample Date	SampleCode	Lab No.	Sample Type																												
S6	14/01/2013	13-03801_3326691	13-03801	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6	19/04/2013	13-19708_3447146	13-19708	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6	12/07/2013	13-31104_3541613	13-31104	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S206	12/07/2013	M13-Jl10365	385951	Interlab_D	-	-	<0.03	-	<0.003	-	<0.001	-	<0.001	<0.001	-	-	-	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	-	-	-	-
120713	12/07/2013	13-31104_3541617	13-31104	Field_D	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6	16/10/2013	13-45540_3654441	13-45540	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6	9/01/2014	14-03142_3752004	14-03142	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6	31/03/2014	14-15737_3848877	14-15737	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6	4/07/2014	14-29468_3960072	14-29468	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6	6/10/2014	14-43373_4071005	14-43373	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6	13/01/2015	15-03411_4184548	15-03411	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6	22/04/2015	15-19660_4306872	15-19660	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6	21/07/2015	15-33269_4410000	15-33269	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	7/11/2011	11-47070_2807631	11-47070	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	17/05/2012	12-23644_3041938	12-23644	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	14/01/2013	13-03801_3326692	13-03801	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	19/04/2013	13-19708_3447147	13-19708	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	12/07/2013	13-31104_3541614	13-31104	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	16/10/2013	13-45540_3654439	13-45540	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	9/01/2014	14-03142_3752005	14-03142	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	31/03/2014	14-15737_3848878	14-15737	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	4/07/2014	14-29468_3960073	14-29468	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	6/10/2014	14-43373_4071006	14-43373	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	13/01/2015	15-03411_4184550	15-03411	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	22/04/2015	15-19660_4306873	15-19660	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7	20/07/2015	15-33119_4408705	15-33119	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S8	2/11/2011	11-46545_2803161	11-46545	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S208	2/11/2011	M11-No01704	317310	Interlab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S021111	2/11/2011	11-46545_2803163	11-46545	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S8	15/05/2012	12-23173_3037190	12-23173	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S8	17/04/2013	13-19065_3441391	13-19065	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S170413	17/04/2013	13-19065_3441393	13-19065	Field_D	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S208	17/04/2013	M13-Ap14190	376172	Interlab_D	-	-	<0.03	-	<0.003	-	<0.001	-	<0.001	<0.001	-	-		<0.005	<0.005	<0.05	0.031	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	-	-	-	-
S8	12/07/2013	13-31104_3541615	13-31104	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S8	15/10/2013	13-45346_3653042	13-45346	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S8A	8/01/2014	14-03010_3750703	14-03010	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S8A	1/04/2014	14-15882_3850183	14-15882	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S8A	7/07/2014	14-29641_3961610	14-29641	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S8A	7/10/2014	14-43525_4072495	14-43525	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
071014	7/10/2014	14-43525_4072501	14-43525	Field_D	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S208A	7/10/2014	M14-Oc06798	434833	Interlab_D	<0.1	-	<0.03	<0.1	<0.003	<0.1	<0.001	-	<0.001	<0.001	-	-		<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	-	-	-	-
S8A	21/01/2015	15-04837_4195791	15-04837	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S8A	28/04/2015	15-20348_4313232	15-20348	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S8A	23/07/2015	15-33543_4412327	15-33543	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	2/11/2011	11-46545_2803162	11-46545	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	14/05/2012	12-22913_3035434	12-22913	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	15/01/2013	13-03903_3327428	13-03903	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	16/04/2013	13-18893_3440211	13-18893	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	11/07/2013	13-31027_3540743	13-31027	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	15/10/2013	13-45346_3653043	13-45346	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S209	15/10/2013	M13-Oc12519	396541	Interlab_D	-	-	<0.03	-	<0.003	-	<0.001	-	<0.001	<0.01	<0.01	-	<0.01	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	-	-	-	-
151013	15/10/2013	13-45346_3653045	13-45346	Field_D	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	7/01/2014	14-02697_3748911	14-02697	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S209	7/01/2014	M14-Ja01360	405048	Interlab_D	<0.015	-	<0.006	<0.015	<0.0006	<0.015	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S070114	7/01/2014	14-02697_3748915	14-02697	Field_D	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	1/04/2014	14-15882_3850184	14-15882	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	3/07/2014	14-29400_3958869	14-29400	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	7/10/2014	14-43525_4072496	14-43525	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	14/01/2015	15-03810_4186955	15-03810	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140115A	14/01/2015	15-03810_4186954	15-03810	Field_D	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S209	14/01/2015	M15-Ja05179	444481	Interlab_D	<0.03	-	<0.03	-	<0.003	-	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	-	-	-	-
S9	23/04/2015	15-19781_4307983	15-19781	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S9	21/07/2015	15-33269_4410001	15-33269	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S10	15/05/2012	12-23173_3037191	12-23173	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S210	15/05/2012	M12-My13990	337641	Interlab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S150512	15/05/2012	12-23173_3037193	12-23173	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S10	15/01/2013	13-03903_3327429	13-03903	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S10	19/04/2013	13-19708_3447148	13-19708	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S10	11/07/2013	13-31027_3540744	13-31027	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S10	15/10/2013	13-45346_3653044	13-45346	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S10A	9/01/2014	14-03142_3752006	14-03142	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S10A	2/04/2014	14-16107_3852468	14-16107	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S10A	3/07/2014	14-29400_3958870	14-29400	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S10A	7/10/2014	14-43525_4072497	14-43525	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Project 1192
Client Wyndham City Council
Site Werribee

Table J1 - Groundwater Results

					Phenols Non-Halogenated						Solvents							Explosives			Phthalates						Herbicides	Alcohols				
					4,6-Dinitro-o-cyclohexyl phenol	4-methylphenol	4-nitrophenol	Dinoseb	Phenol	Phenols (Total Non Halogenated)	Methyl Ethyl Ketone	2-Ethyl Hexyl Acrylate	4-Methyl-2-pentanone	Acetone	Acrylonitrile	Hexane	2-Propanol	2,4-Dinitrotoluene	2,6-dinitrotoluene	Nitrobenzene	Bis(2-ethylhexyl) phthalate	Butyl benzyl phthalate	Diethylphthalate	Dimethyl phthalate	Di-n-butyl phthalate	Di-n-octyl phthalate	Pronamide	1-Butanol	Ethanol	Isobutanol	Methanol	1-Propanol
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL						0.001	0.001		0.0006	0.001	0.001	0.01	0.001	0.001	0.001		0.01															
ANZECC 2000 MW 90%									0.52																							
PCR_ADWG 2011																																
ANZECC 2000 Stockwater																																
Field ID	Sample Date	SampleCode	Lab No.	Sample Type																												
S10A	21/01/2015	15-04837_4195792	15-04837	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S10A	27/04/2015	15-20278_4312737	15-20278	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S10A	22/07/2015	15-33431_4411244	15-33431	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	7/11/2011	11-47070_2807632	11-47070	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	15/05/2012	12-23173_3037192	12-23173	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	16/01/2013	13-04504_3330649	13-04504	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	16/04/2013	13-18893_3440212	13-18893	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	11/07/2013	13-31027_3540745	13-31027	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	17/10/2013	13-45840_3656292	13-45840	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	8/01/2014	14-03010_3750704	14-03010	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	3/04/2014	14-16283_3853876	14-16283	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	3/07/2014	14-29400_3958871	14-29400	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	8/10/2014	14-43773_4073887	14-43773	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	14/01/2015	15-03810_4186957	15-03810	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	27/04/2015	15-20278_4312738	15-20278	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S11	21/07/2015	15-33269_4410002	15-33269	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	3/11/2011	11-46815_2804830	11-46815	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	16/05/2012	12-23337_3038592	12-23337	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	16/01/2013	13-04504_3330650	13-04504	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	17/04/2013	13-19065_3441392	13-19065	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	9/07/2013	13-30796_3538302	13-30796	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	17/10/2013	13-45840_3656293	13-45840	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	6/01/2014	14-02614_3748069	14-02614	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	2/04/2014	14-16107_3852469	14-16107	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	7/07/2014	14-29641_3961611	14-29641	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	8/10/2014	14-43773_4073888	14-43773	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	15/01/2015	15-03991_4188342	15-03991	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	23/04/2015	15-19781_4307984	15-19781	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S12	22/07/2015	15-33431_4411245	15-33431	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	4/11/2011	11-46925_2806228	11-46925	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	17/05/2012	12-23644_3041939	12-23644	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	14/01/2013	13-03801_3326693	13-03801	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	19/04/2013	13-19708_3447149	13-19708	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	12/07/2013	13-31104_3541616	13-31104	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	16/10/2013	13-45540_3654440	13-45540	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	6/01/2014	14-02614_3748070	14-02614	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	31/03/2014	14-15737_3848879	14-15737	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	4/07/2014	14-29468_3960074	14-29468	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	6/10/2014	14-43373_4071007	14-43373	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	12/01/2015	15-03259_4183490	15-03259	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	22/04/2015	15-19660_4306874	15-19660	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S13	20/07/2015	15-33119_4408706	15-33119	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	31/10/2011	11-46411_2802040	11-46411	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	16/05/2012	12-23337_3038593	12-23337	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	17/01/2013	13-04742_3332864	13-04742	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	18/04/2013	13-19313_3442830	13-19313	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	9/07/2013	13-30796_3538303	13-30796	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	14/10/2013	13-45140_3651478	13-45140	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	7/01/2014	14-02697_3748912	14-02697	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	2/04/2014	14-16107_3852470	14-16107	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	7/07/2014	14-29641_3961612	14-29641	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	9/10/2014	14-44165_4076403	14-44165	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	15/01/2015	15-03991_4188343	15-03991	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	28/04/2015	15-20348_4313233	15-20348	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S14	20/07/2015	15-33119_4408707	15-33119	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	31/10/2011	11-46411_2802041	11-46411	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	16/05/2012	12-23337_3038594	12-23337	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	17/01/2013	13-04742_3332865	13-04742	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	18/04/2013	13-19313_3442831	13-19313	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	9/07/2013	13-30796_3538304	13-30796	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	14/10/2013	13-45140_3651479	13-45140	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	7/01/2014	14-02697_3748913	14-02697	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	2/04/2014	14-16107_3852471	14-16107	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	8/07/2014	14-29641_3961615	14-29641	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	9/10/2014	14-44165_4076404	14-44165	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	15/01/2015	15-03991_4188344	15-03991	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	28/04/2015	15-20348_4313234	15-20348	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S15	22/07/2015	15-33431_4411246	15-33431	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S16	31/10/2011	11-46411_2802042	11-46411	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S16	16/05/2012	12-23337_3038595	12-23337	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S16	16/01/2013	13-04504_3330651	13-04504	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S16	18/04/2013	13-19313_3442832	13-19313	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S16	8/07/2013	13-30645_3536915	13-30645	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S16	14/10/2013	13-45140_3651480	13-45140	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S16	7/01/2014	14-02697_3748914	14-02697	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S16	3/04/2014	14-16283_3853877	14-16283	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Project 1192
Client Wyndham City Council
Site Werribee

Table J1 - Groundwater Results

					Phenols Non-Halogenated						Solvents							Explosives			Phthalates						Herbicides	Alcohols				
					4,6-Dinitro-o-cyclohexyl phenol	4-methylphenol	4-nitrophenol	Dinoseb	Phenol	Phenols (Total Non Halogenated)	Methyl Ethyl Ketone	2-Ethyl Hexyl Acrylate	4-Methyl-2-pentanone	Acetone	Acrylonitrile	Hexane	2-Propanol	2,4-Dinitrotoluene	2,6-dinitrotoluene	Nitrobenzene	Bis(2-ethylhexyl) phthalate	Butyl benzyl phthalate	Diethylphthalate	Dimethyl phthalate	Di-n-butyl phthalate	Di-n-octyl phthalate	Pronamide	1-Butanol	Ethanol	Isobutanol	Methanol	1-Propanol
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL						0.001	0.001		0.0006	0.001	0.001	0.01	0.001	0.001	0.001		0.01															
ANZECC 2000 MW 90%									0.52																							
PCR_ADWG 2011																																
ANZECC 2000 Stockwater																																
Field ID	Sample Date	SampleCode	Lab No.	Sample Type																												
S16	7/07/2014	14-29641_3961613	14-29641	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S16	9/10/2014	14-44165_4076405	14-44165	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S16	15/01/2015	15-03991_4188345	15-03991	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S16	28/04/2015	15-20348_4313235	15-20348	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S16	21/07/2015	15-33269_4410003	15-33269	Normal	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN311011	31/10/2011	11-46411_2802043	11-46411	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN021111	2/11/2011	11-46545_2803164	11-46545	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN031111	3/11/2011	11-46815_2804831	11-46815	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN041111	4/11/2011	11-46925_2806229	11-46925	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN071111	7/11/2011	11-47070_2807633	11-47070	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN140512	14/05/2012	12-22913_3035435	12-22913	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN150512	15/05/2012	12-23173_3037194	12-23173	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN160512	16/05/2012	12-23337_3038596	12-23337	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN170512	17/05/2012	12-23644_3041940	12-23644	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN140113	14/01/2013	13-03801_3326694	13-03801	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN150113	15/01/2013	13-03903_3327430	13-03903	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN160113	16/01/2013	13-04504_3330653	13-04504	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN170113	17/01/2013	13-04742_3332866	13-04742	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN160413	16/04/2013	13-18893_3440213	13-18893	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN170413	17/04/2013	13-19065_3441394	13-19065	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN180413	18/04/2013	13-19313_3442833	13-19313	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN190413	19/04/2013	13-19708_3447150	13-19708	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN080713	8/07/2013	13-30645_3536916	13-30645	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN090713	9/07/2013	13-30796_3538305	13-30796	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN110713	11/07/2013	13-31027_3540746	13-31027	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN120713	12/07/2013	13-31104_3541618	13-31104	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN150713	15/07/2013	13-31496_3544458	13-31496	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN141013	14/10/2013	13-45140_3651481	13-45140	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN151013	15/10/2013	13-45346_3653046	13-45346	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN161013	16/10/2013	13-45540_3654442	13-45540	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN171013	17/10/2013	13-45840_3656294	13-45840	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN060114M	6/01/2014	14-02614_3748072	14-02614	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN060114P	6/01/2014	14-02614_3748071	14-02614	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN070114M	7/01/2014	14-02697_3748917	14-02697	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN070114P	7/01/2014	14-02697_3748916	14-02697	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN080114M	8/01/2014	14-03010_3750705	14-03010	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN080114P	8/01/2014	14-03010_3750706	14-03010	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN090114M	9/01/2014	14-03142_3752008	14-03142	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN090114P	9/01/2014	14-03142_3752007	14-03142	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN310314M	31/03/2014	14-15737_3848881	14-15737	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN310314P	31/03/2014	14-15737_3848880	14-15737	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN010414M	1/04/2014	14-15882_3850186	14-15882	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN010414P	1/04/2014	14-15882_3850185	14-15882	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN020414M	2/04/2014	14-16107_3852474	14-16107	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN020414P	2/04/2014	14-16107_3852473	14-16107	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RINM030414	3/04/2014	14-16283_3853879	14-16283	Rinsate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RINP030414	3/04/2014	14-16283_3853878	14-16283	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN020714	2/07/2014	14-29185_3957498	14-29185	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN030714	3/07/2014	14-29400_3958873	14-29400	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN040714	4/07/2014	14-29468_3960075	14-29468	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN070714	7/07/2014	14-29641_3961614	14-29641	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN080714	8/07/2014	14-29641_3961616	14-29641	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN061014	6/10/2014	14-43373_4071008	14-43373	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN071014	7/10/2014	14-43525_4072500	14-43525	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN081014	8/10/2014	14-43773_4073889	14-43773	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN091014	9/10/2014	14-44165_4076406	14-44165	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN120115	12/01/2015	15-03259_4183491	15-03259	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN130115	13/01/2015	15-03411_4184552	15-03411	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN140115	14/01/2015	15-03810_4186952	15-03810	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN150115	15/01/2015	15-03991_4188346	15-03991	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN210115	21/01/2015	15-04837_4195793	15-04837	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN220415	22/04/2015	15-19660_4306875	15-19660	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN230415	23/04/2015	15-19781_4307986	15-19781	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN270415	27/04/2015	15-20278_4312739	15-20278	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN280415	28/04/2015	15-20348_4313236	15-20348	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN200715	20/07/2015	15-33119_4408709	15-33119	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN210715	21/07/2015	15-33269_4410004	15-33269	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN220715	22/07/2015	15-33431_4411247	15-33431	Rinsate	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIN230715	23/07/2015	15-33543_4412329	15-33543	Trip_B	-	<0.001	<0.001	-	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

(a) US EPA Regional Screening Levels (RSL) 2014. Criteria for Tap Water (TR: 1E-06 and THQ: 1.0)
(b) Low reliability values (95%) level of protection
(c) As adopted by AEA (2013) Audit Report (based on Table 3.3.2 of ANZECC
(d) WHO 2011 Drinking Water Guidelines - Provisional
(e) Low reliability trigger values (ANZECC 2000) generally Marine low reliablity
^ Converted from Alkalinity (Bicarbonate as CaCO3) by a factor of 1.22
* Considered to be overly conservative to apply drinking water criteria based on aesthetics to assess primary contact recreation values. No health based criteria available. Consequently no criteria applied.

** Adopted from health based drinking water criteria of 0.5mg/L, multiplied by a factor of 10 to account for incidental ingestion.

Appendix F – Leachate Management Plan

Wests Road Refuse Disposal Facility

Leachate Management Plan

Wyndham City Council

July 2015

Ref No. 20131288RA3

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Document History and Status

Rev	Description	Author	Reviewed	Approved	Date
A	For Client Comment	DME	PJL	PJL	1 June 2015
B	Final Report	DME	PJL	PJL	15 July 2015

Contents

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Appendices

1 Introduction

1.1 Objectives and Scope

Tonkin Consulting has been engaged by Wyndham City Council (Council) to prepare a leachate model and management strategy for Wests Road RDF. This leachate strategy is required to be provided to the EPA which provides an action plan and recommended timing for construction of a new leachate pond and reducing the cell leachate heads to the acceptable level.

The scope of work involved leachate generation modelling to estimate current and future leachate generation rates & sump pumping requirements in order to reduce sump leachate levels and meet EPA compliance criteria. The leachate generation within Cell 1A is not within the scope of this assessment.

Leachate disposal requirements and evaporation pond sizing are estimated using a water balance model for current and future leachate generation scenarios and for the removal and disposal of legacy leachate currently remaining within cells.

1.2 Project Background

1.2.1 PAN Requirements

Last year Wyndham City Council received a PAN notice (90001992) dated 26 June 2014 which requires non compliant leachate levels to be reduced below 300 mm within Cells 1B, 2A, 2B, 3, 4A and 4B by 1 July 2015 at the RDF.

This PAN notice also required that a hydrogeological assessment be undertaken for Cell 1A to determine a leachate level that minimises impacts on groundwater and allows management of landfill gas. It is understood that this PAN requirement was completed by Compass Environmental.

1.2.2 Previous Leachate Modelling and Management Plans

In August 2012 Tonkin & Taylor provided supplemental leachate generation modelling for the Cell 4 pond design to address specific questions raised by the auditor. This modelling indicated that the existing Cell 4 pond will have sufficient capacity to contain the leachate generated during two consecutive wet years (90th percentile) from Cell 4A and 4B. This modelling assumed a temporary cover of 0.25 m thickness over Cell 4A and partially filled Cell 4B with 1 m thickness of placed waste and daily cover.

In May 2014 Tonkin & Taylor provided a Leachate Management Master Plan which provided a high level description of the existing leachate system and 12 recommendations for future works.

In August 2014 FMG Engineering provided a leachate balance assessment report that estimates leachate head and leachate generation volumes for Cells 1B, 2A, 2B and 3 over a period of 10 years.

1.2.3 Cell Construction Details

The cell construction details are summarised below:

- Cells 1B, 2A, 2B, & 3 were lined with 1 m thick Compacted Clay Liner (CCL)
- Cells 4A and 4B contain a composite liner with 1 m thick CCL overlain with HDPE geomembrane.
- The CCL in Cells 1B, 2A, 2B, 3, 4A & 4B has a design maximum permeability of $1x10^{-9}$ m/sec
- The existing cover soil thickness is highly variable over Cell 1B, 2A, 2B & 3 and is estimated to be between 0.3 m and 2.3 m thickness. Test pit investigations were undertaken on

batters requiring remediation in September 2014 by Compass Environmental which confirm variable interim cover thickness. The remediated areas were topped with basaltic clay (0.5 m) and aged mulch (0.2 m).

- The existing cover soil thickness over Cell 4A is understood to be approximately 0.5 m thickness.

Further cell / sump details and leachate pumping data assumed in the modelling can be seen in Appendix B.

1.2.4 Cell and Sump Connectivity

Cells 1B to 3 have been developed in the floor of the quarry pits which are separated by bunding so there is no apparent connectivity between the leachate drainage systems.

2 Leachate Generation Modelling

2.1 HELP Modelling

An enhanced version of the United States EPA software "Hydrologic Evaluation of Landfill Perfomance" (HELP 3.07) was used to model leachate storage and collection rates at the Wests Road RDF. HELP version 3.95 D (2012) was used for evaluating leachate generation based on the geometry of cells, the cell lining and capping system and regional climate data. To improve the model representation of the landfill for the purposes of estimating leachate generation, the model was calibrated to the observed leachate pumping and level records.

2.2 Model Inputs

2.2.1 Cell Input Data & Assumptions

Leachate generation modelling was undertaken for the following existing and future stages of landfill development:

- Operational – applicable for Cell 4B
- Uncapped Interim Cover (0.5 m thickness) - applicable for cells 1B – 4A
- Future Capped (phytocap 1.7 m thickness) – applicable for Cells 1B - 3

Assumed cell depths (waste thickness) were estimated based on comparing the difference between the "as built" baseliner surface and the existing topographic survey. Typical cell depths and a description of the floor drainage profile are shown in Table 2.1 below. The baseliner drainage profile was used to estimate legacy leachate volumes as described in Section 2.4.2.

Table 2.1 Typical Cell Depths

Cell	Filling Period	Typical Cell Depth (m)	Description of Baseliner Drainage Profile
1B	1992 - 1999	Unknown. 15-20 m assumed	Unknown. Assumed floor grade of 1% draining radially to a single sump (L5)
2A	1999 – 2003	15-19 m	Floor grade ranging from 0.6 – 1.4%. Three equally spaced leachate pipes drain to a single sump (L3)
2B	2003 – 2005	15-18 m	Floor grade ranging from 0.5 – 1.5%. An branch of leachate pipes spanning the irregular floor surface are directed to a single sump (L1)
3	2005 - 2009	18-20 m	Sawtooth arrangement of leachate collection pipes at 25 m spacing draining at 1% gradient to two sumps (L2 and L4). Crossfall gradient to pipes ranges from 1.5-3.0%.
4A	2009 – 2013	20–30 m	Sawtooth arrangement of leachate collection pipes at 25 m spacing draining at 1% gradient to two sumps (L6 and L7). The crossfall gradient to pipes is approximately 3.0%.
4B	2013 - current	20–30 m	Sawtooth arrangement of leachate collection pipes at 25 m spacing draining at 1% gradient to three sumps (L8 – L10). The crossfall gradient to pipes is approximately 3.0%.

HELP Modelling was undertaken using the following parameters:

- 50 year simulation local climatic data (see Section 2.2.2)
- Default model properties for MSW, CCL and HDPE layers
- 50 m Drain Length (2 x 25m) at 1%
- 20m waste depth (Completed Cells)
- 5 m waste depth (Operating Cell)
- 500 mm thick interim cover layer (sandy clay loam)
- 300 mm thick daily cover layer (sandy clay loam)
- Evaporative zone depths equal daily and interim cover soil depth
- Runoff is zero until final cover is placed.

2.2.2 Long Term Climate Data

The long term average climate data was obtained from a number of stations around Werribee over a long period of time. Werribee Research Farm (Station 087065) was the closest representative weather station, located approximately 15 km from the landfill site and recorded weather data from 1913 but closed in 1980. Other stations have been and are located around Werribee. To provide a complete dataset, the SILO website was used to interpolate available daily data to produce a complete 50 year record from 1/01/64 to 31/12/2013.

It was considered important that actual long term data was also used in addition to the short term BPEM requirements described in Section 2.2.3 below in order to assess the long term evaporative performance of the pond as a disposal pathway for leachate. The long term pond sizing model was also used to understand the additional pond area need to dispose of legacy leachate from Cells 1B, 2A, 2B, 3, 4A & 4B over a 3 year timeframe.

2.2.3 EPA Victoria BPEM Requirements

In accordance with the Best Practice Environmental Management: Siting, Design, Operation and Rehabilitation of Landfills, Publication 788.1 (BPEM)[1], water balance modelling over 2 consecutive wet years (90th percentile) is required to estimate leachate generation volumes and pond sizing. The aim of this requirement is to provide sufficient capacity for the proposed system to deal with all the leachate generated over the operational life of the landfill. During the 50 year period of climate data examined, 2 consecutive wet years (90th percentile) were assessed to have occurred on 2 occasions, namely years 1973 - 1974 and 2010 - 2011.

2.3 Model Outputs

The HELP Model output files are provided in Appendix A.

2.4 Calibration

2.4.1 Background

The use of the HELP model whilst widely accepted in planning and design of landfill leachate management, is subject to the limitations of the model and its calibration. The model has the following limitations:

- model inputs (particularly the cover soil moisture retention and evapo-transpiration properties) are estimates and are not measured

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[1] EPA (2010) *Best Practice Environmental Management: Siting, Design, Operation and Rehabilitation of Landfills* Publication 788.1. EPA Victoria

- the HELP model has known limitations in the modelling and design of final cover systems which rely on high evapotranspiration rates; and
- the model provides an idealised simplification of the landfill operation and does not fully reflect the staging and progressive capping of the site.

The model output should be used with caution since the operation of the landfill on a day to day basis and variable climatic conditions can significantly alter the quantities of leachate produced seasonally. During the operation of the landfill, leachate production should be monitored and if necessary revisions made to the leachate management system's capacity.

Calibration of the model was undertaken using the available leachate pumping records and recent sump levels. Cell 4A which was considered to be the most complete over the cell life (2009 to 2013) and provides the most reliable estimate of leachate production. Data for cells 1B, 2A, 2B and 3 is limited during this period and due to the greater age of these cells the longer term performance of these cells cannot be assessed directly; therefore professional judgment is required regarding the likely behaviour of these cells. Close monitoring will be required in future to verify the actual leachate production and behaviour of these cells.

2.4.2 Estimate of Legacy Cell Volumes

An estimate of existing leachate quantities in each cell catchment can be seen in Table 2.2. These quantities were estimated using the following approach:

1. For each Cell catchment the height of leachate at the lowest area of baseliner (adjacent to each sump) was determined using recent monthly sump level data provided by Compass Environmental.
2. The total saturated capacity between the cell floor and the most recently recorded leachate height was estimated for each catchment based on cell liner as constructed records. This assumes that there is no leachate hydraulic gradient throughout the cell.
3. An estimate of leachate volume within void spaces of the drainage layer and waste was estimated using published porosity values for drainage gravel (0.397 vol/vol) and saturated waste (0.168 vol/vol). The drainage gravel layer was assumed to be 300 mm thickness.

Table 2.2 Observed Leachate Quantities

Cell	Sump	Sump Leachate Depth above 300 mm (m)	Approximate Volume in Drainage Layer (ML)	Approximate Volume in Saturated Waste (ML)	Total Leachate Volume (ML)	Cell Total (ML)
1B*	L5	1.94	2.73	7.70	9.76	9.76
2A	L3	0	0.11	0.00	0.11	0.11
2B	L1	3.28	2.92	14.25	16.46	16.46
3	L2	0.71	0.71	0.70	1.24	
	L4	0.99	0.89	1.25	1.92	3.16
4A	L6	0.95	0.29	0.39	0.62	
	L7	2.44	0.64	2.20	2.69	3.31
4B	L8	0.49	0.57	0.39	0.96	
	L9	0	0.00	0.00	0.00	
	L10	0.27	0.40	0.13	0.53	1.49
		Total	**9.26**	**27.02**	**34.26**	**34.26**

* No "as built" baseliner drawings were available for Cell 1B. Volume estimate based on known sump level, floor of 1% grading radially to the sump and assumed cell area.

To satisfy the PAN requirement of reducing leachate levels to a maximum of 300 mm depth, the volume of leachate to be removed from Cells 1B – 4B is approximately 27 ML plus continuing leachate generation.

2.4.3 Leachate Pumping Data

Leachate pumping data from Sumps L1 – L10 was compiled from data provided from Wyndham Council and Compass Environmental dating from 2009 to 2015 and is summarised in Table 2.3. An estimate of the average leachate generation rate has been made assuming that the total leachate volume (pumped plus accumulated) occurred over the period of record (maximum 6 years) and that there is no interconnection between cells. These estimates are shown in Table 2.3.

Table 2.3 Estimated Leachate Generation

Cell	Filling Period	Pumped (2009-2015) (ML)	Legacy (ML)	6 yr Total (ML)	Area (Ha)	Generation over 6 yrs (mm/yr)
1B	1992 - 1999	0.02	9.76	9.78	7.73	21.1
2A	1999 – 2003	0.00	0.11	0.11	4.44	0.4
2B	2003 – 2005	0.75	16.5	17.2	7.2	39.8
3	2005 – 2009	0.01	3.16	3.17	5.71	9.3
4A	2009 – 2013	25.4	3.31	28.7	7.76	61.7
4B (*)	2013 - current	4.16	1.49	5.65 (*)	8.76	43.0 (*)

* Data only available for a period of 1.5 years

The following observations are highlighted:

- the recorded sump levels and calculated volumes vary greatly between sumps.
- the reasons for the low generation rate in Cell 2A are not understood.
- The operating head on a CCL in cells 1B - 3 (particularly where operated above 300mm) will result in greater percolation through the liner. The actual generation rate will be higher than indicated in the table above as this figure is the result after percolation.
- The lower rate in Cell 4B may be attributable to lower than average rainfall during this period (2014 was 68% of mean annual rainfall).

2.4.4 Calibration Results

Interim Cover – Cells 1B - 3

The rate of leachate pumped and accumulated on the baseliner of Cells 1B – 3 was calculated using the leachate pumping data records and the legacy volume estimate on the cell liner. The rate of leachate pumped and accumulating in Cells 1B - 3 varies significantly between cells. The area weighted average rate was calculated to be 20 mm/year (average 2009 – 2015 excluding percolation through liner which modelling indicates to be on average 4mm/yr under pumped conditions).

The cover soil was assumed to be vegetated (max LAI = 1) and the cover soil type was varied by trial and error until the annual average leachate generation rate obtained from the HELP model was 26 mm/year. This is considered a reasonable rate given the uncertainties discussed in Section 2.4.3 above.

Interim Cover – Cell 4A

The rate of leachate pumped and accumulated on the baseliner of Cell 4A was calculated using the leachate pumping data records and the legacy volume estimate on the cell liner. The rate of leachate pumped and accumulating in Cell 4A was calculated to be 61.7 mm/year (average 2009 – 2015).

The cover soil was assumed to be un-vegetated and the cover soil type was varied by trial and error until the annual average Cell 4A leachate generation rate obtained from the HELP model was 60 mm/year.

Daily Cover – Cell 4B

The cover soil was assumed to be un-vegetated, of low compaction and with a thickness of 0.25 m to provide a conservative estimate of leachate generation in the operating cell. The annual average Cell 4B leachate generation rate obtained from the HELP model using these parameters was 106 mm/year. This can be compared to the observed generation in sump L8 in 2014-2015 of 106 mm/yr and average of the three sumps of 43 mm/yr. Noting this was a drier than average year as discussed above (68% of mean annual rainfall), the model was adopted unchanged.

Operating Area

The HELP model simulates steady state moisture conditions and does not readily model the wetting up and leachate generation at the active tipping face. To provide a conservative estimate of leachate generated at the tipping face, 50% of direct rainfall in an active tipping area not exceeding 2,000 m^2 was assumed to report as leachate, the remainder being stored in the fresh waste.

Final Cover

BPEM requirement for maximum final cover infiltration rate has been adopted.

Calibration Summary

A summary of the model parameters adopted are provided in Table 2.4.

Table 2.4 Calibration Summary

Cell	Case	Cover Soil (m)	Max LAI	Evap Zone (m)	Soil Texture Type	50 yr ave Drain (mm/yr)	50 yr ave Perc (mm/yr)
1B	1B-3 500 29	0.5	1	0.5	29	26	4
2A	1B-3 500 29	0.5	1	0.5	29	26	4
2B	1B-3 500 29	0.5	1	0.5	29	26	4
3	1B-3 500 29	0.5	1	0.5	29	26	4
4A	4A 500 24	0.5	0	0.5	24	60	0
4B (*)	4 Operating	0.25	0	0.25	15	106	0
Tipping	50% rainfall	-	-	-	-	264 (*)	-
Final Cover	BPEM	-	-	-	-	0.28 (*)	0

* Not from HELP modelling.

3 Pond Water Balance Modelling & Sizing

3.1 Pond Water Balance Modelling

The pond performance was evaluated on a monthly basis over a 50 year period using long term climate data as described in Section 2.2.2. The long term model was used to assess the following scenarios:

- **Scenario 1** – Assess the likely performance of an evaporation pond sized for the current estimated leachate generation under current site conditions for Cells 1B – 4B.
- **Scenario 2** - Assess the likely performance of an evaporation pond sized to cater for Cells 1B – 4B assuming that the cells 1B – 3 have been capped in accordance with the Rehabilitation Management Plan[2].
- **Scenario 3** – Scenario 2 plus the introduction of legacy leachate into the evaporation pond during months where no leachate generation is modelled (27 ML to be evaporated on average in 3 years using the 50 year rainfall record).

The monthly HELP model time series for each capping case (Section 2.4.4) were combined to produce a 50 year leachate drainage time series for each of the above scenarios. This time series was used as input to a 50 year monthly evaporation pond water balance model.

3.1.1 Victoria EPA BPEM Requirements

Within the 50 year period of water balance modelling the pond performance was also evaluated on a monthly basis over 2 consecutive wet years (90th percentile) during years 1973/1974 and 2010/2011. The more recent period was adopted for the BPEM pond area calculation.

The calculation of area required for evaporation of leachate was also calculated in accordance with the following formula provided in BPEM Appendix B.5:

$$A = \frac{1000\mathrm{V}}{0.8\mathrm{E} - \mathrm{R}}$$

Where:

A = pond surface area (m^2)

V = annual volume of leachate (kL or m^3)

E = median annual evaporation (mm Class A pan)

R = median annual rainfall (mm)

3.2 Pond Sizing Results

The results of this assessment are provided in Table 3.1 below. It is noted that these estimates are subject to many factors including operational practice, model limitations and assumptions outlined in this report. The results provided are suitable for planning and design of leachate evaporation pond sizing, but do not guarantee that greater (or lesser) flows will be encountered during operation and the need for contingency measures to be in place.

The pond water balance models (Appendix B) are shown graphically in Figures 3.1 – 3.3 and illustrate the impact of wetter and dryer years over the 50 year rainfall record. The estimated monthly change in pond storages is the result of leachate pumped to the pond, rainfall and evaporation for each scenario. Where multiple ponds are used to provide an equivalent total surface area, the model assumes that the equivalent surface area of a single pond is available for evaporation (i.e. transfer between ponds must be actively managed to achieve this). Pond

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[2] Tonkin Consulting (2014), *West Road RDF Rehabilitation Management Plan.* Ref: 20131288R01C, September 2014

depths have been limited to 1.5 m depth excluding freeboard since deeper ponds to not appreciably reduce the frequency of overflows which result from wetter periods.

Table 3.1 Pond Sizing Results

Scenario	2010 – 2011 Ave Leachate (ML)	Max Month (ML)	BPEM Area Calculation (m^2)	Total Pond Area (*) (m^2)	Total Pond Volume (**) (m^3)	Months of Overflow in 50 years (No.)	Max Monthly Overflow in 50 years (m3)
1	25	17	42,800	46,400	66,600	8	8,942
2	16.8	12	29,130	33,000	47,000	1	882
3	25	13	43,690	42,500	61,000	27 (***)	6,740

* Pond area is the total required inclusive of existing ponds adjacent to Cell 2 and the Cell 4 lined pond

** Total pond volume includes 0.5 m freeboard

*** Legacy leachate could be disposed of over any three year period in the past 5 years. Overflows would occur during wet periods such as occurred in the 1990's and late 1970's.

The overflow volume and frequency assumes that freeboard of depth 0.5 m was utilised prior to overflow.

It is noted from these results that:

- Scenario 1 provides a pond sized for current conditions (excluding disposal of accumulated "legacy" leachate). This pond can accommodate the disposal of the legacy volume (to 300 mm max depth) in a three year period (average conditions) following capping of cells 1B - 3 to BPEM requirements (Scenario 3).
- The Scenario 2 pond size can be reduced further with capping of a portion of Cell 4A which contributes significantly to the "Capped" case.
- Evaporation of legacy leachate over a three year period (average conditions) under Scenario 1 would require an additional pond area of approximately 2 ha for the three year period (6.6 ha total).
- The full site development (capped and operating prior to capping) Scenarios have not been modelled.

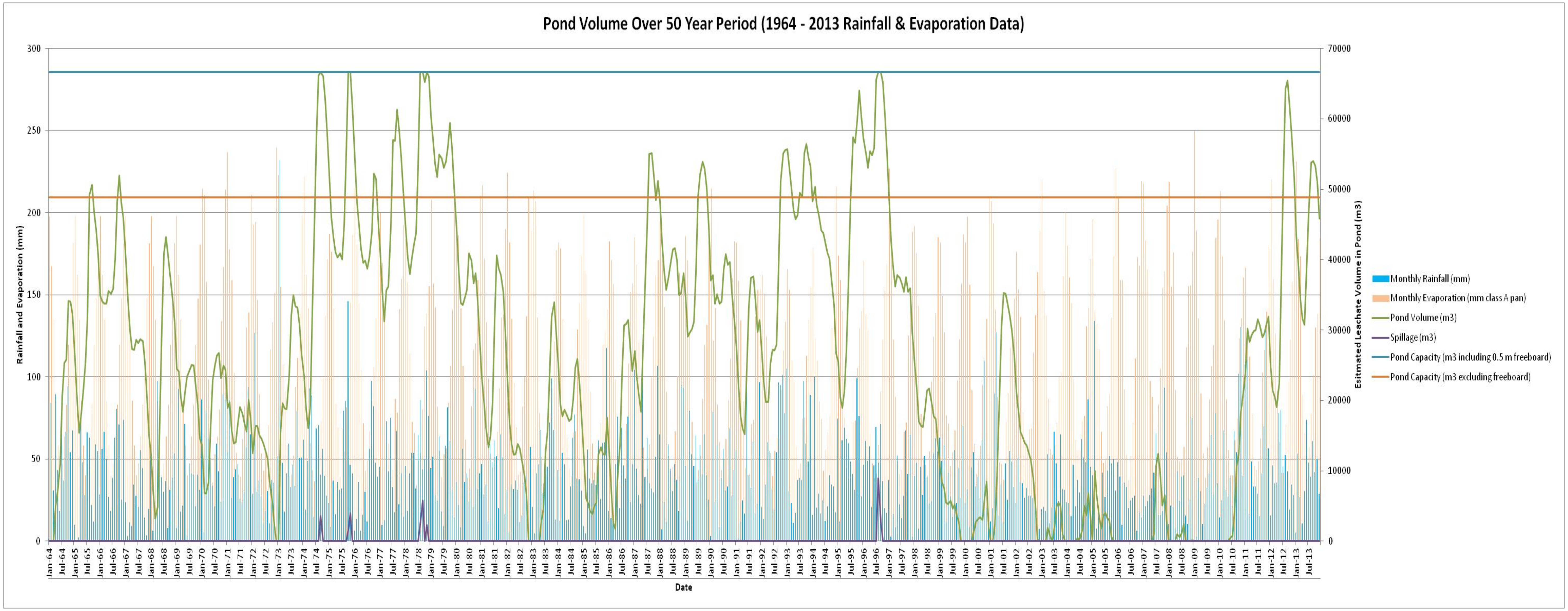

Figure 3.1 Scenario 1 – Cells 1B – 4B (Current site conditions)

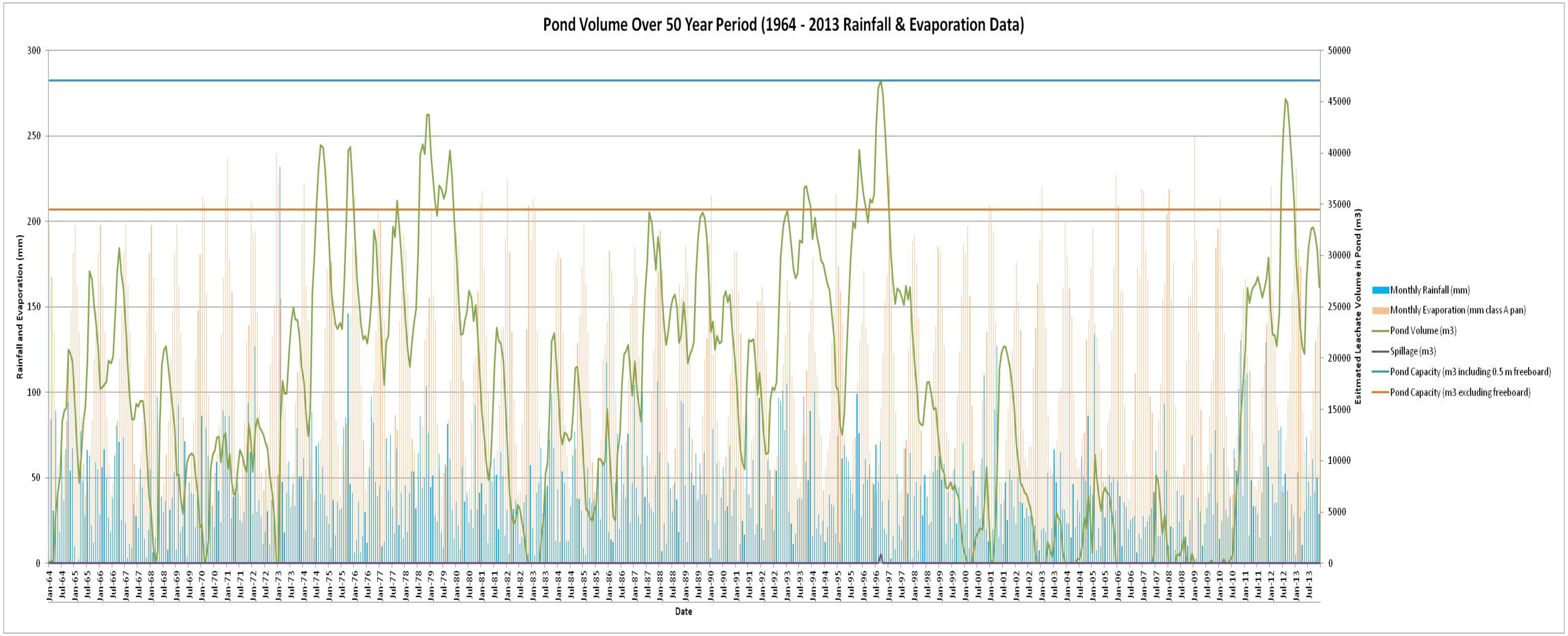

Figure 3.2 Scenario 2 – Cells 1B – 3 (Capped), 4A – 4B (current site conditions)

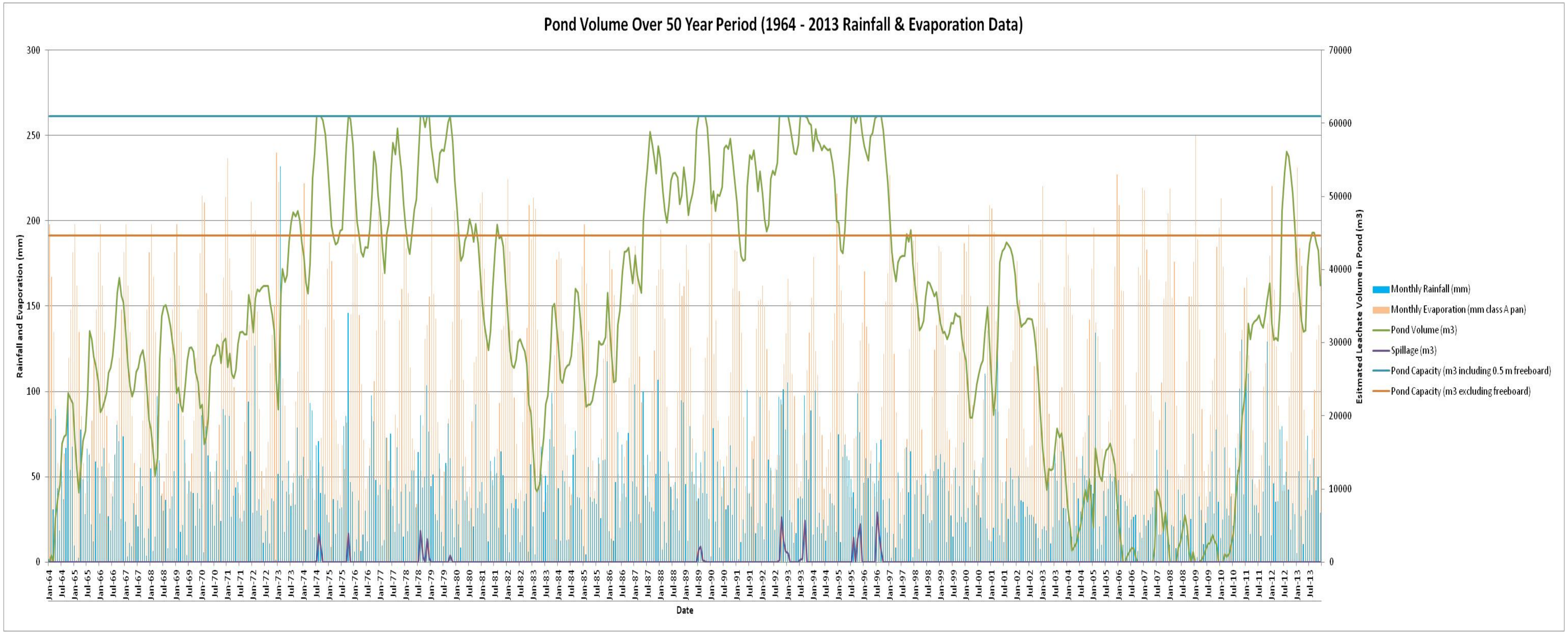

Figure 3.3 Scenario 3 - Cells 1B – 3 (Capped), 4A – 4B (current site conditions), legacy leachate added (over 3 years)

3.3 Available Area for Pond Construction

The extent of waste around the western edge of Cell 2A was investigated by Compass Environmental on 14 May 2015 to assess the remaining potential area of natural ground for pond siting. The area of available land for a new pond is estimated to be 11,600 m^2. This includes the area currently occupied by the existing Cell 2A leachate pond and adjacent overflow pond.

Given that the required surface area for all scenarios modelled is greater than this, additional ponding area on site will be required for leachate storage and evaporation. Consideration should be given to establishment of a large evaporation pond in another portion of the site.

Since the requirements to accommodate the legacy leachate is transient, a temporary pond can be considered within the footprint of a future cell.

4 Conclusions

4.1 Summary

This leachate strategy involved leachate generation modelling to estimate current and future leachate generation rates & sump pumping requirements in order to reduce sump leachate levels and meet EPA compliance criteria. Due to the greater age of Cells 1B – 3, limited records were available for historical sump levels and pumping volumes in these cells. Whilst all of the available data were used to calibrate the modelling effort, more weight was given to the data from Cell 4A.

This investigation indicates that the site's existing leachate ponds are insufficiently sized to cater for long term leachate generation and the required reduction in legacy volumes in Cells 1B – 4B to below 300 mm. Based on a desktop assessment of suitable pond locations it is clear that a second new dedicated leachate pond is required in a new location (other than that identified adjacent to Cell 2A).

The size and number for ponds required is governed by:

- EPA variation of PAN conditions to allow 3 year timeframe for evaporation of legacy leachate.
- Timing and extent of capping works.
- Any offsite disposal undertaken.

Enhanced evaporation options have not been assessed in this report. These may be feasible for accelerating disposal of legacy leachate in a smaller pond area though at a significant operating cost.

4.2 Recommendations

4.2.1 Leachate Monitoring

To allow future development and refinement of the leachate model for improved sizing of leachate disposal requirements it is recommended that Wyndham Council collect improved leachate data:

- Logging of leachate gauging data at all sumps (noting date and time) and occurring after a period without pumping to allow recovery of the standing leachate level monthly or continuously logged where new automated pumpds are used.
- Leachate pumping records at all sumps (preferably continuous logging or from automated pumping system and no less than weekly)

  To verify the actual leachate production and behaviour of Cells 1B – 3 it is recommended that an automated pumping system is installed in these cells prior to new leachate pond construction. This system would then be monitored to provide consistent leachate extraction data across Cells 1B – 4C. Due to the current poor correlation between sump levels and pumping records, more regular and increased leachate extraction will provide data to improve the accuracy of leachate production estimates, particularly as legacy leachate volumes are reduced.

  Further it is recommended that a program of monitoring of leachate chemistry from each cell be developed to characterise leachate to aid in the operation of the leachate ponds or evaluation of alternative leachate disposal methods.

4.2.2 Staging of Works

It is recommended that construction of new leachate evaporation ponds are undertaken in a staged approach as follows:

1. Construct a larger 1.1 ha Cell 2A pond
2. Construct a new 1.9 ha pond (location to be determined)
3. Reassess leachate management requirements based on recent leachate generation and disposal data

If required construct a temporary leachate pond for evaporation of legacy leachate (subject to EPA acceptance of timing and status of capping works).

Landfill capping can be expected to significantly reduce leachate generation (Scenatrio 2) and it is therefore recommended that a capping trial over Cells 1B - 3 is implemented in accordance with the Rehabilitation Management Plan. The need and staging of a third pond can be evaluated following an assessment of changes to leachate generation after capping works are completed.

4.2.3 Design and Monitoring

The new pond located adjacent to Cell 2A should be designed to maximise the available area of natural ground between the access road, Cell 2A to the north and Cell 1B to the south.

The leachate levels within new and existing leachate ponds should be monitored at least weekly for 12 months to allow for further assessment of pond performance and refinement of the leachate generation and sizing models. This will confirm any updates to the required pond sizing and optimise the design of additional ponds.

Appendix A

HELP Model Output

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**                                                                          **
**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**                                                                          **
**              HELP Version 3.95 D          (10 August 2012)               **
**                             developed at                                 **
**        Institute of Soil Science, University of Hamburg, Germany         **
**                               based on                                   **
**              US HELP MODEL VERSION 3.07  (1 NOVEMBER 1997)               **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
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 TIME:  14.08     DATE:   1.06.2015


 PRECIPITATION DATA FILE:      T:\2013\20131288 Werribee Landfill Assistance - 
Wyndam Council\3_Development\4 Calculations\HELP\WerribeeVic.d4
 TEMPERATURE DATA FILE:        T:\2013\20131288 Werribee Landfill Assistance - 
Wyndam Council\3_Development\4 Calculations\HELP\Werribee.d7
 SOLAR RADIATION DATA FILE:    T:\2013\20131288 Werribee Landfill Assistance - 
Wyndam Council\3_Development\4 Calculations\HELP\Werribee.d13
 EVAPOTRANSPIRATION DATA F. 1: T:\2013\20131288 Werribee Landfill Assistance - 
Wyndam Council\3_Development\4 Calculations\HELP\Werribee4 Operating.d11
 SOIL AND DESIGN DATA FILE  1: T:\2013\20131288 Werribee Landfill Assistance - 
Wyndam Council\3_Development\4 Calculations\HELP\4BOperating.d10
 OUTPUT DATA FILE:             T:\2013\20131288 Werribee Landfill Assistance - 
Wyndam Council\3_Development\4 Calculations\HELP\4 Operating.out
 MONTHLY OUTPUT DATA FILE:     T:\2013\20131288 Werribee Landfill Assistance - 
Wyndam Council\3_Development\4 Calculations\HELP\4 Operating.MON

 COLUMNS OF MONTHLY OUTPUT DATA FILE:

      1    DATE OF ULTIMO (yyyymmdd)
      2    PRECIPITATION (MM)
      3    RUNOFF (MM)
      4    POTENTIAL EVAPOTRANSPIRATION (MM)
      5    ACTUAL EVAPOTRANSPIRATION (MM)
      6    HEAD  #1: AVERAGE HEAD ON TOP OF LAYER  4 (CM)
      7    DRAIN #1: LATERAL DRAINAGE FROM LAYER  3 (WITHOUT RECIRC.) (MM)
      8    RECIRC#1: LAT. DRAINAGE RECIRCULATED FROM LAYER  3 INTO L.  1 (MM)
      9    LEAK  #1: PERCOLATION/LEAKAGE THROUGH LAYER  5 (MM)


******************************************************************************

      TITLE:  Werribee Cell 4A

******************************************************************************


                           WEATHER DATA SOURCES
------------------------------------------------------------------------------



         NOTE:  PRECIPITATION DATA FOR     Werribee            Vic
                   WAS ENTERED FROM A TEXT FILE.
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       NOTE:  TEMPERATURE DATA FOR       Werribee            Vic
                WAS ENTERED FROM A TEXT FILE.


       NOTE:  SOLAR RADIATION DATA FOR   Werribee            Vic
                WAS ENTERED FROM A TEXT FILE.


******************************************************************************

                                LAYER DATA   1
------------------------------------------------------------------------------

                             VALID FOR  50 YEARS


    NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE
             COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.


                                   LAYER  1
                                   --------

                    TYPE 1 - VERTICAL PERCOLATION LAYER
                        MATERIAL TEXTURE NUMBER  15
          THICKNESS                   =     25.00   CM
          POROSITY                    =      0.4750 VOL/VOL
          FIELD CAPACITY              =      0.3780 VOL/VOL
          WILTING POINT               =      0.2650 VOL/VOL
          INITIAL SOIL WATER CONTENT  =      0.3072 VOL/VOL
          EFFECTIVE SAT. HYD. CONDUCT.=      0.1700E-04 CM/SEC


                                   LAYER  2
                                   --------

                    TYPE 1 - VERTICAL PERCOLATION LAYER
                        MATERIAL TEXTURE NUMBER  19
          THICKNESS                   =    500.00   CM
          POROSITY                    =      0.1680 VOL/VOL
          FIELD CAPACITY              =      0.0730 VOL/VOL
          WILTING POINT               =      0.0190 VOL/VOL
          INITIAL SOIL WATER CONTENT  =      0.0730 VOL/VOL
          EFFECTIVE SAT. HYD. CONDUCT.=      0.1000E-02 CM/SEC


                                   LAYER  3
                                   --------

                      TYPE 2 - LATERAL DRAINAGE LAYER
                        MATERIAL TEXTURE NUMBER  21
          THICKNESS                   =     30.00   CM
          POROSITY                    =      0.3970 VOL/VOL
          FIELD CAPACITY              =      0.0320 VOL/VOL
          WILTING POINT               =      0.0130 VOL/VOL
          INITIAL SOIL WATER CONTENT  =      0.0321 VOL/VOL
          EFFECTIVE SAT. HYD. CONDUCT.=      0.3000     CM/SEC
          SLOPE                       =      1.00   PERCENT
          DRAINAGE LENGTH             =     50.0    METERS
```

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                                   LAYER  4
                                   --------

                       TYPE 4 - FLEXIBLE MEMBRANE LINER
                         MATERIAL TEXTURE NUMBER  35
           THICKNESS                     =      0.15   CM
           EFFECTIVE SAT. HYD. CONDUCT.=      0.2000E-12 CM/SEC
           FML PINHOLE DENSITY           =      2.00   HOLES/HECTARE
           FML INSTALLATION DEFECTS      =      2.00   HOLES/HECTARE
           FML PLACEMENT QUALITY         =  3 - GOOD


                                   LAYER  5
                                   --------

                         TYPE 3 - BARRIER SOIL LINER
                         MATERIAL TEXTURE NUMBER  16
           THICKNESS                     =    100.00   CM
           POROSITY                      =      0.4270 VOL/VOL
           FIELD CAPACITY                =      0.4180 VOL/VOL
           WILTING POINT                 =      0.3670 VOL/VOL
           INITIAL SOIL WATER CONTENT    =      0.4270 VOL/VOL
           EFFECTIVE SAT. HYD. CONDUCT.=      0.1000E-06 CM/SEC


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                 GENERAL DESIGN AND EVAPORATIVE ZONE DATA   1
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                            VALID FOR  50 YEARS


         NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
                  SOIL DATA BASE USING SOIL TEXTURE #15 WITH BARE
                  GROUND CONDITIONS, A SURFACE SLOPE OF  3.% AND
                  A SLOPE LENGTH OF  100. METERS.

        SCS RUNOFF CURVE NUMBER             =     96.60
        FRACTION OF AREA ALLOWING RUNOFF    =      0.0    PERCENT
        AREA PROJECTED ON HORIZONTAL PLANE  =      1.0000 HECTARES
        EVAPORATIVE ZONE DEPTH              =     25.0    CM
        INITIAL WATER IN EVAPORATIVE ZONE   =      7.680  CM
        UPPER LIMIT OF EVAPORATIVE STORAGE  =     11.875  CM
        FIELD CAPACITY OF EVAPORATIVE ZONE  =      9.450  CM
        LOWER LIMIT OF EVAPORATIVE STORAGE  =      6.625  CM
        SOIL EVAPORATION ZONE DEPTH         =     25.0    CM
        INITIAL SNOW WATER                  =      0.000  CM
        INITIAL INTERCEPTION WATER          =      0.000  CM
        INITIAL WATER IN LAYER MATERIALS    =     87.844  CM
        TOTAL INITIAL WATER                 =     87.844  CM
        TOTAL SUBSURFACE INFLOW             =      0.00   MM/YR


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                        EVAPOTRANSPIRATION DATA   1
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                           VALID FOR  50 YEARS


         NOTE:  EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
                  Werribee            Vic
             STATION LATITUDE                       = -37.90 DEGREES
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             MAXIMUM LEAF AREA INDEX                =   0.00
             START OF GROWING SEASON (JULIAN DATE)  =      0
             END OF GROWING SEASON (JULIAN DATE)    =    367
             EVAPORATIVE ZONE DEPTH                 =  25.0  CM
             AVERAGE ANNUAL WIND SPEED              =   8.00 KPH
             AVERAGE 1ST QUARTER RELATIVE HUMIDITY  =  68.0  %
             AVERAGE 2ND QUARTER RELATIVE HUMIDITY  =  80.0  %
             AVERAGE 3RD QUARTER RELATIVE HUMIDITY  =  79.0  %
             AVERAGE 4TH QUARTER RELATIVE HUMIDITY  =  66.0  %

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                     MONTHLY TOTALS (MM) FOR YEAR 1964
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
                                ------- ------- ------- ------- ------- -------

PRECIPITATION                     1.5    84.2    30.9    89.5    43.2    18.4
                                 65.5    37.0    66.7    94.4    54.2    67.5

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    159.10  114.02  108.72   51.24   36.16   25.34
                                 28.74   42.65   67.20  101.45  124.03  130.88

ACTUAL EVAPOTRANSPIRATION        11.76   51.28   35.42   37.09   33.01   25.32
                                 28.72   42.62   55.92   71.12   44.29   59.59

LATERAL DRAINAGE COLLECTED        0.039  16.536   0.368  31.812   3.444  10.568
  FROM LAYER  3                  28.593   3.604   0.001  37.926  11.771  12.188

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


-------------------------------------------------------------------------------
                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
-------------------------------------------------------------------------------


AVERAGE DAILY HEAD ON            0.001   0.550   0.011   1.023   0.107   0.340
  TOP OF LAYER  4                0.890   0.112   0.000   1.180   0.378   0.379

STD. DEVIATION OF DAILY          0.002   0.797   0.022   1.026   0.154   0.537
  HEAD ON TOP OF LAYER  4        0.842   0.174   0.000   1.426   0.604   0.549

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                     MONTHLY TOTALS (MM) FOR YEAR 1965
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                       9.8       0.9       2.4      77.6      48.3      28.1
                                   66.3      63.0      21.9      12.1      58.8      55.1

RUNOFF                              0.00      0.00      0.00      0.00      0.00      0.00
                                    0.00      0.00      0.00      0.00      0.00      0.00

POTENTIAL EVAPOTRANSPIRATION      154.80    129.97    112.16     54.91     35.19     24.46
                                   27.35     44.45     67.41    114.24    121.51    158.59

ACTUAL EVAPOTRANSPIRATION          14.99      5.58      2.20     17.84     34.38     24.45
                                   27.33     44.16     19.20     12.69     63.37     59.96

LATERAL DRAINAGE COLLECTED          0.039     0.000     0.000    23.759    16.416     9.016
  FROM LAYER  3                    27.837    42.389     0.558     0.000     0.000     4.294

LATERAL DRAINAGE RECIRCULATED       0.000     0.000     0.000     0.000     0.000     0.000
  FROM LAYER  3 INTO L.  1          0.000     0.000     0.000     0.000     0.000     0.000

PERCOLATION/LEAKAGE THROUGH         0.000     0.000     0.000     0.000     0.000     0.000
  LAYER  5                          0.000     0.000     0.000     0.000     0.000     0.000


-------------------------------------------------------------------------------
                    MONTHLY SUMMARIES FOR DAILY HEADS (CM)
-------------------------------------------------------------------------------


AVERAGE DAILY HEAD ON              0.001     0.000     0.000     0.764     0.511     0.290
  TOP OF LAYER  4                  0.866     1.319     0.018     0.000     0.000     0.134

STD. DEVIATION OF DAILY            0.002     0.000     0.000     1.483     0.923     0.270
  HEAD ON TOP OF LAYER  4          1.284     1.002     0.034     0.000     0.000     0.169

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                    MONTHLY TOTALS (MM) FOR YEAR 1966
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                                  JAN/JUL  FEB/AUG  MAR/SEP  APR/OCT  MAY/NOV  JUN/DEC
                                  -------  -------  -------  -------  -------  -------

PRECIPITATION                      28.3     56.0     66.7     50.2     27.0     18.3
                                   38.5     62.9     80.5     71.0     25.4     73.8

RUNOFF                              0.00     0.00     0.00     0.00     0.00     0.00
                                    0.00     0.00     0.00     0.00     0.00     0.00

POTENTIAL EVAPOTRANSPIRATION      156.51   122.81   110.77    60.17    34.74    23.14
                                   28.22    42.96    65.88    99.67   133.02   143.54

ACTUAL EVAPOTRANSPIRATION          12.30    38.54    47.09    24.99    34.71    21.07
                                   21.81    42.76    61.61    45.30    37.09    56.19

LATERAL DRAINAGE COLLECTED          0.003   26.165   15.860    3.370   10.312    0.018
  FROM LAYER  3                     6.053   21.759   22.633   22.291    2.684    9.078

LATERAL DRAINAGE RECIRCULATED       0.000    0.000    0.000    0.000    0.000    0.000
  FROM LAYER  3 INTO L.  1          0.000    0.000    0.000    0.000    0.000    0.000

PERCOLATION/LEAKAGE THROUGH         0.000    0.000    0.000    0.000    0.000    0.000
  LAYER  5                          0.000    0.000    0.000    0.000    0.000    0.000
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-------------------------------------------------------------------------------
                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON               0.000    0.901    0.494    0.108    0.321    0.001
  TOP OF LAYER  4                   0.188    0.677    0.728    0.694    0.086    0.283

STD. DEVIATION OF DAILY             0.000    1.292    0.714    0.193    0.240    0.001
  HEAD ON TOP OF LAYER  4           0.255    0.582    0.843    1.114    0.162    0.388

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                     MONTHLY TOTALS (MM) FOR YEAR 1967
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                                  JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                       23.5     3.2     11.4      9.1     34.4     27.5
                                    20.9    55.4     44.5     14.2      3.7     19.6

RUNOFF                               0.00    0.00     0.00     0.00     0.00     0.00
                                     0.00    0.00     0.00     0.00     0.00     0.00

POTENTIAL EVAPOTRANSPIRATION      148.49  136.33  110.38    59.96    37.61    24.36
                                   28.67   42.99   66.45   116.91   135.47   148.78

ACTUAL EVAPOTRANSPIRATION          38.31    6.57    1.97     5.96     9.59    24.23
                                   26.89   40.42   51.51    17.03     9.61     7.81

LATERAL DRAINAGE COLLECTED          0.013   0.000   0.000    0.000    3.931   17.451
  FROM LAYER  3                     0.235   2.788   2.962    0.870    0.000    0.000

LATERAL DRAINAGE RECIRCULATED       0.000   0.000   0.000    0.000    0.000    0.000
  FROM LAYER  3 INTO L.  1          0.000   0.000   0.000    0.000    0.000    0.000

PERCOLATION/LEAKAGE THROUGH         0.000   0.000   0.000    0.000    0.000    0.000
  LAYER  5                          0.000   0.000   0.000    0.000    0.000    0.000

-------------------------------------------------------------------------------
                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
-------------------------------------------------------------------------------


AVERAGE DAILY HEAD ON               0.000    0.000    0.000    0.000    0.122    0.561
  TOP OF LAYER  4                   0.007    0.087    0.095    0.027    0.000    0.000

STD. DEVIATION OF DAILY             0.001    0.000    0.000    0.000    0.217    0.545
  HEAD ON TOP OF LAYER  4           0.014    0.174    0.115    0.052    0.000    0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1968
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                     55.0     6.3    15.0    97.4    59.8    38.9
                                  30.2    36.4     8.0    31.3    38.5    53.3

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    173.73  147.06  109.51   58.77   32.30   23.72
                                 28.31   45.39   64.89  104.66  123.46  151.02

ACTUAL EVAPOTRANSPIRATION        45.57    8.27    6.30    8.70   32.28   23.70
                                 28.29   42.43   16.65   29.58   37.96   46.40

LATERAL DRAINAGE COLLECTED       17.873   3.756   0.001   0.095  91.676  21.907
  FROM LAYER  3                   5.290   2.370   0.000   0.000   0.000   8.432

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.001   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.556   0.125   0.000   0.003   2.853   0.704
  TOP OF LAYER  4                0.165   0.074   0.000   0.000   0.000   0.262

STD. DEVIATION OF DAILY          1.059   0.229   0.000   0.016   2.391   0.416
  HEAD ON TOP OF LAYER  4        0.109   0.116   0.000   0.000   0.000   0.407

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                     MONTHLY TOTALS (MM) FOR YEAR 1969
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
                                ------- ------- ------- ------- ------- -------

PRECIPITATION                      8.0    92.7    17.8    21.5    71.5     4.1
                                  47.5    41.1    40.3    21.2    40.6    31.4

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    166.21  117.29  106.90   59.19   34.24   23.99
                                 29.75   43.32   57.29  105.86  124.29  143.31

ACTUAL EVAPOTRANSPIRATION        14.32   65.13   23.50   10.33   29.57   22.85
                                 28.33   39.68   56.06   18.55   38.47   35.09

LATERAL DRAINAGE COLLECTED        0.315  10.490   2.322   0.000  15.822  23.389
  FROM LAYER  3                   0.006   0.000   0.000   0.000   6.988   0.013

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
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  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.010   0.361   0.072   0.000   0.492   0.752
  TOP OF LAYER  4                0.000   0.000   0.000   0.000   0.225   0.000

STD. DEVIATION OF DAILY          0.019   0.498   0.117   0.000   0.766   1.110
  HEAD ON TOP OF LAYER  4        0.000   0.000   0.000   0.000   0.359   0.001

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                     MONTHLY TOTALS (MM) FOR YEAR 1970
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
                                ------- ------- ------- ------- ------- -------

PRECIPITATION                    86.1     5.5    79.6    62.5    52.8    33.7
                                 21.3    59.3    42.4    24.1    89.6    86.2

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    143.79  133.03  106.05   60.18   34.09   24.56
                                 28.92   43.27   58.03  103.53  130.84  154.83

ACTUAL EVAPOTRANSPIRATION        63.98    3.36   34.38   34.72   34.07   24.54
                                 28.91   42.82   52.39   24.49   55.96   52.43

LATERAL DRAINAGE COLLECTED       29.547   0.029  17.888  13.020  34.817   4.483
  FROM LAYER  3                   5.589   6.773   0.535   0.000  37.329  24.994

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


-------------------------------------------------------------------------------
                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
-------------------------------------------------------------------------------


AVERAGE DAILY HEAD ON            0.919   0.001   0.557   0.419   1.083   0.144
  TOP OF LAYER  4                0.174   0.211   0.017   0.000   1.200   0.778

STD. DEVIATION OF DAILY          1.339   0.002   1.062   0.567   0.775   0.135
  HEAD ON TOP OF LAYER  4        0.089   0.308   0.032   0.000   1.648   1.131

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                     MONTHLY TOTALS (MM) FOR YEAR 1971
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                               JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    54.2    85.7    26.3    38.7    43.7    46.8
                                 25.6    23.7    30.0    57.4    94.0    64.8

RUNOFF                           0.00    0.00    0.00    0.00    0.00    0.00
                                 0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION   156.91  132.92  116.74   64.60   34.25   24.30
                                27.45   42.78   60.60  102.81  116.83  153.39

ACTUAL EVAPOTRANSPIRATION       47.22   72.99   26.89   31.23   33.85   24.28
                                27.43   32.64   30.20   52.60   56.02   43.84

LATERAL DRAINAGE COLLECTED      0.168  26.163   0.074   0.000   0.000  18.579
  FROM LAYER  3                 6.645   0.003   0.000   8.098  44.699  11.851

LATERAL DRAINAGE RECIRCULATED   0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1      0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH     0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                      0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON           0.005   0.901   0.002   0.000   0.000   0.597
  TOP OF LAYER  4               0.207   0.000   0.000   0.252   1.437   0.369

STD. DEVIATION OF DAILY         0.010   1.092   0.004   0.000   0.000   0.422
  HEAD ON TOP OF LAYER  4       0.252   0.000   0.000   0.399   1.850   0.763

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                     MONTHLY TOTALS (MM) FOR YEAR 1972
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                               JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
                               ------- ------- ------- ------- ------- -------

PRECIPITATION                    28.8   126.9    30.1    36.9    27.2    11.2
                                 18.2    30.6    10.9    37.4    35.7     1.4

RUNOFF                           0.00    0.00    0.00    0.00    0.00    0.00
                                 0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION   141.33  136.36  111.43   58.42   37.78   24.15
                                29.46   45.56   73.73  114.14  131.08  168.41

ACTUAL EVAPOTRANSPIRATION       39.46   64.56   38.06   13.19   24.54   18.20
                                11.82   28.29   27.25   34.78   31.23   13.87

LATERAL DRAINAGE COLLECTED      4.541  46.340  11.063   0.001   0.867   1.661
  FROM LAYER  3                 0.000   0.105   0.004   2.322   1.570   0.191

LATERAL DRAINAGE RECIRCULATED   0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1      0.000   0.000   0.000   0.000   0.000   0.000
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PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


-------------------------------------------------------------------------------
                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.141   1.541   0.344   0.000   0.027   0.053
  TOP OF LAYER  4                0.000   0.003   0.000   0.072   0.050   0.006

STD. DEVIATION OF DAILY          0.270   2.329   0.658   0.000   0.068   0.090
  HEAD ON TOP OF LAYER  4        0.000   0.006   0.000   0.109   0.089   0.011

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                     MONTHLY TOTALS (MM) FOR YEAR 1973
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    51.7   232.1    47.6    17.8    41.4    59.2
                                 33.0    46.6    33.7    79.0    50.6    50.9

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    156.83  130.35   99.32   61.07   35.40   24.02
                                 29.06   42.28   68.69  108.47  127.72  160.33

ACTUAL EVAPOTRANSPIRATION        33.11   91.66   48.00   31.15   32.78   23.74
                                 29.04   41.33   46.09   71.57   44.90   59.49

LATERAL DRAINAGE COLLECTED        0.000 109.240  17.284   4.859   0.001  22.399
  FROM LAYER  3                  13.683   4.469   0.019   0.662   1.290   4.624

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.001   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   3.764   0.538   0.156   0.000   0.720
  TOP OF LAYER  4                0.426   0.139   0.001   0.021   0.041   0.144

STD. DEVIATION OF DAILY          0.000   3.359   0.760   0.223   0.000   0.997
  HEAD ON TOP OF LAYER  4        0.415   0.140   0.001   0.039   0.063   0.206

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                     MONTHLY TOTALS (MM) FOR YEAR 1974
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    61.8    19.0    48.8    93.1    88.7    14.6
                                 68.5    70.7    40.5    56.1    39.6    27.8

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    174.98  128.58  115.63   48.83   37.08   25.10
                                 29.43   42.38   61.18  100.94  124.93  152.34

ACTUAL EVAPOTRANSPIRATION        52.86   11.43   27.10   48.80   36.86   25.08
                                 29.41   42.35   45.35   59.57   42.39   31.71

LATERAL DRAINAGE COLLECTED       20.850   0.413   0.000  11.030  80.206   8.115
  FROM LAYER  3                  21.601  17.897  14.316   0.712   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.001   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.649   0.014   0.000   0.355   2.496   0.261
  TOP OF LAYER  4                0.672   0.557   0.460   0.022   0.000   0.000

STD. DEVIATION OF DAILY          0.998   0.025   0.000   0.306   1.678   0.386
  HEAD ON TOP OF LAYER  4        0.980   0.751   0.695   0.036   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1975
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    23.2     8.8    36.8    16.3    36.1    31.3
                                 32.1    79.5    85.5   146.0    46.7    41.2

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    154.08  133.56  106.17   54.52   35.64   24.38
                                 32.26   40.78   66.27  100.11  133.38  158.82

ACTUAL EVAPOTRANSPIRATION        21.07    9.45   31.90   16.07   25.80   24.36
                                 32.24   40.75   65.25   96.84   68.80   22.70

LATERAL DRAINAGE COLLECTED        0.000   0.000   7.032   0.457   0.405   6.105
  FROM LAYER  3                   0.709  25.713  28.599  32.515  10.084   0.003
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LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.219   0.015   0.013   0.196
  TOP OF LAYER  4                0.022   0.800   0.920   1.012   0.324   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.382   0.028   0.030   0.229
  HEAD ON TOP OF LAYER  4        0.042   0.787   0.508   1.027   0.499   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1976
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                     6.2    13.4    36.1     6.3    15.9    30.2
                                 11.9    56.3    97.5    82.4    47.9    39.4

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    160.78  144.60  114.40   58.65   34.72   24.42
                                 29.20   44.29   63.41  104.50  127.37  159.83

ACTUAL EVAPOTRANSPIRATION        35.73    4.98   39.26    3.50    5.68   13.90
                                 21.81   36.19   59.35   66.88   33.24   49.75

LATERAL DRAINAGE COLLECTED        0.000   0.000   3.857   0.001   0.000   4.413
  FROM LAYER  3                   0.797  15.763  23.950  40.615   0.926   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.120   0.000   0.000   0.142
  TOP OF LAYER  4                0.025   0.491   0.770   1.264   0.030   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.210   0.000   0.000   0.206
  HEAD ON TOP OF LAYER  4        0.047   0.662   1.643   1.264   0.056   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1977
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    45.1     9.8    12.7    72.8    42.6    75.2
                                 32.9    17.6    67.1    22.3    41.4    14.7

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    159.28  128.02  109.37   52.36   35.49   24.09
                                 28.49   48.02   63.35  115.67  130.03  149.75

ACTUAL EVAPOTRANSPIRATION        47.55   11.22    4.82   31.03   25.62   24.07
                                 28.47   36.53   44.48   15.05   26.40   29.84

LATERAL DRAINAGE COLLECTED        6.156   0.160   0.000  40.876   0.396  32.350
  FROM LAYER  3                  18.762   3.333  22.297   0.326   0.313   4.937

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.192   0.006   0.000   1.314   0.012   1.040
  TOP OF LAYER  4                0.584   0.104   0.717   0.010   0.010   0.154

STD. DEVIATION OF DAILY          0.296   0.010   0.000   1.671   0.024   1.054
  HEAD ON TOP OF LAYER  4        0.657   0.126   0.886   0.019   0.052   0.257

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                     MONTHLY TOTALS (MM) FOR YEAR 1978
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    45.5    18.2    41.4    53.8    53.7    32.0
                                 64.5    85.9    43.7    50.1   103.8    76.3

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    144.36  123.88   96.86   57.42   37.70   24.35
                                 29.38   41.74   63.13  107.91  123.38  140.71

ACTUAL EVAPOTRANSPIRATION        13.44   37.29   33.31   39.19   26.92   24.34
                                 29.36   41.71   44.37   31.59   76.51   74.00

LATERAL DRAINAGE COLLECTED        0.001   9.033   0.024  27.148  19.016   3.809
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  FROM LAYER  3                  32.187  54.219   0.453   4.638  37.599   9.726

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000    0.311   0.001   0.873   0.592   0.122
  TOP OF LAYER  4                1.002    1.687   0.015   0.144   1.209   0.303

STD. DEVIATION OF DAILY          0.000    0.412   0.002   1.268   0.969   0.116
  HEAD ON TOP OF LAYER  4        0.855    1.785   0.027   0.459   0.907   0.334

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                     MONTHLY TOTALS (MM) FOR YEAR 1979
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                               JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    44.6    51.2    28.1    24.4    63.6    17.8
                                  9.1    58.2    81.4    61.0    31.4    14.3

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    169.44  127.01  111.91   54.28   34.15   25.41
                                 29.49   42.22   61.68  108.11  124.44  154.16

ACTUAL EVAPOTRANSPIRATION        45.41   28.05   50.12   13.09   31.66   25.39
                                 19.41   32.16   54.80   77.03   28.42   10.68

LATERAL DRAINAGE COLLECTED        0.395   0.649   4.590   0.001  24.565   0.016
  FROM LAYER  3                   0.000   2.113   6.050  16.912   0.003   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.012    0.022   0.143   0.000   0.764   0.001
  TOP OF LAYER  4                0.000    0.066   0.195   0.526   0.000   0.000

STD. DEVIATION OF DAILY          0.029    0.067   0.201   0.000   1.140   0.001
  HEAD ON TOP OF LAYER  4        0.000    0.209   0.251   0.775   0.000   0.000

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                    MONTHLY TOTALS (MM) FOR YEAR 1980
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    35.9    21.9     8.3    56.2    36.0    41.4
                                 24.1    31.7    20.9    92.5    31.8    41.4

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    149.12  131.82  108.27   61.59   38.75   24.16
                                 30.01   49.33   73.75  115.02  134.30  166.73

ACTUAL EVAPOTRANSPIRATION        45.29   17.78    9.42   15.56   38.73   24.15
                                 29.38   32.02   24.04   73.97   39.86   49.39

LATERAL DRAINAGE COLLECTED        6.113   0.154   0.000   9.398  17.893   4.215
  FROM LAYER  3                  13.282   0.067   0.000  16.200   0.130   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000

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                    MONTHLY SUMMARIES FOR DAILY HEADS (CM)
-------------------------------------------------------------------------------


AVERAGE DAILY HEAD ON            0.190   0.005   0.000   0.302   0.557   0.136
  TOP OF LAYER  4                0.413   0.002   0.000   0.504   0.004   0.000

STD. DEVIATION OF DAILY          0.231   0.009   0.000   0.930   0.885   0.149
  HEAD ON TOP OF LAYER  4        0.414   0.004   0.000   0.737   0.008   0.000

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                    MONTHLY TOTALS (MM) FOR YEAR 1981
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    47.0    28.5    34.6    11.9    59.1    48.0
                                 61.5    51.9    20.0    64.9    50.8    16.2

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    167.32  132.15  104.80   64.14   36.32   25.14
                                 30.59   45.15   70.58  115.88  132.37  155.98

ACTUAL EVAPOTRANSPIRATION        21.52   45.55    6.85   27.85   14.93   25.13
                                 30.57   44.57   32.13   55.89   53.36   18.38
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LATERAL DRAINAGE COLLECTED         1.355   7.347   0.002   0.000   8.921  35.924
  FROM LAYER  3                   25.973  16.972   0.079   9.943   0.012   0.000

LATERAL DRAINAGE RECIRCULATED      0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1         0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH        0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                         0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
-------------------------------------------------------------------------------


AVERAGE DAILY HEAD ON             0.042   0.253   0.000   0.000   0.278   1.155
  TOP OF LAYER  4                 0.808   0.528   0.003   0.309   0.000   0.000

STD. DEVIATION OF DAILY           0.207   0.452   0.000   0.000   0.786   0.635
  HEAD ON TOP OF LAYER  4         0.572   0.363   0.005   0.520   0.001   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1982
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                                 JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
                                 ------- ------- ------- ------- ------- -------

PRECIPITATION                     31.4     5.7    34.4    31.6    36.9    31.4
                                  11.5    15.5    35.8    40.0     5.9    57.3

RUNOFF                             0.00    0.00    0.00    0.00    0.00    0.00
                                   0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION     165.73  136.77  113.49   63.25   36.24   24.16
                                  28.36   50.75   67.10  114.43  148.76  155.70

ACTUAL EVAPOTRANSPIRATION         35.27    9.93   11.59   13.39   29.57   24.14
                                  26.90   14.67   25.84   48.66   11.41   41.65

LATERAL DRAINAGE COLLECTED         0.000   0.000   0.000   3.992   9.287  15.279
  FROM LAYER  3                    2.735   0.001   0.000   0.000   0.000  17.252

LATERAL DRAINAGE RECIRCULATED      0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1         0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH        0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                         0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
-------------------------------------------------------------------------------


AVERAGE DAILY HEAD ON             0.000   0.000   0.000   0.128   0.289   0.491
  TOP OF LAYER  4                 0.085   0.000   0.000   0.000   0.000   0.537

STD. DEVIATION OF DAILY           0.000   0.000   0.000   0.334   0.455   0.414
  HEAD ON TOP OF LAYER  4         0.123   0.000   0.000   0.000   0.000   0.862
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                     MONTHLY TOTALS (MM) FOR YEAR 1983
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                     20.9     4.6    41.4    47.0    67.7    29.4
                                  50.4    45.4    72.2    99.2    67.6    13.1

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    157.80  142.30  104.99   55.34   35.73   23.90
                                 28.33   45.98   63.72  105.92  121.59  152.89

ACTUAL EVAPOTRANSPIRATION         9.97    7.27   28.41   35.87   35.70   23.88
                                 28.31   45.95   53.00   49.52   39.83   41.37

LATERAL DRAINAGE COLLECTED       0.066   0.000  12.998   3.626  16.363   8.520
  FROM LAYER  3                 23.015   4.207  33.003  48.859   3.031  13.308

LATERAL DRAINAGE RECIRCULATED    0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1       0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH      0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                       0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
------------------------------------------------------------------------------


AVERAGE DAILY HEAD ON            0.002   0.000   0.404   0.117   0.509   0.274
  TOP OF LAYER  4                0.716   0.131   1.061   1.520   0.097   0.414

STD. DEVIATION OF DAILY          0.004   0.000   0.789   0.218   0.505   0.447
  HEAD ON TOP OF LAYER  4        0.725   0.131   1.066   2.054   0.182   0.657

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                     MONTHLY TOTALS (MM) FOR YEAR 1984
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
                                ------- ------- ------- ------- ------- -------

PRECIPITATION                     43.3    12.3    53.7    47.1    12.7    13.2
                                  33.4    62.8    77.0    38.1    37.5    30.8

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    149.37  135.25  104.08   58.26   37.78   25.65
                                 28.39   45.86   59.47  118.49  135.20  155.03
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ACTUAL EVAPOTRANSPIRATION          29.15    17.61    24.47    34.74    25.42    10.65
                                   24.92    45.83    52.09    48.43    41.67    22.51

LATERAL DRAINAGE COLLECTED          0.003    0.000    5.672   17.069    2.511    0.000
  FROM LAYER  3                     0.000   14.444   26.351    4.155    0.000    0.000

LATERAL DRAINAGE RECIRCULATED       0.000    0.000    0.000    0.000    0.000    0.000
  FROM LAYER  3 INTO L.  1          0.000    0.000    0.000    0.000    0.000    0.000

PERCOLATION/LEAKAGE THROUGH         0.000    0.000    0.000    0.000    0.000    0.000
  LAYER  5                          0.000    0.000    0.000    0.000    0.000    0.000


-------------------------------------------------------------------------------
                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON              0.000    0.000    0.176    0.549    0.078    0.000
  TOP OF LAYER  4                  0.000    0.449    0.847    0.129    0.000    0.000

STD. DEVIATION OF DAILY            0.000    0.000    0.509    0.565    0.149    0.000
  HEAD ON TOP OF LAYER  4          0.000    0.526    1.397    0.247    0.000    0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1985
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                                  JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                       9.2      4.6     55.8     38.1     35.4     37.3
                                   34.1     61.4     25.8     59.8     60.1    117.7

RUNOFF                              0.00     0.00     0.00     0.00     0.00     0.00
                                    0.00     0.00     0.00     0.00     0.00     0.00

POTENTIAL EVAPOTRANSPIRATION      153.27   124.85   110.96    65.20    38.09    24.18
                                   29.26    42.82    64.19   112.97   126.71   141.53

ACTUAL EVAPOTRANSPIRATION           8.96     6.56    43.05    39.25    16.18    24.08
                                   29.24    42.79    35.63    52.93    51.20    77.56

LATERAL DRAINAGE COLLECTED          0.000    0.000   14.003    2.353    0.000    8.484
  FROM LAYER  3                     3.465   24.733    2.387    4.344    9.126   36.857

LATERAL DRAINAGE RECIRCULATED       0.000    0.000    0.000    0.000    0.000    0.000
  FROM LAYER  3 INTO L.  1          0.000    0.000    0.000    0.000    0.000    0.000

PERCOLATION/LEAKAGE THROUGH         0.000    0.000    0.000    0.000    0.000    0.000
  LAYER  5                          0.000    0.000    0.000    0.000    0.000    0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
-------------------------------------------------------------------------------


AVERAGE DAILY HEAD ON              0.000    0.000    0.436    0.076    0.000    0.273
  TOP OF LAYER  4                  0.108    0.770    0.077    0.135    0.293    1.147

STD. DEVIATION OF DAILY            0.000    0.000    0.598    0.142    0.000    0.266
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  HEAD ON TOP OF LAYER  4        0.160   0.647   0.135   0.298   0.398   1.449

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                     MONTHLY TOTALS (MM) FOR YEAR 1986
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    18.2    13.8    12.3    47.0    76.0    20.0
                                 69.0    45.9    38.0    75.7    23.8    47.1

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    152.41  128.89  116.54   57.76   36.01   23.89
                                 28.17   45.60   62.48  103.76  132.65  141.28

ACTUAL EVAPOTRANSPIRATION        24.20    8.70   11.95   25.12   35.99   23.49
                                 28.15   38.98   52.46   72.56   21.36   56.81

LATERAL DRAINAGE COLLECTED        0.221   0.000   0.000   3.629  45.087   6.817
  FROM LAYER  3                  26.446  11.039   3.520   3.764   0.933   0.090

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
-------------------------------------------------------------------------------


AVERAGE DAILY HEAD ON            0.007   0.000   0.000   0.117   1.403   0.219
  TOP OF LAYER  4                0.823   0.344   0.113   0.117   0.030   0.003

STD. DEVIATION OF DAILY          0.013   0.000   0.000   0.194   0.956   0.364
  HEAD ON TOP OF LAYER  4        0.779   0.389   0.174   0.241   0.056   0.006

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                     MONTHLY TOTALS (MM) FOR YEAR 1987
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                   104.2    43.9    28.2    22.9    99.9    38.7
                                 63.0    35.1    32.1    29.5    51.5   106.8

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    150.59  130.45   99.94   61.36   36.19   25.15
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                                 29.12   44.41   71.39  112.86  133.32  148.07

ACTUAL EVAPOTRANSPIRATION        56.26   24.56   37.78    8.18   32.95   25.13
                                 29.10   44.38   26.36   50.69   50.64   52.31

LATERAL DRAINAGE COLLECTED       50.517   0.153   4.333   0.001  57.623   9.946
  FROM LAYER  3                   5.788  34.423   0.289   0.000   0.000  45.395

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            1.572   0.005   0.135   0.000   1.793   0.320
  TOP OF LAYER  4                0.180   1.071   0.009   0.000   0.000   1.413

STD. DEVIATION OF DAILY          1.968   0.009   0.209   0.000   1.868   0.329
  HEAD ON TOP OF LAYER  4        0.221   1.296   0.017   0.000   0.000   1.763

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                     MONTHLY TOTALS (MM) FOR YEAR 1988
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    65.0     7.3    23.7    11.4    58.9    44.0
                                 30.3    46.9    37.4    18.4    94.9    93.5

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    159.80  132.23  114.03   62.72   36.93   25.57
                                 30.35   47.43   68.54  116.06  128.50  146.28

ACTUAL EVAPOTRANSPIRATION        51.19   14.55    8.53   27.76   28.66   25.55
                                 30.33   46.82   39.63   23.71   54.38   75.52

LATERAL DRAINAGE COLLECTED       12.630   0.006   0.000   0.000   6.515  21.198
  FROM LAYER  3                   3.734   4.228   0.108   0.000  15.853  44.569

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.393   0.000   0.000   0.000   0.203   0.682
  TOP OF LAYER  4                0.116   0.132   0.003   0.000   0.510   1.387
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STD. DEVIATION OF DAILY          0.579   0.000   0.000   0.000   0.386   0.390
  HEAD ON TOP OF LAYER  4        0.198   0.230   0.007   0.000   1.283   1.332

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                     MONTHLY TOTALS (MM) FOR YEAR 1989
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    45.5    12.3    79.5    52.8    45.7    64.1
                                 37.2    58.6    40.5    64.9    40.0    25.1

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    154.96  132.43  107.96   58.67   36.86   23.70
                                 28.67   42.13   70.59  110.47  131.76  158.75

ACTUAL EVAPOTRANSPIRATION        49.53    5.18   57.54   46.00   36.83   23.68
                                 28.65   42.10   50.26   56.76   35.73   36.76

LATERAL DRAINAGE COLLECTED        6.854   0.006  14.147   0.151   3.813  31.625
  FROM LAYER  3                  17.793   9.649   4.916   3.499   2.244   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.213   0.000   0.440   0.005   0.119   1.017
  TOP OF LAYER  4                0.554   0.300   0.158   0.109   0.072   0.000

STD. DEVIATION OF DAILY          0.313   0.000   0.584   0.009   0.202   0.904
  HEAD ON TOP OF LAYER  4        0.230   0.525   0.166   0.265   0.135   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1990
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                     3.3    78.6    23.5    58.7     8.3    38.6
                                 56.2    31.0    33.2    68.4    27.6    43.2

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00
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POTENTIAL EVAPOTRANSPIRATION    156.99  119.45  115.26   58.28   37.07   25.26
                                 30.60   44.49   68.54  109.86  141.55  154.57

ACTUAL EVAPOTRANSPIRATION         8.89   53.43   20.32   32.58   27.48   19.38
                                 30.58   31.48   31.70   66.73   19.51   44.88

LATERAL DRAINAGE COLLECTED        0.000  15.886   0.019  16.579   5.318   0.001
  FROM LAYER  3                  28.947   1.447   0.000  13.820   0.101   5.320

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.547   0.001   0.533   0.165   0.000
  TOP OF LAYER  4                0.901   0.045   0.000   0.430   0.003   0.166

STD. DEVIATION OF DAILY          0.000   0.797   0.001   1.082   0.316   0.000
  HEAD ON TOP OF LAYER  4        1.133   0.086   0.000   0.685   0.006   0.278

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                     MONTHLY TOTALS (MM) FOR YEAR 1991
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    55.7     1.6    11.5    24.9    16.7   100.7
                                 40.1    32.4    60.4    16.9    22.7    96.8

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    153.51  133.82  111.85   57.28   35.01   26.36
                                 29.26   44.29   62.55  116.26  130.43  137.73

ACTUAL EVAPOTRANSPIRATION        47.28    9.98    8.02   12.56   25.00   25.41
                                 29.24   42.11   55.43   25.91   33.84   40.46

LATERAL DRAINAGE COLLECTED        0.023   0.000   0.000   0.000   0.000  56.112
  FROM LAYER  3                  16.675   0.359   0.366   2.706   0.000  30.437

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.001   0.000   0.000   0.000   0.000   1.804
  TOP OF LAYER  4                0.519   0.011   0.012   0.084   0.000   0.947

STD. DEVIATION OF DAILY          0.001   0.000   0.000   0.000   0.000   1.383
  HEAD ON TOP OF LAYER  4        0.334   0.021   0.046   0.132   0.000   1.521

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                     MONTHLY TOTALS (MM) FOR YEAR 1992
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    21.0    13.4    34.4    60.2    55.1    31.7
                                 19.0    54.1    96.8    95.1   101.1    77.7

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    138.42  123.04  106.82   57.81   35.00   24.43
                                 30.35   42.36   56.16  104.68  122.05  134.30

ACTUAL EVAPOTRANSPIRATION        46.06    4.91   24.61   33.61   34.94   24.41
                                 30.33   36.05   56.13   86.05   74.72   63.09

LATERAL DRAINAGE COLLECTED        3.005   0.000   0.000   2.955  37.512   2.872
  FROM LAYER  3                   1.361   5.486  31.306  28.768  21.833  16.297

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
-------------------------------------------------------------------------------

AVERAGE DAILY HEAD ON            0.094   0.000   0.000   0.095   1.167   0.092
  TOP OF LAYER  4                0.042   0.171   1.007   0.895   0.702   0.507

STD. DEVIATION OF DAILY          0.179   0.000   0.000   0.137   0.678   0.090
  HEAD ON TOP OF LAYER  4        0.056   0.391   0.906   0.714   1.106   0.756

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                     MONTHLY TOTALS (MM) FOR YEAR 1993
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                   105.3    30.3    23.1    11.3    17.0    37.3
                                 38.5    37.2    97.6    59.5    48.4    88.9
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RUNOFF                             0.00     0.00     0.00     0.00     0.00     0.00
                                   0.00     0.00     0.00     0.00     0.00     0.00

POTENTIAL EVAPOTRANSPIRATION     155.57   128.60   100.69    66.79    36.42    24.48
                                  30.30    47.44    65.81   109.32   127.12   143.07

ACTUAL EVAPOTRANSPIRATION         81.03    33.30    17.72    24.71    12.64    21.89
                                  29.13    38.44    59.19    62.30    48.99    62.54

LATERAL DRAINAGE COLLECTED        12.133   15.313    0.004    0.000    0.000    3.505
  FROM LAYER  3                   21.156    0.057   26.470    1.807    8.504    1.749

LATERAL DRAINAGE RECIRCULATED      0.000    0.000    0.000    0.000    0.000    0.000
  FROM LAYER  3 INTO L.  1         0.000    0.000    0.000    0.000    0.000    0.000

PERCOLATION/LEAKAGE THROUGH        0.000    0.000    0.000    0.000    0.000    0.000
  LAYER  5                         0.000    0.000    0.000    0.000    0.000    0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
-------------------------------------------------------------------------------


AVERAGE DAILY HEAD ON             0.378    0.528    0.000    0.000    0.000    0.113
  TOP OF LAYER  4                 0.658    0.002    0.851    0.056    0.273    0.054

STD. DEVIATION OF DAILY           0.676    0.894    0.000    0.000    0.000    0.109
  HEAD ON TOP OF LAYER  4         0.989    0.003    1.157    0.107    0.422    0.246

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                     MONTHLY TOTALS (MM) FOR YEAR 1994
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                               JAN/JUL  FEB/AUG  MAR/SEP  APR/OCT  MAY/NOV  JUN/DEC
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PRECIPITATION                     16.0    100.3     20.3     28.7     16.8     24.9
                                  12.3     21.3     39.9     34.6     33.2     17.6

RUNOFF                             0.00     0.00     0.00     0.00     0.00     0.00
                                   0.00     0.00     0.00     0.00     0.00     0.00

POTENTIAL EVAPOTRANSPIRATION     150.99   117.32   104.49    58.96    35.85    25.23
                                  30.79    45.23    61.23   113.07   121.37   168.40

ACTUAL EVAPOTRANSPIRATION         30.12    61.65    40.39    25.87    13.17    13.91
                                  20.22    24.39    27.30    50.67    31.11    12.16

LATERAL DRAINAGE COLLECTED         9.972   20.910    0.509    0.000    0.000    0.000
  FROM LAYER  3                    0.000    0.000    0.000    0.000    0.000    0.000

LATERAL DRAINAGE RECIRCULATED      0.000    0.000    0.000    0.000    0.000    0.000
  FROM LAYER  3 INTO L.  1         0.000    0.000    0.000    0.000    0.000    0.000

PERCOLATION/LEAKAGE THROUGH        0.000    0.000    0.000    0.000    0.000    0.000
  LAYER  5                         0.000    0.000    0.000    0.000    0.000    0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON             0.310   0.720   0.016   0.000   0.000   0.000
  TOP OF LAYER  4                 0.000   0.000   0.000   0.000   0.000   0.000

STD. DEVIATION OF DAILY           0.527   1.045   0.030   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4         0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1995
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                     74.8    11.8    61.5    68.9    62.2    59.8
                                  48.7    40.7    31.3    99.0    76.1    27.4

RUNOFF                             0.00    0.00    0.00    0.00    0.00    0.00
                                   0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    150.94  130.67  109.45   51.61   34.93   24.49
                                 27.93   49.17   63.03  102.75  124.32  134.01

ACTUAL EVAPOTRANSPIRATION        54.54   27.82   38.60   48.35   34.69   24.47
                                 27.91   37.24   28.41   58.45   60.56   20.14

LATERAL DRAINAGE COLLECTED       16.541   0.028   6.255  18.867  27.338  21.202
  FROM LAYER  3                  24.320  23.293   0.067  27.419  37.235   0.072

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
-------------------------------------------------------------------------------


AVERAGE DAILY HEAD ON             0.515   0.001   0.195   0.607   0.851   0.682
  TOP OF LAYER  4                 0.757   0.725   0.002   0.853   1.197   0.002

STD. DEVIATION OF DAILY           0.816   0.002   0.249   0.807   1.208   0.616
  HEAD ON TOP OF LAYER  4         0.472   0.686   0.004   1.484   1.105   0.004

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                     MONTHLY TOTALS (MM) FOR YEAR 1996
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                     46.3    60.9    49.1    57.7    21.0    46.2
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                                 69.5    47.6    71.5    36.3    20.1    17.1

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    152.34  123.53  107.03   54.03   34.33   25.05
                                 28.22   44.39   66.61  114.74  133.26  147.78

ACTUAL EVAPOTRANSPIRATION        40.26   35.80   40.02   53.89   27.49   15.41
                                 28.20   44.36   66.57   52.34    8.95   18.17

LATERAL DRAINAGE COLLECTED       12.436   0.005   3.372  22.808   1.723   3.298
  FROM LAYER  3                  33.833  20.229  12.228   1.067   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.387   0.000   0.105   0.733   0.054   0.106
  TOP OF LAYER  4                1.053   0.629   0.393   0.033   0.000   0.000

STD. DEVIATION OF DAILY          0.638   0.000   0.130   0.633   0.102   0.242
  HEAD ON TOP OF LAYER  4        0.436   0.995   0.458   0.063   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1997
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    37.1     2.6    16.3     8.4    52.3    22.3
                                 13.8    27.6    67.3    40.9    64.7     2.7

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    169.48  136.27  106.87   59.68   33.79   25.53
                                 29.04   44.24   68.50  112.62  139.97  156.96

ACTUAL EVAPOTRANSPIRATION        31.32   15.88    8.36    6.73   28.33   25.51
                                 26.40   24.80   52.67   15.05   74.71   12.83

LATERAL DRAINAGE COLLECTED        2.950   1.146   0.000   0.000  10.532   0.132
  FROM LAYER  3                   0.039   0.000  13.841   0.278  20.051   0.169

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON             0.092    0.039    0.000    0.000    0.328    0.004
  TOP OF LAYER  4                 0.001    0.000    0.445    0.009    0.645    0.005

STD. DEVIATION OF DAILY           0.167    0.071    0.000    0.000    0.356    0.006
  HEAD ON TOP OF LAYER  4         0.002    0.000    0.308    0.017    0.504    0.010

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                     MONTHLY TOTALS (MM) FOR YEAR 1998
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                     39.8     47.9      7.5     45.4     28.0     51.7
                                  39.0     22.8     24.5     53.4     62.6     54.6

RUNOFF                             0.00     0.00     0.00     0.00     0.00     0.00
                                   0.00     0.00     0.00     0.00     0.00     0.00

POTENTIAL EVAPOTRANSPIRATION    159.44   133.21   110.73    55.25    35.34    25.08
                                 27.97    46.66    69.64   109.33   131.33   153.56

ACTUAL EVAPOTRANSPIRATION        24.91    45.43    15.05    17.20    30.73    25.06
                                 27.95    39.13    18.11    52.69    46.24    49.05

LATERAL DRAINAGE COLLECTED        1.879    5.101    0.349    0.000    3.288   18.327
  FROM LAYER  3                  13.599    2.400    0.121    0.000   16.478    3.093

LATERAL DRAINAGE RECIRCULATED     0.000    0.000    0.000    0.000    0.000    0.000
  FROM LAYER  3 INTO L.  1        0.000    0.000    0.000    0.000    0.000    0.000

PERCOLATION/LEAKAGE THROUGH       0.000    0.000    0.000    0.000    0.000    0.000
  LAYER  5                        0.000    0.000    0.000    0.000    0.000    0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON             0.058    0.176    0.011    0.000    0.102    0.589
  TOP OF LAYER  4                 0.423    0.075    0.004    0.000    0.530    0.096

STD. DEVIATION OF DAILY           0.154    0.189    0.021    0.000    0.105    0.630
  HEAD ON TOP OF LAYER  4         0.359    0.104    0.007    0.000    0.754    0.284

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                     MONTHLY TOTALS (MM) FOR YEAR 1999
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    63.1    49.1    58.3    11.7    41.7    27.1
                                 14.8    55.4    23.1    44.6    26.6    70.1

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    155.35  130.54  108.09   58.62   38.30   25.56
                                 30.72   46.15   70.77  115.53  136.83  147.38

ACTUAL EVAPOTRANSPIRATION        53.75   55.92   43.14   13.51   20.65   25.55
                                 29.90   33.68   25.53   46.21   21.27   29.32

LATERAL DRAINAGE COLLECTED        3.116   5.256   9.092   0.005   2.383   9.183
  FROM LAYER  3                   0.582   2.892   8.586  12.013   0.067   2.651

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.097   0.181   0.283   0.000   0.074   0.295
  TOP OF LAYER  4                0.018   0.090   0.276   0.374   0.002   0.082

STD. DEVIATION OF DAILY          0.184   0.165   0.480   0.000   0.173   0.210
  HEAD ON TOP OF LAYER  4        0.022   0.355   0.515   0.605   0.004   0.313

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                     MONTHLY TOTALS (MM) FOR YEAR 2000
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    23.4    31.6     8.9    44.7    54.1    33.3
                                 39.3    26.0    61.2   110.3    19.8    12.9

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    148.76  143.75  116.65   62.71   35.44   24.84
                                 29.57   44.81   67.28  105.93  136.61  171.63

ACTUAL EVAPOTRANSPIRATION        28.68   25.53   27.51   29.96   29.36   24.82
                                 29.55   31.07   57.11   58.36   38.29    4.25

LATERAL DRAINAGE COLLECTED       29.986   0.005   0.000   0.000   9.383  13.480
  FROM LAYER  3                   3.042   7.800   0.009  15.384  44.735   0.009

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000
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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON              0.933    0.000    0.000    0.000    0.292    0.433
  TOP OF LAYER  4                  0.095    0.243    0.000    0.479    1.438    0.000

STD. DEVIATION OF DAILY            1.440    0.000    0.000    0.000    0.318    0.389
  HEAD ON TOP OF LAYER  4          0.271    0.317    0.001    1.152    2.212    0.001

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                     MONTHLY TOTALS (MM) FOR YEAR 2001
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                                 JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                      12.1     20.1     89.8    127.1     15.7     34.3
                                   11.6     47.2     25.4     55.1     48.6     32.7

RUNOFF                              0.00     0.00     0.00     0.00     0.00     0.00
                                    0.00     0.00     0.00     0.00     0.00     0.00

POTENTIAL EVAPOTRANSPIRATION     163.21   139.61   110.16    58.73    36.38    26.21
                                  29.63    43.60    68.32   107.21   124.06   139.72

ACTUAL EVAPOTRANSPIRATION          6.86     9.47    42.24    29.23    29.22    19.58
                                  26.41    29.04    30.98    57.90    46.03    34.56

LATERAL DRAINAGE COLLECTED         0.000    0.502   33.737   34.556   72.692    2.440
  FROM LAYER  3                    2.740    2.452    1.621    0.000    0.000    0.000

LATERAL DRAINAGE RECIRCULATED      0.000    0.000    0.000    0.000    0.000    0.000
  FROM LAYER  3 INTO L.  1         0.000    0.000    0.000    0.000    0.000    0.000

PERCOLATION/LEAKAGE THROUGH        0.000    0.000    0.000    0.000    0.001    0.000
  LAYER  5                         0.000    0.000    0.000    0.000    0.000    0.000

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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON              0.000    0.017    1.050    1.111    2.262    0.078
  TOP OF LAYER  4                  0.085    0.076    0.052    0.000    0.000    0.000

STD. DEVIATION OF DAILY            0.000    0.041    1.988    1.477    2.854    0.153
  HEAD ON TOP OF LAYER  4          0.139    0.128    0.086    0.000    0.000    0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 2002
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    23.4    50.6    36.1    35.4    26.3    32.5
                                 27.8    27.7    26.4    22.5    14.1     7.7

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    147.35  123.31  109.79   62.00   38.41   26.02
                                 31.21   47.11   71.71  112.58  134.94  153.58

ACTUAL EVAPOTRANSPIRATION        29.14   41.27   24.37   43.12   21.92   25.68
                                 31.19   39.90   16.47   26.60   12.78   10.92

LATERAL DRAINAGE COLLECTED        0.000   2.734   1.372   4.539   0.009   0.000
  FROM LAYER  3                   0.000   0.000   0.000   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.094   0.043   0.146   0.000   0.000
  TOP OF LAYER  4                0.000   0.000   0.000   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.150   0.140   0.201   0.001   0.000
  HEAD ON TOP OF LAYER  4        0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 2003
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    19.4    21.0    18.3    53.1    10.7    20.5
                                 66.6    47.5    24.4    64.9    31.8    31.4

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    164.31  126.84  111.80   62.27   38.17   26.00
                                 30.32   43.70   68.51  104.53  140.82  164.05

ACTUAL EVAPOTRANSPIRATION        31.10    5.14   13.47   34.60   15.46    9.33
                                 25.88   43.67   34.88   56.55   40.95   42.55

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000  26.935   0.663   0.000
  FROM LAYER  3                   9.311  26.204   1.496   0.000   0.000   3.474

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
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  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.866   0.021   0.000
  TOP OF LAYER  4                0.290   0.815   0.048   0.000   0.000   0.108

STD. DEVIATION OF DAILY          0.000   0.000   0.000   1.063   0.039   0.000
  HEAD ON TOP OF LAYER  4        0.660   0.863   0.090   0.000   0.000   0.218

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                     MONTHLY TOTALS (MM) FOR YEAR 2004
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    23.8    23.4    15.0    46.3    21.2    37.1
                                 29.8    62.2    50.9    48.2    86.2    45.4

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    151.76  131.99  109.94   60.25   35.81   25.22
                                 29.52   46.32   64.12  117.73  130.50  154.47

ACTUAL EVAPOTRANSPIRATION        12.01   29.49   12.51   16.38   29.99   20.84
                                 29.50   44.13   50.07   45.29   76.65   36.77

LATERAL DRAINAGE COLLECTED        0.437   0.000   0.000   7.397   6.405   5.443
  FROM LAYER  3                   3.086   9.621  15.236   1.450  27.346   0.137

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.014   0.000   0.000   0.238   0.199   0.175
  TOP OF LAYER  4                0.096   0.299   0.490   0.045   0.879   0.004

STD. DEVIATION OF DAILY          0.026   0.000   0.000   0.574   0.305   0.275
  HEAD ON TOP OF LAYER  4        0.144   0.401   0.499   0.191   0.610   0.008

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                     MONTHLY TOTALS (MM) FOR YEAR 2005
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    40.1   134.2     7.5    20.9    10.1    41.7
                                 26.8    42.7    51.8    47.3    49.7    30.8

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    161.11  118.00  108.50   67.85   38.56   26.28
                                 30.74   47.61   67.61  116.71  145.20  168.36

ACTUAL EVAPOTRANSPIRATION        38.67   66.04    9.81    6.39    6.77   17.97
                                 30.72   45.42   44.15   60.20   43.78   36.08

LATERAL DRAINAGE COLLECTED        0.000  76.466   0.543   0.000   0.000  16.277
  FROM LAYER  3                   3.264   0.001   2.822   0.077   7.616   0.210

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.001   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   2.634   0.017   0.000   0.000   0.523
  TOP OF LAYER  4                0.102   0.000   0.091   0.002   0.245   0.007

STD. DEVIATION OF DAILY          0.000   2.764   0.032   0.000   0.000   0.548
  HEAD ON TOP OF LAYER  4        0.155   0.000   0.121   0.005   0.422   0.013

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                     MONTHLY TOTALS (MM) FOR YEAR 2006
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    48.2    39.3    10.1    35.6    32.7    20.0
                                 24.9    26.3    27.6     6.3    17.1    14.2

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    161.52  128.47  121.29   56.31   34.34   23.61
                                 29.93   48.77   72.24  128.04  136.53  162.32

ACTUAL EVAPOTRANSPIRATION        28.89   40.47   14.72   29.05   34.32   20.13
                                 27.07   26.45   34.87   10.43    7.09    6.58

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   3.009   0.123   0.000
  FROM LAYER  3                   0.000   0.000   0.000   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000
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PERCOLATION/LEAKAGE THROUGH        0.000    0.000    0.000    0.000    0.000    0.000
  LAYER  5                         0.000    0.000    0.000    0.000    0.000    0.000


-------------------------------------------------------------------------------
                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
-------------------------------------------------------------------------------


AVERAGE DAILY HEAD ON             0.000    0.000    0.000    0.097    0.004    0.000
  TOP OF LAYER  4                 0.000    0.000    0.000    0.000    0.000    0.000

STD. DEVIATION OF DAILY           0.000    0.000    0.000    0.134    0.007    0.000
  HEAD ON TOP OF LAYER  4         0.000    0.000    0.000    0.000    0.000    0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 2007
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                                 JAN/JUL  FEB/AUG  MAR/SEP  APR/OCT  MAY/NOV  JUN/DEC
                                 -------  -------  -------  -------  -------  -------

PRECIPITATION                     27.8     21.3     24.5     28.1     32.2     41.7
                                  65.7     16.1     15.9     18.3     93.5     54.1

RUNOFF                             0.00     0.00     0.00     0.00     0.00     0.00
                                   0.00     0.00     0.00     0.00     0.00     0.00

POTENTIAL EVAPOTRANSPIRATION     157.45   143.82   116.69    65.84    40.46    24.74
                                  28.96    49.45    70.08   120.13   144.10   162.22

ACTUAL EVAPOTRANSPIRATION         35.95    10.88    23.36    18.03    36.87    23.71
                                  28.94    27.23    11.09    15.53    76.99    48.14

LATERAL DRAINAGE COLLECTED         6.512    0.667    0.000    0.000    0.000    5.592
  FROM LAYER  3                   48.743    1.688    0.000    0.000   27.336    2.637

LATERAL DRAINAGE RECIRCULATED      0.000    0.000    0.000    0.000    0.000    0.000
  FROM LAYER  3 INTO L.  1         0.000    0.000    0.000    0.000    0.000    0.000

PERCOLATION/LEAKAGE THROUGH        0.000    0.000    0.000    0.000    0.000    0.000
  LAYER  5                         0.000    0.000    0.000    0.000    0.000    0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
-------------------------------------------------------------------------------


AVERAGE DAILY HEAD ON             0.203    0.023    0.000    0.000    0.000    0.180
  TOP OF LAYER  4                 1.517    0.053    0.000    0.000    0.879    0.082

STD. DEVIATION OF DAILY           0.394    0.041    0.000    0.000    0.000    0.315
  HEAD ON TOP OF LAYER  4         0.961    0.100    0.000    0.000    1.253    0.146

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                     MONTHLY TOTALS (MM) FOR YEAR 2008
-------------------------------------------------------------------------------

                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
                                ------- ------- ------- ------- ------- -------

PRECIPITATION                    10.2    21.5    20.8     8.0    42.6    24.4
                                 39.1    39.9    15.7    10.5    25.4    75.1

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    169.82  129.67  120.33   58.63   34.10   25.90
                                 29.03   41.81   74.59  118.80  127.97  147.51

ACTUAL EVAPOTRANSPIRATION        14.11    8.08   15.92   19.20   19.12   25.88
                                 29.01   41.78   22.15   10.21   17.15   55.96

LATERAL DRAINAGE COLLECTED        0.879   0.000   0.000   0.000   7.796   2.048
  FROM LAYER  3                   4.237  13.725   1.002   0.000   0.000  30.054

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


-------------------------------------------------------------------------------
                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
-------------------------------------------------------------------------------


AVERAGE DAILY HEAD ON            0.027   0.000   0.000   0.000   0.243   0.066
  TOP OF LAYER  4                0.132   0.427   0.032   0.000   0.000   0.935

STD. DEVIATION OF DAILY          0.052   0.000   0.000   0.000   0.315   0.068
  HEAD ON TOP OF LAYER  4        0.161   0.308   0.060   0.000   0.000   1.320

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                     MONTHLY TOTALS (MM) FOR YEAR 2009
-------------------------------------------------------------------------------

                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
                                ------- ------- ------- ------- ------- -------

PRECIPITATION                     0.9     2.9    38.3    30.3    10.5    22.8
                                 32.3    41.1    64.7    28.3    77.7    35.1

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    175.67  138.87  106.04   59.84   35.22   24.15
                                 30.41   48.12   66.29  112.88  146.04  160.68

ACTUAL EVAPOTRANSPIRATION         6.92    2.43    6.46   13.33   29.53   19.34
                                 25.76   34.01   55.70   32.86   49.43   53.84

LATERAL DRAINAGE COLLECTED        0.697   0.000   0.050   9.620   8.761   0.003
  FROM LAYER  3                   0.000   0.000   7.114   3.884  10.880   7.393
```

```
LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


-------------------------------------------------------------------------------
                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
-------------------------------------------------------------------------------


AVERAGE DAILY HEAD ON            0.022   0.000   0.002   0.309   0.273   0.000
  TOP OF LAYER  4                0.000   0.000   0.229   0.121   0.350   0.230

STD. DEVIATION OF DAILY          0.041   0.000   0.008   0.228   0.321   0.000
  HEAD ON TOP OF LAYER  4        0.000   0.000   0.449   0.195   0.727   0.440

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                     MONTHLY TOTALS (MM) FOR YEAR 2010
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
                                ------- ------- ------- ------- ------- -------

PRECIPITATION                    14.2    24.7    67.4    31.2    27.1    38.5
                                 21.4    66.8    54.2   101.8   130.3    39.8

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    163.26  135.87  113.65   60.50   37.05   24.00
                                 28.48   41.14   57.86  111.74  126.84  144.95

ACTUAL EVAPOTRANSPIRATION        14.32   32.63   43.67   26.54   23.67   21.30
                                 28.46   41.12   45.16   47.27   84.28   64.85

LATERAL DRAINAGE COLLECTED        0.001   0.596  15.184   0.052   0.000   0.000
  FROM LAYER  3                   7.727  26.560  18.457   6.983  41.252  36.299

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


-------------------------------------------------------------------------------
                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
-------------------------------------------------------------------------------


AVERAGE DAILY HEAD ON            0.000   0.021   0.472   0.002   0.000   0.000
  TOP OF LAYER  4                0.240   0.827   0.593   0.217   1.326   1.130

STD. DEVIATION OF DAILY          0.000   0.034   0.725   0.003   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.250   0.865   0.829   0.300   0.994   1.635

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                     MONTHLY TOTALS (MM) FOR YEAR 2011
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
                                ------- ------- ------- ------- ------- -------

PRECIPITATION                   107.4   110.6    16.4    48.5    33.4    33.2
                                 29.0    15.2    41.3    69.9   129.2    56.5

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    146.71  113.74  100.55   58.68   32.38   25.38
                                 29.30   46.42   70.18  110.13  131.77  158.52

ACTUAL EVAPOTRANSPIRATION        54.20   71.63   16.44   34.63   25.84   25.36
                                 29.28   26.21   27.93   53.94   81.93   81.88

LATERAL DRAINAGE COLLECTED       44.175  38.394   0.298  12.497   0.250   0.978
  FROM LAYER  3                   3.002   0.001   0.000  10.400   1.285  45.271

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


-------------------------------------------------------------------------------
                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
-------------------------------------------------------------------------------


AVERAGE DAILY HEAD ON            1.375   1.323   0.009   0.402   0.008   0.031
  TOP OF LAYER  4                0.093   0.000   0.000   0.324   0.041   1.409

STD. DEVIATION OF DAILY          1.849   1.503   0.018   0.563   0.015   0.072
  HEAD ON TOP OF LAYER  4        0.130   0.000   0.000   0.489   0.113   1.883

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                     MONTHLY TOTALS (MM) FOR YEAR 2012
-------------------------------------------------------------------------------

                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
                                ------- ------- ------- ------- ------- -------

PRECIPITATION                    15.5    46.0    35.3    35.5    77.8    79.7
                                 45.1    52.7    42.4    19.0    34.3    27.9

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    161.47  131.84  106.94   62.11   35.26   23.63
                                 29.67   43.94   65.42  107.77  135.29  156.31

ACTUAL EVAPOTRANSPIRATION        17.15   10.51   45.91   18.29   35.24   23.62
                                 29.65   43.47   39.97   34.36   17.94   35.39

LATERAL DRAINAGE COLLECTED        0.013   0.004  21.816   0.098  18.272  73.220
```

```
  FROM LAYER  3                  18.741  21.914   1.117   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.001
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


-------------------------------------------------------------------------------
                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
-------------------------------------------------------------------------------


AVERAGE DAILY HEAD ON            0.000   0.000   0.679   0.003   0.569   2.354
  TOP OF LAYER  4                0.583   0.682   0.036   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.001   0.001   0.828   0.015   0.857   1.496
  HEAD ON TOP OF LAYER  4        0.319   1.018   0.067   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 2013
-------------------------------------------------------------------------------

                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
                                ------- ------- ------- ------- ------- -------

PRECIPITATION                      5.1    53.3    26.8    10.6    30.4    74.0
                                 47.9    39.2    60.8    42.1    50.0    28.7

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    167.73  139.24  121.10   58.22   35.99   24.10
                                 29.91   42.83   67.61  105.84  124.13  149.32

ACTUAL EVAPOTRANSPIRATION        10.47   33.10   40.53   18.85    9.29   24.09
                                 29.77   38.86   43.77   52.97   42.00   39.56

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000  52.831
  FROM LAYER  3                  16.394  10.889   4.324   2.770   1.591   0.066

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


-------------------------------------------------------------------------------
                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
-------------------------------------------------------------------------------


AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   1.699
  TOP OF LAYER  4                0.510   0.339   0.139   0.086   0.051   0.002

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   1.066
  HEAD ON TOP OF LAYER  4        0.570   0.286   0.194   0.124   0.067   0.004

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                 FINAL WATER STORAGE AT END OF YEAR 2013
------------------------------------------------------------------------------

                 LAYER            (CM)           (VOL/VOL)
                 -----           ------          ---------
                   1              7.6922           0.3077

                   2             36.5000           0.0730

                   3              0.9600           0.0320

                   4              0.0000           0.0000

                   5             42.7000           0.4270

    TOTAL WATER IN LAYERS        87.852

    SNOW WATER                    0.000

    INTERCEPTION WATER            0.000

    TOTAL FINAL WATER            87.852
******************************************************************************


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              PEAK DAILY VALUES FOR YEARS 1964 THROUGH 2013
------------------------------------------------------------------------------

                                                (MM)        (CU. METERS)
                                             ----------     ------------
      PRECIPITATION                            98.50          985.000

      RUNOFF                                    0.000           0.0000

      DRAINAGE COLLECTED FROM LAYER  3          9.72987        97.29871

      PERCOLATION/LEAKAGE THROUGH LAYER  5      0.000073        0.00073

      AVERAGE HEAD ON TOP OF LAYER  4          93.861

      MAXIMUM HEAD ON TOP OF LAYER  4         128.349

      LOCATION OF MAXIMUM HEAD IN LAYER  3
            (DISTANCE FROM DRAIN)              15.8 METERS

      SNOW WATER                                0.00            0.0000

      MAXIMUM VEG. SOIL WATER (VOL/VOL)                 0.4410

      MINIMUM VEG. SOIL WATER (VOL/VOL)                 0.2650

       ***  Maximum heads are computed using McEnroe's equations.  ***

            Reference:  Maximum Saturated Depth over Landfill Liner
                        by Bruce M. McEnroe, University of Kansas
                        ASCE Journal of Environmental Engineering
                        Vol. 119, No. 2, March 1993, pp. 262-270.
```

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            AVERAGE MONTHLY VALUES (MM) FOR YEARS 1964 THROUGH 2013
--------------------------------------------------------------------------------

                         JAN/JUL  FEB/AUG  MAR/SEP  APR/OCT  MAY/NOV  JUN/DEC
                         -------  -------  -------  -------  -------  -------
  PRECIPITATION
  -------------
    TOTALS                36.56    39.32    32.49    41.30    40.44    36.58
                          37.19    44.00    46.05    52.72    51.13    45.10

    STD. DEVIATIONS       26.73    44.16    20.89    26.14    21.53    18.68
                          18.18    16.85    23.67    30.69    29.83    28.34

  RUNOFF
  ------
    TOTALS                0.000    0.000    0.000    0.000    0.000    0.000
                          0.000    0.000    0.000    0.000    0.000    0.000

    STD. DEVIATIONS       0.000    0.000    0.000    0.000    0.000    0.000
                          0.000    0.000    0.000    0.000    0.000    0.000

  POTENTIAL EVAPOTRANSPIRATION
  ----------------------------
    TOTALS              157.283  130.688  109.721   59.103   35.980   24.737
                         29.345   44.892   66.113  110.460  131.000  152.446

    STD. DEVIATIONS       8.631    7.768    5.460    3.974    1.662    0.795
                          1.014    2.422    4.434    6.061    7.114    9.530

  ACTUAL EVAPOTRANSPIRATION
  -------------------------
    TOTALS               32.300   27.977   25.661   24.945   26.960   22.442
                         27.717   37.780   41.145   46.733   42.987   40.592

    STD. DEVIATIONS      17.464   23.014   15.023   12.543    8.670    3.932
                          3.468    7.074   14.667   20.845   20.318   20.091

  LATERAL DRAINAGE COLLECTED FROM LAYER  3
  ----------------------------------------
    TOTALS                6.0491   8.7931   4.4823   7.1314  13.6467  12.2646
                         11.0203  10.0016   6.7842   7.7495   9.0579   8.6628

    STD. DEVIATIONS      11.2979  20.4174   7.3894  10.6980  21.5360  15.6874
                         11.8319  12.3137  10.0301  12.1013  13.8074  13.5059

  LATERAL DRAINAGE RECIRCULATED FROM LAYER  3 INTO L.  1
  ------------------------------------------------------
    TOTALS                0.0000   0.0000   0.0000   0.0000   0.0000   0.0000
                          0.0000   0.0000   0.0000   0.0000   0.0000   0.0000

    STD. DEVIATIONS       0.0000   0.0000   0.0000   0.0000   0.0000   0.0000
                          0.0000   0.0000   0.0000   0.0000   0.0000   0.0000

  PERCOLATION/LEAKAGE THROUGH LAYER  5
  ------------------------------------
    TOTALS                0.0001   0.0001   0.0000   0.0001   0.0001   0.0001
                          0.0001   0.0001   0.0001   0.0001   0.0001   0.0001

    STD. DEVIATIONS       0.0001   0.0002   0.0001   0.0001   0.0002   0.0001
                          0.0001   0.0001   0.0001   0.0001   0.0001   0.0001
```

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-------------------------------------------------------------------------------
                 AVERAGES OF MONTHLY AVERAGED DAILY HEADS (CM)
-------------------------------------------------------------------------------


  DAILY AVERAGE HEAD ON TOP OF LAYER  4
  -------------------------------------
    AVERAGES                 0.1882   0.3014   0.1395   0.2293   0.4247   0.3944
                             0.3429   0.3112   0.2182   0.2412   0.2913   0.2696

    STD. DEVIATIONS          0.3516   0.7013   0.2299   0.3440   0.6702   0.5044
                             0.3682   0.3832   0.3225   0.3766   0.4440   0.4203

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     AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1964 THROUGH 2013
-------------------------------------------------------------------------------

                                           MM               CU. METERS    PERCENT
                              --------------------      -----------   ---------
 PRECIPITATION                  502.88    ( 110.147)       5028.8     100.00

 RUNOFF                           0.000   (  0.0000)          0.00      0.000

 POTENTIAL EVAPOTRANSPIRATION 1051.770    ( 30.6287)      10517.70

 ACTUAL EVAPOTRANSPIRATION      397.238   ( 68.2807)       3972.38     78.992

 LATERAL DRAINAGE COLLECTED     105.64365 ( 50.66850)      1056.437   21.00755
   FROM LAYER  3

 DRAINAGE RECIRCULATED            0.00000 (  0.00000)         0.000    0.00000
   FROM LAYER  3 INTO L.  1

 PERCOLATION/LEAKAGE THROUGH      0.00095 (  0.00043)         0.010     0.00019
   LAYER  5

 AVERAGE HEAD ON TOP              2.793   (    1.334)
   OF LAYER  4

 CHANGE IN WATER STORAGE          0.002   (  0.5220)          0.02      0.000

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**                                                                          **
**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**                                                                          **
**              HELP Version 3.95 D          (10 August 2012)               **
**                                developed at                              **
**        Institute of Soil Science, University of Hamburg, Germany         **
**                                  based on                                **
**              US HELP MODEL VERSION 3.07  (1 NOVEMBER 1997)               **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
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******************************************************************************


 TIME:   7.13     DATE:   1.06.2015


 PRECIPITATION DATA FILE:      T:\2013\20131288 Werribee Landfill Assistance -
Wyndam Council\3_Development\4 Calculations\HELP\WerribeeVic.d4
 TEMPERATURE DATA FILE:        T:\2013\20131288 Werribee Landfill Assistance -
Wyndam Council\3_Development\4 Calculations\HELP\Werribee.d7
 SOLAR RADIATION DATA FILE:    T:\2013\20131288 Werribee Landfill Assistance -
Wyndam Council\3_Development\4 Calculations\HELP\Werribee.d13
 EVAPOTRANSPIRATION DATA F. 1: T:\2013\20131288 Werribee Landfill Assistance -
Wyndam Council\3_Development\4 Calculations\HELP\Werribee4A.d11
 SOIL AND DESIGN DATA FILE  1: T:\2013\20131288 Werribee Landfill Assistance -
Wyndam Council\3_Development\4 Calculations\HELP\4ACoverCCL.d10
 OUTPUT DATA FILE:             T:\2013\20131288 Werribee Landfill Assistance -
Wyndam Council\3_Development\4 Calculations\HELP\4A calibration.out
 MONTHLY OUTPUT DATA FILE:     T:\2013\20131288 Werribee Landfill Assistance -
Wyndam Council\3_Development\4 Calculations\HELP\4A calibration.MON

 COLUMNS OF MONTHLY OUTPUT DATA FILE:

      1    DATE OF ULTIMO (yyyymmdd)
      2    PRECIPITATION (MM)
      3    RUNOFF (MM)
      4    POTENTIAL EVAPOTRANSPIRATION (MM)
      5    ACTUAL EVAPOTRANSPIRATION (MM)
      6    HEAD  #1: AVERAGE HEAD ON TOP OF LAYER  4 (CM)
      7    DRAIN #1: LATERAL DRAINAGE FROM LAYER  3 (WITHOUT RECIRC.) (MM)
      8    RECIRC#1: LAT. DRAINAGE RECIRCULATED FROM LAYER  3 INTO L.  1 (MM)
      9    LEAK  #1: PERCOLATION/LEAKAGE THROUGH LAYER  5 (MM)


******************************************************************************

      TITLE:  Werribee Cell 4A

******************************************************************************


                             WEATHER DATA SOURCES
------------------------------------------------------------------------------



          NOTE:  PRECIPITATION DATA FOR     Werribee            Vic
                     WAS ENTERED FROM A TEXT FILE.
```

```
       NOTE:  TEMPERATURE DATA FOR       Werribee            Vic
                WAS ENTERED FROM A TEXT FILE.


       NOTE:  SOLAR RADIATION DATA FOR   Werribee            Vic
                WAS ENTERED FROM A TEXT FILE.


******************************************************************************

                              LAYER DATA   1
------------------------------------------------------------------------------

                            VALID FOR  50 YEARS


     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE
              COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.


                                 LAYER  1
                                 --------

                      TYPE 1 - VERTICAL PERCOLATION LAYER
                        MATERIAL TEXTURE NUMBER  24
          THICKNESS                   =     50.00   CM
          POROSITY                    =      0.3650 VOL/VOL
          FIELD CAPACITY              =      0.3050 VOL/VOL
          WILTING POINT               =      0.2020 VOL/VOL
          INITIAL SOIL WATER CONTENT  =      0.2877 VOL/VOL
          EFFECTIVE SAT. HYD. CONDUCT.=      0.2700E-05 CM/SEC


                                 LAYER  2
                                 --------

                      TYPE 1 - VERTICAL PERCOLATION LAYER
                        MATERIAL TEXTURE NUMBER  19
          THICKNESS                   =   2000.00   CM
          POROSITY                    =      0.1680 VOL/VOL
          FIELD CAPACITY              =      0.0730 VOL/VOL
          WILTING POINT               =      0.0190 VOL/VOL
          INITIAL SOIL WATER CONTENT  =      0.0730 VOL/VOL
          EFFECTIVE SAT. HYD. CONDUCT.=      0.1000E-02 CM/SEC


                                 LAYER  3
                                 --------

                       TYPE 2 - LATERAL DRAINAGE LAYER
                        MATERIAL TEXTURE NUMBER  21
          THICKNESS                   =     30.00   CM
          POROSITY                    =      0.3970 VOL/VOL
          FIELD CAPACITY              =      0.0320 VOL/VOL
          WILTING POINT               =      0.0130 VOL/VOL
          INITIAL SOIL WATER CONTENT  =      0.0329 VOL/VOL
          EFFECTIVE SAT. HYD. CONDUCT.=      0.3000     CM/SEC
          SLOPE                       =      1.00   PERCENT
          DRAINAGE LENGTH             =     50.0    METERS
```

```
                                   LAYER  4
                                   --------

                       TYPE 4 - FLEXIBLE MEMBRANE LINER
                         MATERIAL TEXTURE NUMBER  35
           THICKNESS                   =      0.15   CM
           EFFECTIVE SAT. HYD. CONDUCT.=      0.2000E-12 CM/SEC
           FML PINHOLE DENSITY         =      2.00   HOLES/HECTARE
           FML INSTALLATION DEFECTS    =      2.00   HOLES/HECTARE
           FML PLACEMENT QUALITY       =  3 - GOOD


                                   LAYER  5
                                   --------

                         TYPE 3 - BARRIER SOIL LINER
                         MATERIAL TEXTURE NUMBER  16
           THICKNESS                   =    100.00   CM
           POROSITY                    =      0.4270 VOL/VOL
           FIELD CAPACITY              =      0.4180 VOL/VOL
           WILTING POINT               =      0.3670 VOL/VOL
           INITIAL SOIL WATER CONTENT  =      0.4270 VOL/VOL
           EFFECTIVE SAT. HYD. CONDUCT.=      0.1000E-06 CM/SEC


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                 GENERAL DESIGN AND EVAPORATIVE ZONE DATA   1
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                             VALID FOR  50 YEARS


         NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
                  SOIL DATA BASE USING SOIL TEXTURE #15 WITH BARE
                  GROUND CONDITIONS, A SURFACE SLOPE OF  3.% AND
                  A SLOPE LENGTH OF  100. METERS.

        SCS RUNOFF CURVE NUMBER              =     96.60
        FRACTION OF AREA ALLOWING RUNOFF     =      0.0    PERCENT
        AREA PROJECTED ON HORIZONTAL PLANE   =      1.0000 HECTARES
        EVAPORATIVE ZONE DEPTH               =     50.0    CM
        INITIAL WATER IN EVAPORATIVE ZONE    =     14.383  CM
        UPPER LIMIT OF EVAPORATIVE STORAGE   =     18.250  CM
        FIELD CAPACITY OF EVAPORATIVE ZONE   =     15.250  CM
        LOWER LIMIT OF EVAPORATIVE STORAGE   =     10.100  CM
        SOIL EVAPORATION ZONE DEPTH          =     50.0    CM
        INITIAL SNOW WATER                   =      0.000  CM
        INITIAL INTERCEPTION WATER           =      0.000  CM
        INITIAL WATER IN LAYER MATERIALS     =    204.071  CM
        TOTAL INITIAL WATER                  =    204.071  CM
        TOTAL SUBSURFACE INFLOW              =      0.00   MM/YR


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                        EVAPOTRANSPIRATION DATA   1
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                            VALID FOR  50 YEARS


         NOTE:  EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
                  Werribee            Vic
             STATION LATITUDE                        = -37.90 DEGREES
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             MAXIMUM LEAF AREA INDEX                =   0.00
             START OF GROWING SEASON (JULIAN DATE)  =      0
             END OF GROWING SEASON (JULIAN DATE)    =    367
             EVAPORATIVE ZONE DEPTH                 =  50.0  CM
             AVERAGE ANNUAL WIND SPEED              =   8.00 KPH
             AVERAGE 1ST QUARTER RELATIVE HUMIDITY  =  68.0  %
             AVERAGE 2ND QUARTER RELATIVE HUMIDITY  =  80.0  %
             AVERAGE 3RD QUARTER RELATIVE HUMIDITY  =  79.0  %
             AVERAGE 4TH QUARTER RELATIVE HUMIDITY  =  66.0  %

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                     MONTHLY TOTALS (MM) FOR YEAR 1964
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                     1.5    84.2    30.9    89.5    43.2    18.4
                                 65.5    37.0    66.7    94.4    54.2    67.5

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    159.10  114.02  108.72   51.24   36.16   25.34
                                 28.74   42.65   67.20  101.45  124.03  130.88

ACTUAL EVAPOTRANSPIRATION        15.36   70.60   34.95   36.63   28.04   24.13
                                 28.48   38.14   52.73   78.98   49.83   72.69

LATERAL DRAINAGE COLLECTED        0.280   0.000   0.000  12.143  21.740  15.176
  FROM LAYER  3                  21.881  13.101   0.140  27.528   6.095   4.371

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.009   0.000   0.000   0.390   0.677   0.488
  TOP OF LAYER  4                0.681   0.408   0.005   0.857   0.196   0.136

STD. DEVIATION OF DAILY          0.017   0.000   0.000   0.703   0.617   0.274
  HEAD ON TOP OF LAYER  4        0.781   0.366   0.008   0.769   0.186   0.112

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                     MONTHLY TOTALS (MM) FOR YEAR 1965
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                   9.8     0.9     2.4    77.6    48.3    28.1
                               66.3    63.0    21.9    12.1    58.8    55.1

RUNOFF                          0.00    0.00    0.00    0.00    0.00    0.00
                                0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION  154.80  129.97  112.16   54.91   35.19   24.46
                               27.35   44.45   67.41  114.24  121.51  158.59

ACTUAL EVAPOTRANSPIRATION      18.38    6.89    5.91   26.59   35.18   24.45
                               27.34   42.60   24.64    9.01   65.05   55.62

LATERAL DRAINAGE COLLECTED      0.280   0.000   0.000   0.000  20.829   9.155
  FROM LAYER  3                13.914  54.888   6.346   0.004   0.000   0.000

LATERAL DRAINAGE RECIRCULATED   0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1      0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH     0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                      0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON          0.009   0.000   0.000   0.000   0.648   0.294
  TOP OF LAYER  4              0.433   1.708   0.204   0.000   0.000   0.000

STD. DEVIATION OF DAILY        0.017   0.000   0.000   0.000   0.325   0.126
  HEAD ON TOP OF LAYER  4      0.364   0.509   0.225   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1966
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                              JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                  28.3    56.0    66.7    50.2    27.0    18.3
                               38.5    62.9    80.5    71.0    25.4    73.8

RUNOFF                          0.00    0.00    0.00    0.00    0.00    0.00
                                0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION  156.51  122.81  110.77   60.17   34.74   23.14
                               28.22   42.96   65.88   99.67  133.02  143.54

ACTUAL EVAPOTRANSPIRATION      36.65   51.64   47.07   21.82   33.78   19.02
                               24.98   40.43   55.55   59.80   51.43   67.06

LATERAL DRAINAGE COLLECTED      0.000   0.000   0.000   5.289  21.146   1.929
  FROM LAYER  3                 0.065  20.060  21.481  12.010   2.278   0.028

LATERAL DRAINAGE RECIRCULATED   0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1      0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH     0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                      0.000   0.000   0.000   0.000   0.000   0.000
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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON               0.000    0.000    0.000    0.170    0.658    0.062
  TOP OF LAYER  4                   0.002    0.624    0.691    0.374    0.073    0.001

STD. DEVIATION OF DAILY             0.000    0.000    0.000    0.126    0.287    0.091
  HEAD ON TOP OF LAYER  4           0.009    0.611    0.364    0.334    0.063    0.002

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                     MONTHLY TOTALS (MM) FOR YEAR 1967
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                                  JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                       23.5      3.2     11.4      9.1     34.4     27.5
                                    20.9     55.4     44.5     14.2      3.7     19.6

RUNOFF                               0.00     0.00     0.00     0.00     0.00     0.00
                                     0.00     0.00     0.00     0.00     0.00     0.00

POTENTIAL EVAPOTRANSPIRATION       148.49   136.33   110.38    59.96    37.61    24.36
                                    28.67    42.99    66.45   116.91   135.47   148.78

ACTUAL EVAPOTRANSPIRATION           41.22     9.43     6.93     8.20    14.46    24.19
                                    23.45    41.23    47.96    25.80     8.86    10.77

LATERAL DRAINAGE COLLECTED           0.000    0.000    0.000    0.000    0.000    0.000
  FROM LAYER  3                      2.057    0.008    3.522    5.052    0.013    0.000

LATERAL DRAINAGE RECIRCULATED        0.000    0.000    0.000    0.000    0.000    0.000
  FROM LAYER  3 INTO L.  1           0.000    0.000    0.000    0.000    0.000    0.000

PERCOLATION/LEAKAGE THROUGH          0.000    0.000    0.000    0.000    0.000    0.000
  LAYER  5                           0.000    0.000    0.000    0.000    0.000    0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON               0.000    0.000    0.000    0.000    0.000    0.000
  TOP OF LAYER  4                   0.064    0.000    0.113    0.157    0.000    0.000

STD. DEVIATION OF DAILY             0.000    0.000    0.000    0.000    0.000    0.000
  HEAD ON TOP OF LAYER  4           0.075    0.000    0.102    0.130    0.001    0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1968
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    55.0     6.3    15.0    97.4    59.8    38.9
                                 30.2    36.4     8.0    31.3    38.5    53.3

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    173.73  147.06  109.51   58.77   32.30   23.72
                                 28.31   45.39   64.89  104.66  123.46  151.02

ACTUAL EVAPOTRANSPIRATION        41.72    7.66   19.77   23.96   32.30   23.71
                                 28.29   42.29   18.17   31.85   52.51   55.34

LATERAL DRAINAGE COLLECTED        0.000   1.069   0.261   0.000  48.405  44.054
  FROM LAYER  3                  12.737   6.180   0.017   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.036   0.008   0.000   1.506   1.417
  TOP OF LAYER  4                0.396   0.192   0.001   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.054   0.016   0.000   1.025   0.961
  HEAD ON TOP OF LAYER  4        0.183   0.143   0.001   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1969
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                     8.0    92.7    17.8    21.5    71.5     4.1
                                 47.5    41.1    40.3    21.2    40.6    31.4

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    166.21  117.29  106.90   59.19   34.24   23.99
                                 29.75   43.32   57.29  105.86  124.29  143.31

ACTUAL EVAPOTRANSPIRATION        10.30   67.68   21.08   27.83   24.51   20.03
                                 27.41   34.54   52.30   21.37   53.48   34.37

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000  17.629
  FROM LAYER  3                   1.757   5.420   5.305   1.644   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
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  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.567
  TOP OF LAYER  4                0.055   0.169   0.171   0.051   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.315
  HEAD ON TOP OF LAYER  4        0.083   0.076   0.141   0.081   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1970
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    86.1     5.5    79.6    62.5    52.8    33.7
                                 21.3    59.3    42.4    24.1    89.6    86.2

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    143.79  133.03  106.05   60.18   34.09   24.56
                                 28.92   43.27   58.03  103.53  130.84  154.83

ACTUAL EVAPOTRANSPIRATION        71.26   10.20   47.00   36.12   34.08   23.59
                                 25.52   40.95   55.58   30.70   73.39   68.72

LATERAL DRAINAGE COLLECTED        0.322   2.381   0.005  11.469  42.839   8.359
  FROM LAYER  3                   6.269   2.834   6.725   0.055   2.470   8.233

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.010   0.082   0.000   0.369   1.333   0.269
  TOP OF LAYER  4                0.195   0.088   0.216   0.002   0.079   0.256

STD. DEVIATION OF DAILY          0.032   0.089   0.000   0.193   0.686   0.173
  HEAD ON TOP OF LAYER  4        0.084   0.104   0.135   0.003   0.169   0.180

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                     MONTHLY TOTALS (MM) FOR YEAR 1971
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                                  JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                       54.2    85.7    26.3    38.7    43.7    46.8
                                    25.6    23.7    30.0    57.4    94.0    64.8

RUNOFF                               0.00    0.00    0.00    0.00    0.00    0.00
                                     0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION       156.91  132.92  116.74   64.60   34.25   24.30
                                    27.45   42.78   60.60  102.81  116.83  153.39

ACTUAL EVAPOTRANSPIRATION           51.27   97.29   31.81   29.75   32.13   24.29
                                    23.72   27.14   41.83   50.25   80.40   55.31

LATERAL DRAINAGE COLLECTED           5.445   8.627   2.950   0.001   0.000   2.251
  FROM LAYER  3                     15.876   1.123   0.059   0.000  13.491   6.401

LATERAL DRAINAGE RECIRCULATED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1           0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH          0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                           0.000   0.000   0.000   0.000   0.000   0.000

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                    MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON               0.169   0.297   0.092   0.000   0.000   0.072
  TOP OF LAYER  4                   0.494   0.035   0.002   0.000   0.434   0.199

STD. DEVIATION OF DAILY             0.090   0.188   0.131   0.000   0.000   0.112
  HEAD ON TOP OF LAYER  4           0.218   0.036   0.004   0.000   0.533   0.199

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                    MONTHLY TOTALS (MM) FOR YEAR 1972
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                                  JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
                                  ------- ------- ------- ------- ------- -------

PRECIPITATION                       28.8   126.9    30.1    36.9    27.2    11.2
                                    18.2    30.6    10.9    37.4    35.7     1.4

RUNOFF                               0.00    0.00    0.00    0.00    0.00    0.00
                                     0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION       141.33  136.36  111.43   58.42   37.78   24.15
                                    29.46   45.56   73.73  114.14  131.08  168.41

ACTUAL EVAPOTRANSPIRATION           35.95   75.23   44.15   22.57   28.63   14.78
                                    21.48   27.07   21.18   52.01   40.42    9.59

LATERAL DRAINAGE COLLECTED           1.426   7.291  35.613   0.835   0.000   0.753
  FROM LAYER  3                      0.007   0.000   0.000   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1           0.000   0.000   0.000   0.000   0.000   0.000
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PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.044   0.243   1.108   0.027   0.000   0.024
  TOP OF LAYER  4                0.000   0.000   0.000   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.048   0.390   0.757   0.050   0.000   0.034
  HEAD ON TOP OF LAYER  4        0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1973
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    51.7   232.1    47.6    17.8    41.4    59.2
                                 33.0    46.6    33.7    79.0    50.6    50.9

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    156.83  130.35   99.32   61.07   35.40   24.02
                                 29.06   42.28   68.69  108.47  127.72  160.33

ACTUAL EVAPOTRANSPIRATION        28.18  125.95   75.21   33.03   34.17   23.94
                                 29.04   39.13   47.96   74.78   53.57   69.30

LATERAL DRAINAGE COLLECTED        0.000   2.678  44.291   0.962   0.000  17.300
  FROM LAYER  3                  16.763   9.074   1.465   0.018   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.092   1.378   0.031   0.000   0.556
  TOP OF LAYER  4                0.522   0.282   0.047   0.001   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.278   0.812   0.056   0.000   0.803
  HEAD ON TOP OF LAYER  4        0.347   0.165   0.049   0.001   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1974
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    61.8    19.0    48.8    93.1    88.7    14.6
                                 68.5    70.7    40.5    56.1    39.6    27.8

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    174.98  128.58  115.63   48.83   37.08   25.10
                                 29.43   42.38   61.18  100.94  124.93  152.34

ACTUAL EVAPOTRANSPIRATION        50.17   31.44   35.62   48.71   37.08   25.09
                                 29.42   39.58   45.41   66.33   44.78   36.47

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000  29.701  42.311
  FROM LAYER  3                  25.007  14.287  20.007   4.256   0.029   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.924   1.361
  TOP OF LAYER  4                0.778   0.445   0.643   0.132   0.001   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.660   0.921
  HEAD ON TOP OF LAYER  4        0.569   0.135   0.246   0.098   0.002   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1975
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    23.2     8.8    36.8    16.3    36.1    31.3
                                 32.1    79.5    85.5   146.0    46.7    41.2

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    154.08  133.56  106.17   54.52   35.64   24.38
                                 32.26   40.78   66.27  100.11  133.38  158.82

ACTUAL EVAPOTRANSPIRATION        34.55    8.38   31.06   21.95   21.85   21.29
                                 29.10   40.77   63.06   99.19   69.73   28.40

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   0.000  10.730  29.610  26.261  21.072   0.426
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LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.000   0.334   0.952   0.817   0.678   0.013

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.000   0.619   0.309   0.479   0.465   0.025

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                     MONTHLY TOTALS (MM) FOR YEAR 1976
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                     6.2    13.4    36.1     6.3    15.9    30.2
                                 11.9    56.3    97.5    82.4    47.9    39.4

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    160.78  144.60  114.40   58.65   34.72   24.42
                                 29.20   44.29   63.41  104.50  127.37  159.83

ACTUAL EVAPOTRANSPIRATION        23.17   23.87   41.55    8.20    8.64   23.00
                                 22.51   39.06   54.55   80.43   47.25   58.36

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   0.000   0.000   0.000  32.811   8.014   0.009

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.000   0.000   0.000   1.021   0.258   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.000   0.000   0.000   0.542   0.242   0.001

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                     MONTHLY TOTALS (MM) FOR YEAR 1977
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                     45.1     9.8    12.7    72.8    42.6    75.2
                                  32.9    17.6    67.1    22.3    41.4    14.7

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    159.28  128.02  109.37   52.36   35.49   24.09
                                 28.49   48.02   63.35  115.67  130.03  149.75

ACTUAL EVAPOTRANSPIRATION        49.99   13.19    9.59   36.76   30.81   24.08
                                 28.48   30.14   44.33   24.88   36.11   34.91

LATERAL DRAINAGE COLLECTED       0.000   0.000   0.000   0.022   7.556  23.741
  FROM LAYER  3                 33.340   4.081  16.713   5.722   0.003   0.000

LATERAL DRAINAGE RECIRCULATED    0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1       0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH      0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                       0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.001   0.235   0.763
  TOP OF LAYER  4                1.037   0.127   0.537   0.178   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.004   0.161   0.641
  HEAD ON TOP OF LAYER  4        0.682   0.077   0.553   0.196   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1978
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                     45.5    18.2    41.4    53.8    53.7    32.0
                                  64.5    85.9    43.7    50.1   103.8    76.3

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    144.36  123.88   96.86   57.42   37.70   24.35
                                 29.38   41.74   63.13  107.91  123.38  140.71

ACTUAL EVAPOTRANSPIRATION        22.73   50.03   33.47   47.54   29.50   24.29
                                 29.37   40.68   40.52   32.25   97.80   88.93

LATERAL DRAINAGE COLLECTED       0.000   0.000   0.000   0.000   0.000  10.012
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  FROM LAYER  3                 23.106  41.117  19.359   4.955   7.820   9.127

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON           0.000   0.000   0.000   0.000   0.000   0.322
  TOP OF LAYER  4               0.719   1.279   0.623   0.154   0.251   0.284

STD. DEVIATION OF DAILY         0.000   0.000   0.000   0.000   0.000   0.179
  HEAD ON TOP OF LAYER  4       0.364   0.762   0.558   0.120   0.154   0.211

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                     MONTHLY TOTALS (MM) FOR YEAR 1979
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                               JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                   44.6    51.2    28.1    24.4    63.6    17.8
                                 9.1    58.2    81.4    61.0    31.4    14.3

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION   169.44  127.01  111.91   54.28   34.15   25.41
                                29.49   42.22   61.68  108.11  124.44  154.16

ACTUAL EVAPOTRANSPIRATION       58.67   26.10   58.77   24.11   31.32   24.52
                                10.96   37.00   51.19   87.98   44.53   10.20

LATERAL DRAINAGE COLLECTED        0.019   0.000   0.000   0.000   0.000   0.062
  FROM LAYER  3                   2.595   0.003  11.319  15.774   0.455   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON           0.001   0.000   0.000   0.000   0.000   0.002
  TOP OF LAYER  4               0.081   0.000   0.364   0.491   0.015   0.000

STD. DEVIATION OF DAILY         0.001   0.000   0.000   0.000   0.000   0.004
  HEAD ON TOP OF LAYER  4       0.083   0.000   0.190   0.280   0.027   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1980
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    35.9    21.9     8.3    56.2    36.0    41.4
                                 24.1    31.7    20.9    92.5    31.8    41.4

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    149.12  131.82  108.27   61.59   38.75   24.16
                                 30.01   49.33   73.75  115.02  134.30  166.73

ACTUAL EVAPOTRANSPIRATION        42.14   35.24    9.97   14.56   38.74   23.87
                                 25.25   36.05   26.51   81.91   39.91   45.64

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.986
  FROM LAYER  3                  15.679   3.261   0.001   0.201   1.940   0.001

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.032
  TOP OF LAYER  4                0.488   0.101   0.000   0.006   0.062   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.063
  HEAD ON TOP OF LAYER  4        0.142   0.130   0.000   0.018   0.076   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1981
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    47.0    28.5    34.6    11.9    59.1    48.0
                                 61.5    51.9    20.0    64.9    50.8    16.2

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    167.32  132.15  104.80   64.14   36.32   25.14
                                 30.59   45.15   70.58  115.88  132.37  155.98

ACTUAL EVAPOTRANSPIRATION        36.07   47.58   18.45   25.42   26.31   25.14
                                 30.58   37.65   33.81   61.92   68.49   29.98
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LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000  11.117
  FROM LAYER  3                  29.829  22.526   5.033   0.979   0.665   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.357
  TOP OF LAYER  4                0.928   0.701   0.162   0.030   0.021   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.325
  HEAD ON TOP OF LAYER  4        0.369   0.263   0.107   0.046   0.040   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1982
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                                 JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
                                 ------- ------- ------- ------- ------- -------

PRECIPITATION                    31.4     5.7    34.4    31.6    36.9    31.4
                                 11.5    15.5    35.8    40.0     5.9    57.3

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    165.73  136.77  113.49   63.25   36.24   24.16
                                 28.36   50.75   67.10  114.43  148.76  155.70

ACTUAL EVAPOTRANSPIRATION        31.25   10.82   35.93   16.95   20.56   23.27
                                 17.58   25.23   26.02   61.03   11.00   58.53

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   0.000   0.000   0.000   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
-------------------------------------------------------------------------------


AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.000   0.000   0.000   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.000   0.000   0.000   0.000   0.000   0.000
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                     MONTHLY TOTALS (MM) FOR YEAR 1983
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    20.9     4.6    41.4    47.0    67.7    29.4
                                 50.4    45.4    72.2    99.2    67.6    13.1

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    157.80  142.30  104.99   55.34   35.73   23.90
                                 28.33   45.98   63.72  105.92  121.59  152.89

ACTUAL EVAPOTRANSPIRATION        18.84    5.78   28.97   38.22   35.43   23.89
                                 28.32   44.06   54.69   66.79   54.85   38.73

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.119   9.908
  FROM LAYER  3                  21.807   8.672  21.213  17.753  16.015   0.975

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.004   0.319
  TOP OF LAYER  4                0.679   0.270   0.682   0.552   0.515   0.030

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.017   0.121
  HEAD ON TOP OF LAYER  4        0.386   0.098   0.699   0.600   0.516   0.045

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                     MONTHLY TOTALS (MM) FOR YEAR 1984
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    43.3    12.3    53.7    47.1    12.7    13.2
                                 33.4    62.8    77.0    38.1    37.5    30.8

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    149.37  135.25  104.08   58.26   37.78   25.65
                                 28.39   45.86   59.47  118.49  135.20  155.03
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ACTUAL EVAPOTRANSPIRATION        48.95   16.57   26.67   39.39   18.92    8.68
                                 28.37   44.05   48.48   57.68   38.19   40.45

LATERAL DRAINAGE COLLECTED        0.128   0.000   0.000   0.000   9.499   0.111
  FROM LAYER  3                   0.561  11.180  12.042  21.792   0.423   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.004   0.000   0.000   0.000   0.296   0.004
  TOP OF LAYER  4                0.017   0.348   0.387   0.678   0.014   0.000

STD. DEVIATION OF DAILY          0.008   0.000   0.000   0.000   0.173   0.007
  HEAD ON TOP OF LAYER  4        0.063   0.205   0.250   0.449   0.025   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1985
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                     9.2     4.6    55.8    38.1    35.4    37.3
                                 34.1    61.4    25.8    59.8    60.1   117.7

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    153.27  124.85  110.96   65.20   38.09   24.18
                                 29.26   42.82   64.19  112.97  126.71  141.53

ACTUAL EVAPOTRANSPIRATION        12.63    6.05   44.53   41.59   22.06   24.17
                                 27.11   42.80   28.99   52.64   61.26   90.41

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   3.870  20.252   7.559   0.046   8.662  17.852

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.120   0.630   0.243   0.001   0.279   0.556

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
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  HEAD ON TOP OF LAYER  4        0.091   0.478   0.188   0.003   0.131   0.568

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                     MONTHLY TOTALS (MM) FOR YEAR 1986
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    18.2    13.8    12.3    47.0    76.0    20.0
                                 69.0    45.9    38.0    75.7    23.8    47.1

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    152.41  128.89  116.54   57.76   36.01   23.89
                                 28.17   45.60   62.48  103.76  132.65  141.28

ACTUAL EVAPOTRANSPIRATION        27.64   24.87   12.25   26.57   36.00   21.36
                                 28.16   35.88   42.54   72.27   42.28   58.23

LATERAL DRAINAGE COLLECTED        5.923   0.003   0.000   0.000  14.943  20.703
  FROM LAYER  3                  16.409  22.340   6.881   4.983   3.406   0.035

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.184   0.000   0.000   0.000   0.465   0.666
  TOP OF LAYER  4                0.511   0.695   0.221   0.155   0.110   0.001

STD. DEVIATION OF DAILY          0.197   0.000   0.000   0.000   0.756   0.504
  HEAD ON TOP OF LAYER  4        0.441   0.435   0.115   0.146   0.105   0.002

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                     MONTHLY TOTALS (MM) FOR YEAR 1987
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                   104.2    43.9    28.2    22.9    99.9    38.7
                                 63.0    35.1    32.1    29.5    51.5   106.8

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    150.59  130.45   99.94   61.36   36.19   25.15
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                                 29.12   44.41   71.39  112.86  133.32  148.07

ACTUAL EVAPOTRANSPIRATION        81.52   36.60   37.85   10.01   36.08   24.94
                                 28.22   43.70   28.61   56.60   60.73   84.39

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000  18.914  37.815
  FROM LAYER  3                  16.122  28.605   4.801   0.004   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.589   1.216
  TOP OF LAYER  4                0.502   0.890   0.154   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.864   0.872
  HEAD ON TOP OF LAYER  4        0.261   0.676   0.143   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1988
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    65.0     7.3    23.7    11.4    58.9    44.0
                                 30.3    46.9    37.4    18.4    94.9    93.5

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    159.80  132.23  114.03   62.72   36.93   25.57
                                 30.35   47.43   68.54  116.06  128.50  146.28

ACTUAL EVAPOTRANSPIRATION        74.35   15.66   13.04   28.08   30.88   25.56
                                 30.24   44.59   43.85   31.51   56.74  106.89

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.539
  FROM LAYER  3                   9.827   0.035   1.408   0.006   0.000   3.435

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.017
  TOP OF LAYER  4                0.306   0.001   0.045   0.000   0.000   0.107
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STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.064
  HEAD ON TOP OF LAYER  4        0.191   0.002   0.056   0.000   0.000   0.183

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                     MONTHLY TOTALS (MM) FOR YEAR 1989
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    45.5    12.3    79.5    52.8    45.7    64.1
                                 37.2    58.6    40.5    64.9    40.0    25.1

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    154.96  132.43  107.96   58.67   36.86   23.70
                                 28.67   42.13   70.59  110.47  131.76  158.75

ACTUAL EVAPOTRANSPIRATION        54.72   12.96   61.96   47.17   36.82   23.69
                                 28.65   40.72   50.44   60.37   47.01   56.84

LATERAL DRAINAGE COLLECTED        5.269   0.649   0.348   6.269   1.897  31.583
  FROM LAYER  3                  22.424   5.967  12.775   0.311   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.164   0.022   0.011   0.202   0.059   1.016
  TOP OF LAYER  4                0.698   0.186   0.411   0.010   0.000   0.000

STD. DEVIATION OF DAILY          0.140   0.040   0.025   0.157   0.064   0.778
  HEAD ON TOP OF LAYER  4        0.151   0.117   0.173   0.018   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1990
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                     3.3    78.6    23.5    58.7     8.3    38.6
                                 56.2    31.0    33.2    68.4    27.6    43.2

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00
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POTENTIAL EVAPOTRANSPIRATION    156.99  119.45  115.26   58.28   37.07   25.26
                                 30.60   44.49   68.54  109.86  141.55  154.57

ACTUAL EVAPOTRANSPIRATION         9.78   64.89   16.08   37.49   22.20   18.65
                                 30.58   31.72   42.27   76.57   36.45   50.55

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                  13.589  12.439   0.032   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.423   0.387   0.001   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.543   0.326   0.002   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1991
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    55.7     1.6    11.5    24.9    16.7   100.7
                                 40.1    32.4    60.4    16.9    22.7    96.8

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    153.51  133.82  111.85   57.28   35.01   26.36
                                 29.26   44.29   62.55  116.26  130.43  137.73

ACTUAL EVAPOTRANSPIRATION        65.91    7.19    3.64   10.29   22.24   25.92
                                 29.24   40.54   53.66   25.08   31.72   62.42

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000  13.143
  FROM LAYER  3                  30.564   5.476   0.007   3.637   0.028   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.423
  TOP OF LAYER  4                0.951   0.170   0.000   0.113   0.001   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.741
  HEAD ON TOP OF LAYER  4        0.555   0.170   0.000   0.083   0.002   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1992
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    21.0    13.4    34.4    60.2    55.1    31.7
                                 19.0    54.1    96.8    95.1   101.1    77.7

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    138.42  123.04  106.82   57.81   35.00   24.43
                                 30.35   42.36   56.16  104.68  122.05  134.30

ACTUAL EVAPOTRANSPIRATION        42.41    8.14   47.33   37.79   34.98   24.42
                                 27.84   32.97   56.15   85.93   90.37   84.97

LATERAL DRAINAGE COLLECTED        3.384   0.283   0.000   0.000  17.791  10.378
  FROM LAYER  3                   4.246   0.044  21.853  33.328   8.314   3.381

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.105   0.009   0.000   0.000   0.554   0.334
  TOP OF LAYER  4                0.132   0.001   0.703   1.037   0.267   0.105

STD. DEVIATION OF DAILY          0.085   0.017   0.000   0.000   0.711   0.238
  HEAD ON TOP OF LAYER  4        0.075   0.003   0.427   0.492   0.265   0.105

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                     MONTHLY TOTALS (MM) FOR YEAR 1993
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                   105.3    30.3    23.1    11.3    17.0    37.3
                                 38.5    37.2    97.6    59.5    48.4    88.9
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RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    155.57  128.60  100.69   66.79   36.42   24.48
                                 30.30   47.44   65.81  109.32  127.12  143.07

ACTUAL EVAPOTRANSPIRATION        90.71   48.13   26.70   14.23   14.64   24.47
                                 26.03   31.22   59.78   75.56   47.62   68.49

LATERAL DRAINAGE COLLECTED        2.589   0.830   0.089   0.000   0.000   0.280
  FROM LAYER  3                  16.040   5.184  21.742  11.293   0.009   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.081   0.029   0.003   0.000   0.000   0.009
  TOP OF LAYER  4                0.499   0.161   0.699   0.351   0.000   0.000

STD. DEVIATION OF DAILY          0.082   0.041   0.005   0.000   0.000   0.028
  HEAD ON TOP OF LAYER  4        0.283   0.170   0.709   0.365   0.001   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1994
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    16.0   100.3    20.3    28.7    16.8    24.9
                                 12.3    21.3    39.9    34.6    33.2    17.6

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    150.99  117.32  104.49   58.96   35.85   25.23
                                 30.79   45.23   61.23  113.07  121.37  168.40

ACTUAL EVAPOTRANSPIRATION        29.96   82.95   49.26   29.44   11.24   21.81
                                 24.72   29.47   29.28   42.94   32.06   28.12

LATERAL DRAINAGE COLLECTED        0.000   0.207   4.867   0.003   0.000   0.000
  FROM LAYER  3                   0.000   0.000   0.000   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.007   0.151   0.000   0.000   0.000
  TOP OF LAYER  4                0.000   0.000   0.000   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.029   0.148   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1995
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                     74.8    11.8    61.5    68.9    62.2    59.8
                                  48.7    40.7    31.3    99.0    76.1    27.4

RUNOFF                             0.00    0.00    0.00    0.00    0.00    0.00
                                   0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    150.94  130.67  109.45   51.61   34.93   24.49
                                 27.93   49.17   63.03  102.75  124.32  134.01

ACTUAL EVAPOTRANSPIRATION        52.26   22.97   45.50   51.44   33.53   24.48
                                 27.92   31.82   36.98   61.34   84.77   35.52

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.014  25.576  23.652
  FROM LAYER  3                  23.364  26.971   2.900   0.104  27.560   2.817

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.796   0.761
  TOP OF LAYER  4                0.727   0.839   0.093   0.003   0.886   0.088

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.002   0.624   0.568
  HEAD ON TOP OF LAYER  4        0.307   0.388   0.125   0.016   0.285   0.134

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                     MONTHLY TOTALS (MM) FOR YEAR 1996
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                     46.3    60.9    49.1    57.7    21.0    46.2
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                                 69.5    47.6    71.5    36.3    20.1    17.1

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    152.34  123.53  107.03   54.03   34.33   25.05
                                 28.22   44.39   66.61  114.74  133.26  147.78

ACTUAL EVAPOTRANSPIRATION        46.21   37.82   59.09   52.91   27.77   15.93
                                 28.21   44.37   64.53   46.75   16.82   31.12

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.107   0.000
  FROM LAYER  3                  31.299  22.690   6.126   7.940   0.544   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.003   0.000
  TOP OF LAYER  4                0.974   0.706   0.197   0.247   0.017   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.006   0.000
  HEAD ON TOP OF LAYER  4        0.379   0.313   0.071   0.102   0.033   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1997
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    37.1     2.6    16.3     8.4    52.3    22.3
                                 13.8    27.6    67.3    40.9    64.7     2.7

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    169.48  136.27  106.87   59.68   33.79   25.53
                                 29.04   44.24   68.50  112.62  139.97  156.96

ACTUAL EVAPOTRANSPIRATION        46.68   14.46    8.44    5.74   28.67   25.51
                                 20.25   25.81   48.67   15.33   74.04   10.69

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   0.000   0.000   3.061   5.260  13.829   6.334

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON             0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                 0.000   0.000   0.098   0.164   0.445   0.197

STD. DEVIATION OF DAILY           0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4         0.000   0.000   0.136   0.149   0.517   0.200

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                     MONTHLY TOTALS (MM) FOR YEAR 1998
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
                                ------- ------- ------- ------- ------- -------

PRECIPITATION                     39.8    47.9     7.5    45.4    28.0    51.7
                                  39.0    22.8    24.5    53.4    62.6    54.6

RUNOFF                             0.00    0.00    0.00    0.00    0.00    0.00
                                   0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    159.44  133.21  110.73   55.25   35.34   25.08
                                 27.97   46.66   69.64  109.33  131.33  153.56

ACTUAL EVAPOTRANSPIRATION        46.12   66.53   12.42   29.23   24.25   23.33
                                 26.93   34.13   27.23   49.87   55.79   67.39

LATERAL DRAINAGE COLLECTED         0.004   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                    5.266   4.894   2.348   0.002   0.000   1.373

LATERAL DRAINAGE RECIRCULATED      0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1         0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH        0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                         0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON             0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                 0.164   0.152   0.076   0.000   0.000   0.043

STD. DEVIATION OF DAILY           0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4         0.214   0.131   0.079   0.000   0.000   0.056

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                     MONTHLY TOTALS (MM) FOR YEAR 1999
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    63.1    49.1    58.3    11.7    41.7    27.1
                                 14.8    55.4    23.1    44.6    26.6    70.1

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    155.35  130.54  108.09   58.62   38.30   25.56
                                 30.72   46.15   70.77  115.53  136.83  147.38

ACTUAL EVAPOTRANSPIRATION        60.85   64.81   57.85   13.35   18.63   24.70
                                 23.90   33.10   29.51   59.87   36.86   31.20

LATERAL DRAINAGE COLLECTED        0.001   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   0.000   0.000   0.110   0.008   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.000   0.000   0.004   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.000   0.000   0.007   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 2000
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    23.4    31.6     8.9    44.7    54.1    33.3
                                 39.3    26.0    61.2   110.3    19.8    12.9

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    148.76  143.75  116.65   62.71   35.44   24.84
                                 29.57   44.81   67.28  105.93  136.61  171.63

ACTUAL EVAPOTRANSPIRATION        58.80   31.91   26.63   44.22   27.70   24.19
                                 29.55   29.78   49.94   68.57   50.94   13.92

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   0.000   3.733   0.865   3.619  27.111   1.695

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000
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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON               0.000    0.000    0.000    0.000    0.000    0.000
  TOP OF LAYER  4                   0.000    0.116    0.028    0.113    0.872    0.053

STD. DEVIATION OF DAILY             0.000    0.000    0.000    0.000    0.000    0.000
  HEAD ON TOP OF LAYER  4           0.000    0.114    0.053    0.091    0.594    0.087

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                     MONTHLY TOTALS (MM) FOR YEAR 2001
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                                  JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                       12.1     20.1     89.8    127.1     15.7     34.3
                                    11.6     47.2     25.4     55.1     48.6     32.7

RUNOFF                               0.00     0.00     0.00     0.00     0.00     0.00
                                     0.00     0.00     0.00     0.00     0.00     0.00

POTENTIAL EVAPOTRANSPIRATION       163.21   139.61   110.16    58.73    36.38    26.21
                                    29.63    43.60    68.32   107.21   124.06   139.72

ACTUAL EVAPOTRANSPIRATION           15.66    33.96    38.44    40.22    36.38    26.19
                                    16.08    37.31    31.06    65.12    60.67    43.02

LATERAL DRAINAGE COLLECTED           0.000    0.000    0.000    5.178   64.877   16.054
  FROM LAYER  3                     10.765    0.057    4.748    0.091    0.000    0.000

LATERAL DRAINAGE RECIRCULATED        0.000    0.000    0.000    0.000    0.000    0.000
  FROM LAYER  3 INTO L.  1           0.000    0.000    0.000    0.000    0.000    0.000

PERCOLATION/LEAKAGE THROUGH          0.000    0.000    0.000    0.000    0.001    0.000
  LAYER  5                           0.000    0.000    0.000    0.000    0.000    0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON               0.000    0.000    0.000    0.166    2.019    0.516
  TOP OF LAYER  4                   0.335    0.002    0.153    0.003    0.000    0.000

STD. DEVIATION OF DAILY             0.000    0.000    0.000    0.157    0.747    0.396
  HEAD ON TOP OF LAYER  4           0.212    0.003    0.096    0.005    0.000    0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 2002
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    23.4    50.6    36.1    35.4    26.3    32.5
                                 27.8    27.7    26.4    22.5    14.1     7.7

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    147.35  123.31  109.79   62.00   38.41   26.02
                                 31.21   47.11   71.71  112.58  134.94  153.58

ACTUAL EVAPOTRANSPIRATION        25.91   48.51   18.96   42.16   23.53   21.36
                                 29.01   34.98   25.89   26.76   11.88    8.52

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   0.000   0.000   0.000   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.000   0.000   0.000   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 2003
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    19.4    21.0    18.3    53.1    10.7    20.5
                                 66.6    47.5    24.4    64.9    31.8    31.4

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    164.31  126.84  111.80   62.27   38.17   26.00
                                 30.32   43.70   68.51  104.53  140.82  164.05

ACTUAL EVAPOTRANSPIRATION        29.56   20.78   27.75   33.87   11.02   15.10
                                 28.06   43.68   31.14   66.03   50.11   41.85

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   0.000   7.040  10.078   0.179   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
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  LAYER  5                          0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON              0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                  0.000   0.219   0.324   0.006   0.000   0.000

STD. DEVIATION OF DAILY            0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4          0.000   0.230   0.162   0.011   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 2004
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                                  JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                      23.8    23.4    15.0    46.3    21.2    37.1
                                   29.8    62.2    50.9    48.2    86.2    45.4

RUNOFF                              0.00    0.00    0.00    0.00    0.00    0.00
                                    0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION      151.76  131.99  109.94   60.25   35.81   25.22
                                   29.52   46.32   64.12  117.73  130.50  154.47

ACTUAL EVAPOTRANSPIRATION          18.08   47.76    8.41   13.26   27.41   22.68
                                   28.92   39.20   47.02   44.79   79.74   46.10

LATERAL DRAINAGE COLLECTED          0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                     0.000   0.108  20.741   3.681  18.059   4.566

LATERAL DRAINAGE RECIRCULATED       0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1          0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH         0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                          0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON              0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                  0.000   0.003   0.667   0.115   0.581   0.142

STD. DEVIATION OF DAILY            0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4          0.000   0.015   0.328   0.153   0.561   0.164

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                     MONTHLY TOTALS (MM) FOR YEAR 2005
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    40.1   134.2     7.5    20.9    10.1    41.7
                                 26.8    42.7    51.8    47.3    49.7    30.8

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    161.11  118.00  108.50   67.85   38.56   26.28
                                 30.74   47.61   67.61  116.71  145.20  168.36

ACTUAL EVAPOTRANSPIRATION        35.22   99.90   12.19   23.52   11.23   19.82
                                 30.57   41.34   40.91   77.35   49.52   46.11

LATERAL DRAINAGE COLLECTED        0.002  22.605  11.146   0.018   0.000   0.133
  FROM LAYER  3                   7.641   0.031   0.000   1.254   0.001   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.779   0.347   0.001   0.000   0.004
  TOP OF LAYER  4                0.238   0.001   0.000   0.039   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.890   0.324   0.001   0.000   0.018
  HEAD ON TOP OF LAYER  4        0.142   0.002   0.000   0.054   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 2006
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    48.2    39.3    10.1    35.6    32.7    20.0
                                 24.9    26.3    27.6     6.3    17.1    14.2

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    161.52  128.47  121.29   56.31   34.34   23.61
                                 29.93   48.77   72.24  128.04  136.53  162.32

ACTUAL EVAPOTRANSPIRATION        46.38   37.04   21.90   24.13   26.60   12.75
                                 25.52   22.65   30.97    8.29   27.15   11.70

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   0.000   0.000   0.000   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000
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PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.000   0.000   0.000   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 2007
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    27.8    21.3    24.5    28.1    32.2    41.7
                                 65.7    16.1    15.9    18.3    93.5    54.1

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    157.45  143.82  116.69   65.84   40.46   24.74
                                 28.96   49.45   70.08  120.13  144.10  162.22

ACTUAL EVAPOTRANSPIRATION        31.76   11.37   26.52   15.57   34.74   23.29
                                 28.69   23.84    9.77   25.48   86.52   55.15

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                  31.315   9.147   0.011   0.000   3.165   2.069

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.974   0.285   0.000   0.000   0.102   0.064

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.851   0.257   0.001   0.000   0.154   0.104

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                     MONTHLY TOTALS (MM) FOR YEAR 2008
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    10.2    21.5    20.8     8.0    42.6    24.4
                                 39.1    39.9    15.7    10.5    25.4    75.1

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    169.82  129.67  120.33   58.63   34.10   25.90
                                 29.03   41.81   74.59  118.80  127.97  147.51

ACTUAL EVAPOTRANSPIRATION        13.32   25.28   20.12   17.69   22.43   24.69
                                 28.67   39.98   14.92   24.03   22.20   61.77

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   0.000   0.848   6.238   0.031   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.000   0.026   0.201   0.001   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.000   0.035   0.137   0.002   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 2009
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                     0.9     2.9    38.3    30.3    10.5    22.8
                                 32.3    41.1    64.7    28.3    77.7    35.1

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    175.67  138.87  106.04   59.84   35.22   24.15
                                 30.41   48.12   66.29  112.88  146.04  160.68

ACTUAL EVAPOTRANSPIRATION        10.69    6.28   31.54   16.34   19.40   19.29
                                 29.14   40.33   57.42   39.95   47.86   65.23

LATERAL DRAINAGE COLLECTED        4.224   0.015   0.000   0.000   0.000   0.000
  FROM LAYER  3                   1.869   0.001   0.000   4.187   0.043   4.218
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LATERAL DRAINAGE RECIRCULATED      0.000    0.000    0.000    0.000    0.000    0.000
  FROM LAYER  3 INTO L.  1         0.000    0.000    0.000    0.000    0.000    0.000

PERCOLATION/LEAKAGE THROUGH        0.000    0.000    0.000    0.000    0.000    0.000
  LAYER  5                         0.000    0.000    0.000    0.000    0.000    0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON             0.131    0.001    0.000    0.000    0.000    0.000
  TOP OF LAYER  4                 0.058    0.000    0.000    0.130    0.001    0.131

STD. DEVIATION OF DAILY           0.110    0.001    0.000    0.000    0.000    0.000
  HEAD ON TOP OF LAYER  4         0.069    0.000    0.000    0.134    0.003    0.132

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                     MONTHLY TOTALS (MM) FOR YEAR 2010
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                                 JAN/JUL  FEB/AUG  MAR/SEP  APR/OCT  MAY/NOV  JUN/DEC
                                 -------  -------  -------  -------  -------  -------

PRECIPITATION                     14.2     24.7     67.4     31.2     27.1     38.5
                                  21.4     66.8     54.2    101.8    130.3     39.8

RUNOFF                             0.00     0.00     0.00     0.00     0.00     0.00
                                   0.00     0.00     0.00     0.00     0.00     0.00

POTENTIAL EVAPOTRANSPIRATION     163.26   135.87   113.65    60.50    37.05    24.00
                                  28.48    41.14    57.86   111.74   126.84   144.95

ACTUAL EVAPOTRANSPIRATION         26.44    37.69    58.00    35.56    23.80    20.61
                                  26.96    40.96    38.89    58.03    99.17    84.55

LATERAL DRAINAGE COLLECTED         0.087    0.000    0.000    0.000    0.000    0.000
  FROM LAYER  3                    0.000    1.815   23.463    3.483   11.329   28.711

LATERAL DRAINAGE RECIRCULATED      0.000    0.000    0.000    0.000    0.000    0.000
  FROM LAYER  3 INTO L.  1         0.000    0.000    0.000    0.000    0.000    0.000

PERCOLATION/LEAKAGE THROUGH        0.000    0.000    0.000    0.000    0.000    0.000
  LAYER  5                         0.000    0.000    0.000    0.000    0.000    0.000


-------------------------------------------------------------------------------
                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
-------------------------------------------------------------------------------


AVERAGE DAILY HEAD ON             0.003    0.000    0.000    0.000    0.000    0.000
  TOP OF LAYER  4                 0.000    0.056    0.754    0.108    0.364    0.893

STD. DEVIATION OF DAILY           0.005    0.000    0.000    0.000    0.000    0.000
  HEAD ON TOP OF LAYER  4         0.000    0.137    0.377    0.139    0.432    0.556

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                     MONTHLY TOTALS (MM) FOR YEAR 2011
-------------------------------------------------------------------------------

                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
                                ------- ------- ------- ------- ------- -------

PRECIPITATION                   107.4   110.6    16.4    48.5    33.4    33.2
                                 29.0    15.2    41.3    69.9   129.2    56.5

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    146.71  113.74  100.55   58.68   32.38   25.38
                                 29.30   46.42   70.18  110.13  131.77  158.52

ACTUAL EVAPOTRANSPIRATION        84.57   80.82   20.93   35.85   26.40   25.36
                                 25.19   26.80   14.34   67.55   86.75  110.98

LATERAL DRAINAGE COLLECTED        4.998  24.870   9.983   4.206   6.419   1.550
  FROM LAYER  3                   8.190   3.236   0.044   7.013   0.571   9.904

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


-------------------------------------------------------------------------------
                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
-------------------------------------------------------------------------------


AVERAGE DAILY HEAD ON            0.156   0.857   0.311   0.135   0.200   0.050
  TOP OF LAYER  4                0.255   0.101   0.001   0.218   0.018   0.308

STD. DEVIATION OF DAILY          0.281   0.537   0.274   0.238   0.138   0.067
  HEAD ON TOP OF LAYER  4        0.129   0.099   0.003   0.173   0.034   0.244

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                     MONTHLY TOTALS (MM) FOR YEAR 2012
-------------------------------------------------------------------------------

                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
                                ------- ------- ------- ------- ------- -------

PRECIPITATION                    15.5    46.0    35.3    35.5    77.8    79.7
                                 45.1    52.7    42.4    19.0    34.3    27.9

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    161.47  131.84  106.94   62.11   35.26   23.63
                                 29.67   43.94   65.42  107.77  135.29  156.31

ACTUAL EVAPOTRANSPIRATION        16.11   34.74   48.58   19.01   35.16   23.63
                                 29.45   41.84   46.31   32.94   24.71   48.62

LATERAL DRAINAGE COLLECTED        0.724   0.000   0.000   0.000   5.513  62.218
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  FROM LAYER  3                  37.326  13.435   8.565   0.011   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.001
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


-------------------------------------------------------------------------------
                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
-------------------------------------------------------------------------------


AVERAGE DAILY HEAD ON            0.023   0.000   0.000   0.000   0.172   2.001
  TOP OF LAYER  4                1.162   0.418   0.275   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.043   0.000   0.000   0.000   0.171   0.820
  HEAD ON TOP OF LAYER  4        0.715   0.326   0.246   0.001   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 2013
-------------------------------------------------------------------------------

                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
                                ------- ------- ------- ------- ------- -------

PRECIPITATION                     5.1    53.3    26.8    10.6    30.4    74.0
                                 47.9    39.2    60.8    42.1    50.0    28.7

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    167.73  139.24  121.10   58.22   35.99   24.10
                                 29.91   42.83   67.61  105.84  124.13  149.32

ACTUAL EVAPOTRANSPIRATION        10.24   41.99   47.68    6.73   16.19   24.08
                                 27.13   32.72   39.50   46.93   54.10   46.94

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000  12.820
  FROM LAYER  3                  20.106  17.964   4.043  10.952   3.311   2.186

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  5                        0.000   0.000   0.000   0.000   0.000   0.000


-------------------------------------------------------------------------------
                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
-------------------------------------------------------------------------------


AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.412
  TOP OF LAYER  4                0.626   0.559   0.130   0.341   0.106   0.068

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.634
  HEAD ON TOP OF LAYER  4        0.336   0.180   0.121   0.169   0.095   0.085

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                   FINAL WATER STORAGE AT END OF YEAR 2013
------------------------------------------------------------------------------

                    LAYER          (CM)         (VOL/VOL)
                    -----         ------        ---------
                      1          12.8535          0.2571

                      2         145.9999          0.0730

                      3           0.9601          0.0320

                      4           0.0000          0.0000

                      5          42.7000          0.4270

    TOTAL WATER IN LAYERS       202.513

    SNOW WATER                    0.000

    INTERCEPTION WATER            0.000

    TOTAL FINAL WATER           202.513

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                PEAK DAILY VALUES FOR YEARS 1964 THROUGH 2013
------------------------------------------------------------------------------

                                                     (MM)       (CU. METERS)
                                                  ----------    ------------
      PRECIPITATION                                 98.50          985.000

      RUNOFF                                         0.000           0.0000

      DRAINAGE COLLECTED FROM LAYER  3               3.19230        31.92297

      PERCOLATION/LEAKAGE THROUGH LAYER  5           0.000026        0.00026

      AVERAGE HEAD ON TOP OF LAYER  4               30.795

      MAXIMUM HEAD ON TOP OF LAYER  4               50.178

      LOCATION OF MAXIMUM HEAD IN LAYER  3
            (DISTANCE FROM DRAIN)                    9.3 METERS

      SNOW WATER                                     0.00            0.0000

      MAXIMUM VEG. SOIL WATER (VOL/VOL)                      0.3603

      MINIMUM VEG. SOIL WATER (VOL/VOL)                      0.2055

       ***  Maximum heads are computed using McEnroe's equations.  ***

            Reference:  Maximum Saturated Depth over Landfill Liner
                        by Bruce M. McEnroe, University of Kansas
                        ASCE Journal of Environmental Engineering
                        Vol. 119, No. 2, March 1993, pp. 262-270.
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            AVERAGE MONTHLY VALUES (MM) FOR YEARS 1964 THROUGH 2013
-------------------------------------------------------------------------------

                         JAN/JUL  FEB/AUG  MAR/SEP  APR/OCT  MAY/NOV  JUN/DEC
                         -------  -------  -------  -------  -------  -------
  PRECIPITATION
  -------------
    TOTALS                36.56    39.32    32.49    41.30    40.44    36.58
                          37.19    44.00    46.05    52.72    51.13    45.10

    STD. DEVIATIONS       26.73    44.16    20.89    26.14    21.53    18.68
                          18.18    16.85    23.67    30.69    29.83    28.34

  RUNOFF
  ------
    TOTALS                 0.000    0.000    0.000    0.000    0.000    0.000
                           0.000    0.000    0.000    0.000    0.000    0.000

    STD. DEVIATIONS        0.000    0.000    0.000    0.000    0.000    0.000
                           0.000    0.000    0.000    0.000    0.000    0.000

  POTENTIAL EVAPOTRANSPIRATION
  ----------------------------
    TOTALS               157.283  130.688  109.721   59.103   35.980   24.737
                          29.345   44.892   66.113  110.460  131.000  152.446

    STD. DEVIATIONS        8.631    7.768    5.460    3.974    1.662    0.795
                           1.014    2.422    4.434    6.061    7.114    9.530

  ACTUAL EVAPOTRANSPIRATION
  -------------------------
    TOTALS                38.627   37.272   31.349   27.836   26.768   22.424
                          26.612   36.520   40.541   52.387   52.148   50.422

    STD. DEVIATIONS       20.692   28.579   17.415   12.713    7.986    3.610
                           3.865    6.126   13.578   22.302   22.030   25.099

  LATERAL DRAINAGE COLLECTED FROM LAYER  3
  ----------------------------------------
    TOTALS                 0.7021   1.4302   2.1911   0.9282   7.1574   8.9144
                          11.0696   8.8172   7.0151   5.5647   4.1345   2.3629

    STD. DEVIATIONS        1.6392   4.8866   8.1396   2.6699  14.1680  14.0258
                          11.3302  11.5257   8.2643   8.8729   7.1769   5.1467

  LATERAL DRAINAGE RECIRCULATED FROM LAYER  3 INTO L.  1
  ------------------------------------------------------
    TOTALS                 0.0000   0.0000   0.0000   0.0000   0.0000   0.0000
                           0.0000   0.0000   0.0000   0.0000   0.0000   0.0000

    STD. DEVIATIONS        0.0000   0.0000   0.0000   0.0000   0.0000   0.0000
                           0.0000   0.0000   0.0000   0.0000   0.0000   0.0000

  PERCOLATION/LEAKAGE THROUGH LAYER  5
  ------------------------------------
    TOTALS                 0.0000   0.0000   0.0000   0.0000   0.0001   0.0001
                           0.0001   0.0001   0.0001   0.0001   0.0000   0.0000

    STD. DEVIATIONS        0.0000   0.0000   0.0001   0.0000   0.0001   0.0001
                           0.0001   0.0001   0.0001   0.0001   0.0001   0.0000
```

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--------------------------------------------------------------------------------
                AVERAGES OF MONTHLY AVERAGED DAILY HEADS (CM)
--------------------------------------------------------------------------------


  DAILY AVERAGE HEAD ON TOP OF LAYER  4
  -------------------------------------
    AVERAGES                 0.0218   0.0491   0.0682   0.0298   0.2227   0.2866
                             0.3445   0.2744   0.2256   0.1732   0.1329   0.0735

    STD. DEVIATIONS          0.0510   0.1682   0.2533   0.0859   0.4409   0.4510
                             0.3526   0.3587   0.2657   0.2761   0.2308   0.1602

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     AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1964 THROUGH 2013
--------------------------------------------------------------------------------

                                        MM                 CU. METERS     PERCENT
                              --------------------      ------------   ---------
 PRECIPITATION                 502.88    ( 110.147)        5028.8     100.00

 RUNOFF                          0.000   (  0.0000)           0.00      0.000

 POTENTIAL EVAPOTRANSPIRATION 1051.770   ( 30.6287)       10517.70

 ACTUAL EVAPOTRANSPIRATION     442.908   ( 81.2115)        4429.08     88.073

 LATERAL DRAINAGE COLLECTED     60.28748 ( 40.29708)        602.875   11.98834
   FROM LAYER  3

 DRAINAGE RECIRCULATED           0.00000 (  0.00000)          0.000    0.00000
   FROM LAYER  3 INTO L.  1

 PERCOLATION/LEAKAGE THROUGH     0.00057 (  0.00037)          0.006     0.00011
   LAYER  5

 AVERAGE HEAD ON TOP             1.585   (    1.059)
   OF LAYER  4

 CHANGE IN WATER STORAGE        -0.311   (  0.8361)          -3.11     -0.062

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**                                                                          **
**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**                                                                          **
**              HELP Version 3.95 D          (10 August 2012)               **
**                               developed at                               **
**        Institute of Soil Science, University of Hamburg, Germany         **
**                                 based on                                 **
**              US HELP MODEL VERSION 3.07  (1 NOVEMBER 1997)               **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
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 TIME:  14.41     DATE:   1.06.2015


 PRECIPITATION DATA FILE:      T:\2013\20131288 Werribee Landfill Assistance -
Wyndam Council\3_Development\4 Calculations\HELP\WerribeeVic.d4
 TEMPERATURE DATA FILE:        T:\2013\20131288 Werribee Landfill Assistance -
Wyndam Council\3_Development\4 Calculations\HELP\Werribee.d7
 SOLAR RADIATION DATA FILE:    T:\2013\20131288 Werribee Landfill Assistance -
Wyndam Council\3_Development\4 Calculations\HELP\Werribee.d13
 EVAPOTRANSPIRATION DATA F. 1: T:\2013\20131288 Werribee Landfill Assistance -
Wyndam Council\3_Development\4 Calculations\HELP\Werribee500.d11
 SOIL AND DESIGN DATA FILE  1: T:\2013\20131288 Werribee Landfill Assistance -
Wyndam Council\3_Development\4 Calculations\HELP\500_29CoverCCL.d10
 OUTPUT DATA FILE:             T:\2013\20131288 Werribee Landfill Assistance -
Wyndam Council\3_Development\4 Calculations\HELP\500_1CoverCCL.out
 MONTHLY OUTPUT DATA FILE:     T:\2013\20131288 Werribee Landfill Assistance -
Wyndam Council\3_Development\4 Calculations\HELP\500_1CoverCCL.MON

 COLUMNS OF MONTHLY OUTPUT DATA FILE:

      1    DATE OF ULTIMO (yyyymmdd)
      2    PRECIPITATION (MM)
      3    RUNOFF (MM)
      4    POTENTIAL EVAPOTRANSPIRATION (MM)
      5    ACTUAL EVAPOTRANSPIRATION (MM)
      6    HEAD  #1: AVERAGE HEAD ON TOP OF LAYER  4 (CM)
      7    DRAIN #1: LATERAL DRAINAGE FROM LAYER  3 (WITHOUT RECIRC.) (MM)
      8    RECIRC#1: LAT. DRAINAGE RECIRCULATED FROM LAYER  3 INTO L.  1 (MM)
      9    LEAK  #1: PERCOLATION/LEAKAGE THROUGH LAYER  4 (MM)


******************************************************************************

      TITLE:  Werribee Cells 1B - 3 (CCL)

******************************************************************************


                           WEATHER DATA SOURCES
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         NOTE:  PRECIPITATION DATA FOR     Werribee            Vic
                  WAS ENTERED FROM A TEXT FILE.
```

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          NOTE:  TEMPERATURE DATA FOR       Werribee            Vic
                   WAS ENTERED FROM A TEXT FILE.


          NOTE:  SOLAR RADIATION DATA FOR   Werribee            Vic
                   WAS ENTERED FROM A TEXT FILE.


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                              LAYER DATA   1
------------------------------------------------------------------------------

                           VALID FOR  50 YEARS


      NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE
               COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.


                                 LAYER  1
                                 --------

                     TYPE 1 - VERTICAL PERCOLATION LAYER
                         MATERIAL TEXTURE NUMBER  29
           THICKNESS                   =     50.00   CM
           POROSITY                    =      0.4510 VOL/VOL
           FIELD CAPACITY              =      0.4190 VOL/VOL
           WILTING POINT               =      0.3220 VOL/VOL
           INITIAL SOIL WATER CONTENT  =      0.3392 VOL/VOL
           EFFECTIVE SAT. HYD. CONDUCT.=      0.6800E-06 CM/SEC
         NOTE:  SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY  1.80
                  FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.


                                 LAYER  2
                                 --------

                     TYPE 1 - VERTICAL PERCOLATION LAYER
                         MATERIAL TEXTURE NUMBER  19
           THICKNESS                   =   2000.00   CM
           POROSITY                    =      0.1680 VOL/VOL
           FIELD CAPACITY              =      0.0730 VOL/VOL
           WILTING POINT               =      0.0190 VOL/VOL
           INITIAL SOIL WATER CONTENT  =      0.0730 VOL/VOL
           EFFECTIVE SAT. HYD. CONDUCT.=      0.1000E-02 CM/SEC


                                 LAYER  3
                                 --------

                       TYPE 2 - LATERAL DRAINAGE LAYER
                         MATERIAL TEXTURE NUMBER  21
           THICKNESS                   =     30.00   CM
           POROSITY                    =      0.3970 VOL/VOL
           FIELD CAPACITY              =      0.0320 VOL/VOL
           WILTING POINT               =      0.0130 VOL/VOL
           INITIAL SOIL WATER CONTENT  =      0.0320 VOL/VOL
           EFFECTIVE SAT. HYD. CONDUCT.=      0.3000     CM/SEC
           SLOPE                       =      1.00   PERCENT
           DRAINAGE LENGTH             =     50.0    METERS
```

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                                   LAYER  4
                                   --------

                         TYPE 3 - BARRIER SOIL LINER
                         MATERIAL TEXTURE NUMBER  16
          THICKNESS                    =   100.00   CM
          POROSITY                     =     0.4270 VOL/VOL
          FIELD CAPACITY               =     0.4180 VOL/VOL
          WILTING POINT                =     0.3670 VOL/VOL
          INITIAL SOIL WATER CONTENT   =     0.4270 VOL/VOL
          EFFECTIVE SAT. HYD. CONDUCT.=      0.1000E-06 CM/SEC


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                 GENERAL DESIGN AND EVAPORATIVE ZONE DATA   1
------------------------------------------------------------------------------

                             VALID FOR  50 YEARS


        NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
                 SOIL DATA BASE USING SOIL TEXTURE #24 WITH A
                 GOOD STAND OF GRASS, A SURFACE SLOPE OF  3.%
                 AND A SLOPE LENGTH OF  100. METERS.

       SCS RUNOFF CURVE NUMBER            =     86.69
       FRACTION OF AREA ALLOWING RUNOFF   =      0.0    PERCENT
       AREA PROJECTED ON HORIZONTAL PLANE =      1.0000 HECTARES
       EVAPORATIVE ZONE DEPTH             =     50.0    CM
       INITIAL WATER IN EVAPORATIVE ZONE  =     16.960  CM
       UPPER LIMIT OF EVAPORATIVE STORAGE =     22.550  CM
       FIELD CAPACITY OF EVAPORATIVE ZONE =     20.950  CM
       LOWER LIMIT OF EVAPORATIVE STORAGE =     16.100  CM
       SOIL EVAPORATION ZONE DEPTH        =     50.0    CM
       INITIAL SNOW WATER                 =      0.000  CM
       INITIAL INTERCEPTION WATER         =      0.000  CM
       INITIAL WATER IN LAYER MATERIALS   =    206.620  CM
       TOTAL INITIAL WATER                =    206.620  CM
       TOTAL SUBSURFACE INFLOW            =      0.00   MM/YR


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                        EVAPOTRANSPIRATION DATA   1
------------------------------------------------------------------------------

                            VALID FOR  50 YEARS


        NOTE:  EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
                 Werribee           Vic
            STATION LATITUDE                        = -37.90 DEGREES
            MAXIMUM LEAF AREA INDEX                 =   1.00
            START OF GROWING SEASON (JULIAN DATE)   =      0
            END OF GROWING SEASON (JULIAN DATE)     =    365
            EVAPORATIVE ZONE DEPTH                  =  50.0  CM
            AVERAGE ANNUAL WIND SPEED               =   8.00 KPH
            AVERAGE 1ST QUARTER RELATIVE HUMIDITY   =  68.0  %
            AVERAGE 2ND QUARTER RELATIVE HUMIDITY   =  80.0  %
            AVERAGE 3RD QUARTER RELATIVE HUMIDITY   =  79.0  %
            AVERAGE 4TH QUARTER RELATIVE HUMIDITY   =  66.0  %

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                     MONTHLY TOTALS (MM) FOR YEAR 1964
-------------------------------------------------------------------------------

                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
                                ------- ------- ------- ------- ------- -------

PRECIPITATION                      1.5    84.2    30.9    89.5    43.2    18.4
                                  65.5    37.0    66.7    94.4    54.2    67.5

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    159.10  114.02  108.72   51.24   36.16   25.34
                                 28.74   42.65   67.20  101.45  124.03  130.88

ACTUAL EVAPOTRANSPIRATION         9.69   71.91   35.77   37.62   35.34   24.93
                                 28.69   39.42   55.34   92.19   60.22   82.49

LATERAL DRAINAGE COLLECTED       0.000   0.000   0.000   0.000   0.000   9.353
  FROM LAYER  3                 15.562  15.750   0.669  10.753   4.398   0.000

LATERAL DRAINAGE RECIRCULATED    0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1       0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH      0.000   0.000   0.000   0.000   0.000   1.693
  LAYER  4                       2.308   2.691   0.501   1.262   1.394   0.000

-------------------------------------------------------------------------------
                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
-------------------------------------------------------------------------------


AVERAGE DAILY HEAD ON             0.000   0.000   0.000   0.000   0.000   0.301
  TOP OF LAYER  4                 0.484   0.490   0.022   0.335   0.141   0.000

STD. DEVIATION OF DAILY           0.000   0.000   0.000   0.000   0.000   0.251
  HEAD ON TOP OF LAYER  4         0.465   0.311   0.053   0.409   0.167   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1965
-------------------------------------------------------------------------------

                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
                                ------- ------- ------- ------- ------- -------

PRECIPITATION                      9.8     0.9     2.4    77.6    48.3    28.1
                                  66.3    63.0    21.9    12.1    58.8    55.1

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    154.80  129.97  112.16   54.91   35.19   24.46
                                 27.35   44.45   67.41  114.24  121.51  158.59

ACTUAL EVAPOTRANSPIRATION        22.43    7.24    3.25   28.55   35.19   24.39
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                                 27.32   44.45   36.57   11.58   74.35   64.97

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.019   9.009
  FROM LAYER  3                   6.089  35.689  11.170   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.113   2.578
  LAYER  4                        2.369   2.708   1.915   0.000   0.000   0.000


-------------------------------------------------------------------------------
                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.001   0.290
  TOP OF LAYER  4                0.189   1.111   0.359   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.002   0.183
  HEAD ON TOP OF LAYER  4        0.215   0.052   0.352   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1966
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    28.3    56.0    66.7    50.2    27.0    18.3
                                 38.5    62.9    80.5    71.0    25.4    73.8

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    156.51  122.81  110.77   60.17   34.74   23.14
                                 28.22   42.96   65.88   99.67  133.02  143.54

ACTUAL EVAPOTRANSPIRATION        36.87   52.29   52.44   27.19   34.29   22.93
                                 27.97   41.41   65.87   72.04   60.38   85.09

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   0.000   0.306  14.981   7.209   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  4                        0.000   0.139   2.604   1.628   0.000   0.000


-------------------------------------------------------------------------------
                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
-------------------------------------------------------------------------------


AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.000   0.010   0.482   0.224   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.000   0.044   0.237   0.248   0.000   0.000
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                     MONTHLY TOTALS (MM) FOR YEAR 1967
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                     23.5     3.2    11.4     9.1    34.4    27.5
                                  20.9    55.4    44.5    14.2     3.7    19.6

RUNOFF                             0.00    0.00    0.00    0.00    0.00    0.00
                                   0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION     148.49  136.33  110.38   59.96   37.61   24.36
                                  28.67   42.99   66.45  116.91  135.47  148.78

ACTUAL EVAPOTRANSPIRATION         29.60    2.15    1.85    9.62   13.54   23.64
                                  25.46   41.81   53.91   29.37    8.72   13.78

LATERAL DRAINAGE COLLECTED         0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                    0.000   0.000   0.000   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED      0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1         0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH        0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  4                         0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.000   0.000   0.000   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1968
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                     55.0     6.3    15.0    97.4    59.8    38.9
                                  30.2    36.4     8.0    31.3    38.5    53.3

RUNOFF                             0.00    0.00    0.00    0.00    0.00    0.00
                                   0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION     173.73  147.06  109.51   58.77   32.30   23.72
                                  28.31   45.39   64.89  104.66  123.46  151.02
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ACTUAL EVAPOTRANSPIRATION         59.23   14.98   12.20   19.79   32.30   23.72
                                  28.31   44.42   22.02   46.27   49.09   50.74

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000  28.928
  FROM LAYER  3                  36.474   8.853   0.000   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   2.422
  LAYER  4                        2.709   1.917   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.930
  TOP OF LAYER  4                1.135   0.275   0.000   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.352
  HEAD ON TOP OF LAYER  4        0.035   0.277   0.000   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1969
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                      8.0    92.7    17.8    21.5    71.5     4.1
                                 47.5    41.1    40.3    21.2    40.6    31.4

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    166.21  117.29  106.90   59.19   34.24   23.99
                                 29.75   43.32   57.29  105.86  124.29  143.31

ACTUAL EVAPOTRANSPIRATION         6.82   76.33   23.40   28.02   24.67   23.22
                                 28.20   36.70   55.64   22.76   61.06   39.65

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   0.000   3.353   1.934   0.569   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  4                        0.000   1.830   1.325   0.446   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.000   0.104   0.062   0.018   0.000   0.000
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STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.000   0.102   0.087   0.049   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1970
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    86.1     5.5    79.6    62.5    52.8    33.7
                                 21.3    59.3    42.4    24.1    89.6    86.2

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    143.79  133.03  106.05   60.18   34.09   24.56
                                 28.92   43.27   58.03  103.53  130.84  154.83

ACTUAL EVAPOTRANSPIRATION        81.11   10.02   51.59   40.24   34.09   24.55
                                 26.10   42.09   56.72   41.84   86.18   75.14

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   3.246  20.888
  FROM LAYER  3                   7.389   0.390   2.458   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.478   2.609
  LAYER  4                        2.685   0.400   1.764   0.000   0.000   0.000

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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.101   0.672
  TOP OF LAYER  4                0.230   0.012   0.079   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.246   0.248
  HEAD ON TOP OF LAYER  4        0.166   0.034   0.089   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1971
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    54.2    85.7    26.3    38.7    43.7    46.8
                                 25.6    23.7    30.0    57.4    94.0    64.8

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00
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POTENTIAL EVAPOTRANSPIRATION    156.91  132.92  116.74   64.60   34.25   24.30
                                 27.45   42.78   60.60  102.81  116.83  153.39

ACTUAL EVAPOTRANSPIRATION        64.82  100.59   31.55   26.08   28.61   24.17
                                 27.44   28.83   45.04   63.45   94.58   61.03

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   2.790   0.000   0.000   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  4                        1.550   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.087   0.000   0.000   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.099   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1972
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    28.8   126.9    30.1    36.9    27.2    11.2
                                 18.2    30.6    10.9    37.4    35.7     1.4

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    141.33  136.36  111.43   58.42   37.78   24.15
                                 29.46   45.56   73.73  114.14  131.08  168.41

ACTUAL EVAPOTRANSPIRATION        50.41   75.33   66.08   34.48   30.62   17.07
                                 24.15   25.70   25.32   34.69   36.08    4.08

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   0.000   0.000   0.000   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  4                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
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  TOP OF LAYER  4              0.000   0.000   0.000   0.000   0.000   0.000

STD. DEVIATION OF DAILY        0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4      0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1973
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
                                ------- ------- ------- ------- ------- -------

PRECIPITATION                    51.7   232.1    47.6    17.8    41.4    59.2
                                 33.0    46.6    33.7    79.0    50.6    50.9

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    156.83  130.35   99.32   61.07   35.40   24.02
                                 29.06   42.28   68.69  108.47  127.72  160.33

ACTUAL EVAPOTRANSPIRATION        33.29  126.20   98.82   44.35   35.39   24.02
                                 29.05   42.26   53.34   79.74   60.24   69.10

LATERAL DRAINAGE COLLECTED        0.000   0.000   3.258   4.211   0.000   0.815
  FROM LAYER  3                  23.154   5.871   0.000   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.716   1.516   0.000   0.217
  LAYER  4                        2.698   2.516   0.000   0.000   0.000   0.000

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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON          0.000   0.000   0.101   0.135   0.000   0.026
  TOP OF LAYER  4              0.721   0.183   0.000   0.000   0.000   0.000

STD. DEVIATION OF DAILY        0.000   0.000   0.178   0.152   0.000   0.101
  HEAD ON TOP OF LAYER  4      0.209   0.175   0.000   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1974
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
                                ------- ------- ------- ------- ------- -------

PRECIPITATION                    61.8    19.0    48.8    93.1    88.7    14.6
                                 68.5    70.7    40.5    56.1    39.6    27.8

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
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                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    174.98  128.58  115.63   48.83   37.08   25.10
                                 29.43   42.38   61.18  100.94  124.93  152.34

ACTUAL EVAPOTRANSPIRATION        61.76   22.34   32.14   45.87   37.04   25.10
                                 29.43   40.84   54.14   74.04   53.61   43.18

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   5.131  34.925
  FROM LAYER  3                  29.986  19.151   8.141   0.323   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.674   2.621
  LAYER  4                        2.703   2.694   2.599   0.543   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.160   1.123
  TOP OF LAYER  4                0.933   0.596   0.262   0.010   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.322   0.031
  HEAD ON TOP OF LAYER  4        0.188   0.141   0.101   0.027   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1975
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    23.2      8.8     36.8     16.3     36.1     31.3
                                 32.1     79.5     85.5    146.0     46.7     41.2

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    154.08  133.56  106.17   54.52   35.64   24.38
                                 32.26   40.78   66.27  100.11  133.38  158.82

ACTUAL EVAPOTRANSPIRATION        20.95    3.29   41.98   18.19   25.19   22.11
                                 29.45   40.41   66.27  100.11   84.69   41.75

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   0.000   0.000  17.265  20.072  18.758   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  4                        0.000   0.000   2.110   2.695   2.577   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON             0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                 0.000   0.000   0.555   0.625   0.603   0.000

STD. DEVIATION OF DAILY           0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4         0.000   0.000   0.320   0.333   0.424   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1976
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                     6.2    13.4    36.1     6.3    15.9    30.2
                                 11.9    56.3    97.5    82.4    47.9    39.4

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    160.78  144.60  114.40   58.65   34.72   24.42
                                 29.20   44.29   63.41  104.50  127.37  159.83

ACTUAL EVAPOTRANSPIRATION        35.03    9.64   40.03    2.40    9.35   20.46
                                 19.40   39.15   58.67   93.27   59.71   68.90

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   0.000   0.000   0.000   8.378   4.955   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  4                        0.000   0.000   0.000   1.001   1.369   0.000

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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON             0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                 0.000   0.000   0.000   0.261   0.159   0.000

STD. DEVIATION OF DAILY           0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4         0.000   0.000   0.000   0.371   0.191   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1977
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
                                ------- ------- ------- ------- ------- -------

PRECIPITATION                    45.1     9.8    12.7    72.8    42.6    75.2
                                 32.9    17.6    67.1    22.3    41.4    14.7
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RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    159.28  128.02  109.37   52.36   35.49   24.09
                                 28.49   48.02   63.35  115.67  130.03  149.75

ACTUAL EVAPOTRANSPIRATION        44.32    9.15    9.47   36.11   34.94   24.09
                                 28.49   32.21   55.53   37.52   43.73   34.72

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   7.645
  FROM LAYER  3                  31.186   6.495   3.712   3.395   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   1.638
  LAYER  4                        2.704   2.425   0.737   1.151   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.246
  TOP OF LAYER  4                0.970   0.202   0.119   0.106   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.316
  HEAD ON TOP OF LAYER  4        0.232   0.112   0.198   0.147   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1978
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    45.5    18.2    41.4    53.8    53.7    32.0
                                 64.5    85.9    43.7    50.1   103.8    76.3

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    144.36  123.88   96.86   57.42   37.70   24.35
                                 29.38   41.74   63.13  107.91  123.38  140.71

ACTUAL EVAPOTRANSPIRATION        16.46   48.54   29.97   48.49   31.03   24.24
                                 29.38   41.73   60.04   37.25  112.75  105.77

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.984
  FROM LAYER  3                  14.641  22.386  20.609   1.534   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.671
  LAYER  4                        2.254   2.697   2.609   1.208   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.032
  TOP OF LAYER  4                0.456   0.697   0.663   0.048   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.059
  HEAD ON TOP OF LAYER  4        0.442   0.305   0.378   0.064   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1979
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    44.6    51.2    28.1    24.4    63.6    17.8
                                  9.1    58.2    81.4    61.0    31.4    14.3

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    169.44  127.01  111.91   54.28   34.15   25.41
                                 29.49   42.22   61.68  108.11  124.44  154.16

ACTUAL EVAPOTRANSPIRATION        60.40   19.54   57.76   21.55   31.51   24.51
                                 12.89   36.70   51.20   97.98   48.30   10.70

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   0.000   0.000   0.088   6.802   0.287   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  4                        0.000   0.000   0.335   1.539   0.323   0.000

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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.000   0.000   0.003   0.212   0.009   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.000   0.000   0.008   0.202   0.030   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1980
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    35.9    21.9     8.3    56.2    36.0    41.4
                                 24.1    31.7    20.9    92.5    31.8    41.4

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    149.12  131.82  108.27   61.59   38.75   24.16
                                 30.01   49.33   73.75  115.02  134.30  166.73

ACTUAL EVAPOTRANSPIRATION        51.43   25.29    6.76   11.94   38.65   24.15
                                 25.87   37.84   34.21   89.48   45.95   53.37

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.501
  FROM LAYER  3                  12.739   0.496   0.000   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.499
  LAYER  4                        2.689   0.429   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.016
  TOP OF LAYER  4                0.396   0.015   0.000   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.043
  HEAD ON TOP OF LAYER  4        0.152   0.043   0.000   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1981
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    47.0    28.5    34.6    11.9    59.1    48.0
                                 61.5    51.9    20.0    64.9    50.8    16.2

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    167.32  132.15  104.80   64.14   36.32   25.14
                                 30.59   45.15   70.58  115.88  132.37  155.98

ACTUAL EVAPOTRANSPIRATION        33.04   41.02   15.29   26.24   22.28   25.14
                                 30.59   42.68   36.29   67.51   81.38   20.20

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                  23.754  23.662   0.555   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  4                        2.288   2.698   0.460   0.000   0.000   0.000
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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.739   0.736   0.018   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.378   0.289   0.046   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1982
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    31.4     5.7    34.4    31.6    36.9    31.4
                                 11.5    15.5    35.8    40.0     5.9    57.3

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    165.73  136.77  113.49   63.25   36.24   24.16
                                 28.36   50.75   67.10  114.43  148.76  155.70

ACTUAL EVAPOTRANSPIRATION        27.37    7.32   31.95   12.12   25.41   23.86
                                 23.57   27.97   36.29   54.75    6.17   58.15

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   0.000   0.000   0.000   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  4                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.000   0.000   0.000   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1983
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    20.9     4.6    41.4    47.0    67.7    29.4
                                 50.4    45.4    72.2    99.2    67.6    13.1

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    157.80  142.30  104.99   55.34   35.73   23.90
                                 28.33   45.98   63.72  105.92  121.59  152.89

ACTUAL EVAPOTRANSPIRATION        17.10    4.86   30.63   43.97   35.20   23.81
                                 28.32   45.70   63.71   71.59   70.84   48.93

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.002
  FROM LAYER  3                  13.196   7.803  10.322   5.096   6.792   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.048
  LAYER  4                        2.363   2.432   1.393   1.421   1.895   0.000

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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.411   0.243   0.332   0.159   0.218   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.359   0.122   0.405   0.193   0.175   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1984
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    43.3    12.3    53.7    47.1    12.7    13.2
                                 33.4    62.8    77.0    38.1    37.5    30.8

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    149.37  135.25  104.08   58.26   37.78   25.65
                                 28.39   45.86   59.47  118.49  135.20  155.03

ACTUAL EVAPOTRANSPIRATION        56.37   17.41   25.82   42.75   25.86   15.74
                                 25.80   44.84   50.29   65.05   46.37   47.53

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   0.000   0.000   0.000   7.500   0.010   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  4                        0.000   0.000   0.000   1.993   0.063   0.000
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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON              0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                  0.000   0.000   0.000   0.233   0.000   0.000

STD. DEVIATION OF DAILY            0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4          0.000   0.000   0.000   0.187   0.002   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1985
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                       9.2     4.6    55.8    38.1    35.4    37.3
                                   34.1    61.4    25.8    59.8    60.1   117.7

RUNOFF                             0.00    0.00    0.00    0.00    0.00    0.00
                                   0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION     153.27  124.85  110.96   65.20   38.09   24.18
                                  29.26   42.82   64.19  112.97  126.71  141.53

ACTUAL EVAPOTRANSPIRATION         14.03    6.33   45.72   43.14   19.56   23.07
                                  27.45   42.81   31.59   57.69   68.85  109.43

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   0.000   8.631   6.075   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  4                        0.000   1.001   1.677   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON              0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                  0.000   0.269   0.195   0.000   0.000   0.000

STD. DEVIATION OF DAILY            0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4          0.000   0.379   0.208   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1986
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    18.2    13.8    12.3    47.0    76.0    20.0
                                 69.0    45.9    38.0    75.7    23.8    47.1

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    152.41  128.89  116.54   57.76   36.01   23.89
                                 28.17   45.60   62.48  103.76  132.65  141.28

ACTUAL EVAPOTRANSPIRATION        41.99   16.51   16.43   27.69   36.01   23.88
                                 28.17   44.58   49.25   86.33   40.31   60.42

LATERAL DRAINAGE COLLECTED        0.217   0.000   0.000   0.000   0.000  11.964
  FROM LAYER  3                  18.206  17.421   0.533   0.137   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.562   0.000   0.000   0.000   0.000   2.256
  LAYER  4                        2.670   2.517   0.952   0.462   0.000   0.000

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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.007   0.000   0.000   0.000   0.000   0.385
  TOP OF LAYER  4                0.567   0.542   0.017   0.004   0.000   0.000

STD. DEVIATION OF DAILY          0.016   0.000   0.000   0.000   0.000   0.274
  HEAD ON TOP OF LAYER  4        0.355   0.366   0.030   0.012   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1987
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                   104.2    43.9    28.2    22.9    99.9    38.7
                                 63.0    35.1    32.1    29.5    51.5   106.8

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    150.59  130.45   99.94   61.36   36.19   25.15
                                 29.12   44.41   71.39  112.86  133.32  148.07

ACTUAL EVAPOTRANSPIRATION        94.50   36.58   36.89   10.13   35.68   25.15
                                 29.11   44.40   40.53   65.28   53.25   99.69

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000  17.970
  FROM LAYER  3                  20.587  22.372   7.016   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000
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PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   1.613
  LAYER  4                        2.696   2.697   1.590   0.000   0.000   0.000


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                    MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.578
  TOP OF LAYER  4                0.641   0.696   0.226   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.509
  HEAD ON TOP OF LAYER  4        0.387   0.443   0.243   0.000   0.000   0.000

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                    MONTHLY TOTALS (MM) FOR YEAR 1988
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    65.0     7.3    23.7    11.4    58.9    44.0
                                 30.3    46.9    37.4    18.4    94.9    93.5

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    159.80  132.23  114.03   62.72   36.93   25.57
                                 30.35   47.43   68.54  116.06  128.50  146.28

ACTUAL EVAPOTRANSPIRATION        63.48   18.90   10.03   18.26   29.46   25.17
                                 30.33   46.77   53.31   33.66   53.29  122.82

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   3.408   0.261   0.000   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  4                        1.794   0.643   0.000   0.000   0.000   0.000


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                    MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.106   0.008   0.000   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.108   0.019   0.000   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1989
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                     45.5    12.3    79.5    52.8    45.7    64.1
                                  37.2    58.6    40.5    64.9    40.0    25.1

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    154.96  132.43  107.96   58.67   36.86   23.70
                                 28.67   42.13   70.59  110.47  131.76  158.75

ACTUAL EVAPOTRANSPIRATION        65.38   15.11   67.48   46.71   35.21   23.70
                                 28.66   41.50   58.28   76.91   47.40   40.44

LATERAL DRAINAGE COLLECTED       0.000   0.000   0.000   0.000   0.000   0.943
  FROM LAYER  3                 28.468   4.033   6.321   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED    0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1       0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH      0.000   0.000   0.000   0.000   0.000   0.217
  LAYER  4                       2.702   1.402   1.825   0.000   0.000   0.000


-------------------------------------------------------------------------------
                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON             0.000   0.000   0.000   0.000   0.000   0.030
  TOP OF LAYER  4                 0.886   0.126   0.203   0.000   0.000   0.000

STD. DEVIATION OF DAILY           0.000   0.000   0.000   0.000   0.000   0.111
  HEAD ON TOP OF LAYER  4         0.241   0.152   0.170   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1990
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                      3.3    78.6    23.5    58.7     8.3    38.6
                                  56.2    31.0    33.2    68.4    27.6    43.2

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    156.99  119.45  115.26   58.28   37.07   25.26
                                 30.60   44.49   68.54  109.86  141.55  154.57

ACTUAL EVAPOTRANSPIRATION         4.24   72.08   16.73   37.51   27.46   18.88
                                 30.37   42.19   49.75   78.84   41.59   44.88

LATERAL DRAINAGE COLLECTED       0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                  0.000   7.587   0.000   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED    0.000   0.000   0.000   0.000   0.000   0.000
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  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  4                        0.000   1.975   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.000   0.236   0.000   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.000   0.196   0.000   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1991
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    55.7     1.6    11.5    24.9    16.7   100.7
                                 40.1    32.4    60.4    16.9    22.7    96.8

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    153.51  133.82  111.85   57.28   35.01   26.36
                                 29.26   44.29   62.55  116.26  130.43  137.73

ACTUAL EVAPOTRANSPIRATION        50.13    5.29    5.24   10.95   27.06   26.05
                                 29.26   44.27   58.20   37.75   37.61   68.51

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                  18.445  18.072   0.002   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  4                        1.657   2.693   0.024   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.574   0.562   0.000   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.511   0.405   0.000   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1992
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                                 JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                     21.0    13.4    34.4    60.2    55.1    31.7
                                  19.0    54.1    96.8    95.1   101.1    77.7

RUNOFF                             0.00    0.00    0.00    0.00    0.00    0.00
                                   0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION     138.42  123.04  106.82   57.81   35.00   24.43
                                  30.35   42.36   56.16  104.68  122.05  134.30

ACTUAL EVAPOTRANSPIRATION         48.72   11.17   43.11   35.65   34.74   24.36
                                  28.81   34.71   56.16   95.51   96.99   99.34

LATERAL DRAINAGE COLLECTED         0.000   0.000   0.000   0.000   0.000   3.266
  FROM LAYER  3                    1.942   0.000  16.616  24.008   3.659   0.000

LATERAL DRAINAGE RECIRCULATED      0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1         0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH        0.000   0.000   0.000   0.000   0.000   1.098
  LAYER  4                         1.628   0.000   2.303   2.698   1.201   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON             0.000   0.000   0.000   0.000   0.000   0.105
  TOP OF LAYER  4                 0.060   0.000   0.534   0.747   0.118   0.000

STD. DEVIATION OF DAILY           0.000   0.000   0.000   0.000   0.000   0.139
  HEAD ON TOP OF LAYER  4         0.072   0.000   0.381   0.253   0.153   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1993
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                                 JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    105.3    30.3    23.1    11.3    17.0    37.3
                                  38.5    37.2    97.6    59.5    48.4    88.9

RUNOFF                             0.00    0.00    0.00    0.00    0.00    0.00
                                   0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION     155.57  128.60  100.69   66.79   36.42   24.48
                                  30.30   47.44   65.81  109.32  127.12  143.07

ACTUAL EVAPOTRANSPIRATION        100.46   59.22   22.46   16.51   12.12   22.24
                                  28.78   37.94   65.31   84.93   55.23   78.51

LATERAL DRAINAGE COLLECTED         0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                    0.000   0.000   1.340   6.316   0.000   0.000
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LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  4                        0.000   0.000   0.325   1.619   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.000   0.000   0.043   0.197   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.000   0.000   0.125   0.204   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1994
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    16.0   100.3    20.3    28.7    16.8    24.9
                                 12.3    21.3    39.9    34.6    33.2    17.6

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    150.99  117.32  104.49   58.96   35.85   25.23
                                 30.79   45.23   61.23  113.07  121.37  168.40

ACTUAL EVAPOTRANSPIRATION        43.72   80.11   42.93   25.85   15.01   15.60
                                 19.65   23.06   27.94   45.43   36.32   22.28

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   0.000   0.000   0.000   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  4                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.000   0.000   0.000   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1995
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    74.8    11.8    61.5    68.9    62.2    59.8
                                 48.7    40.7    31.3    99.0    76.1    27.4

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    150.94  130.67  109.45   51.61   34.93   24.49
                                 27.93   49.17   63.03  102.75  124.32  134.01

ACTUAL EVAPOTRANSPIRATION        55.01   25.87   52.33   50.27   34.93   24.49
                                 27.92   39.00   48.78   68.13   97.60   43.40

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.575  17.596
  FROM LAYER  3                  27.052  22.163   1.002   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.470   2.607
  LAYER  4                        2.701   2.697   0.607   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.018   0.566
  TOP OF LAYER  4                0.842   0.690   0.032   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.053   0.378
  HEAD ON TOP OF LAYER  4        0.262   0.239   0.071   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1996
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    46.3    60.9    49.1    57.7    21.0    46.2
                                 69.5    47.6    71.5    36.3    20.1    17.1

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    152.34  123.53  107.03   54.03   34.33   25.05
                                 28.22   44.39   66.61  114.74  133.26  147.78

ACTUAL EVAPOTRANSPIRATION        55.08   36.05   49.95   53.73   31.24   17.30
                                 28.22   44.38   66.60   49.25   31.34   33.04
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LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                  10.177  25.470   4.944   2.775   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  4                        1.088   2.700   2.532   1.756   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.317   0.793   0.159   0.086   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.446   0.358   0.071   0.084   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 1997
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    37.1     2.6    16.3     8.4    52.3    22.3
                                 13.8    27.6    67.3    40.9    64.7     2.7

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    169.48  136.27  106.87   59.68   33.79   25.53
                                 29.04   44.24   68.50  112.62  139.97  156.96

ACTUAL EVAPOTRANSPIRATION        45.36    5.97    8.43    6.55   29.62   24.29
                                 24.75   29.83   57.06   15.35   89.12   10.85

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   0.000   0.000   0.000   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  4                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.000   0.000   0.000   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.000   0.000   0.000   0.000   0.000   0.000

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                       MONTHLY TOTALS (MM) FOR YEAR 1998
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                                 JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                     39.8    47.9     7.5    45.4    28.0    51.7
                                  39.0    22.8    24.5    53.4    62.6    54.6

RUNOFF                             0.00    0.00    0.00    0.00    0.00    0.00
                                   0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION     159.44  133.21  110.73   55.25   35.34   25.08
                                  27.97   46.66   69.64  109.33  131.33  153.56

ACTUAL EVAPOTRANSPIRATION         59.86   49.17    6.19   27.73   25.25   23.90
                                  27.60   36.82   35.75   59.61   62.98   69.99

LATERAL DRAINAGE COLLECTED         0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                    2.461   2.112   0.000   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED      0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1         0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH        0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  4                         1.128   1.953   0.000   0.000   0.000   0.000

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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON             0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                 0.077   0.066   0.000   0.000   0.000   0.000

STD. DEVIATION OF DAILY           0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4         0.117   0.075   0.000   0.000   0.000   0.000

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                       MONTHLY TOTALS (MM) FOR YEAR 1999
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                                 JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                     63.1    49.1    58.3    11.7    41.7    27.1
                                  14.8    55.4    23.1    44.6    26.6    70.1

RUNOFF                             0.00    0.00    0.00    0.00    0.00    0.00
                                   0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION     155.35  130.54  108.09   58.62   38.30   25.56
                                  30.72   46.15   70.77  115.53  136.83  147.38

ACTUAL EVAPOTRANSPIRATION         51.83   61.80   55.14   11.52   17.24   24.20
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                              24.20   38.08   36.93   64.22   31.41   35.31

LATERAL DRAINAGE COLLECTED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                0.000   0.000   0.000   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED  0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1     0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH    0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  4                     0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON         0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4             0.000   0.000   0.000   0.000   0.000   0.000

STD. DEVIATION OF DAILY       0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4     0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 2000
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                               JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                   23.4    31.6     8.9    44.7    54.1    33.3
                                39.3    26.0    61.2   110.3    19.8    12.9

RUNOFF                          0.00    0.00    0.00    0.00    0.00    0.00
                                0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION  148.76  143.75  116.65   62.71   35.44   24.84
                               29.57   44.81   67.28  105.93  136.61  171.63

ACTUAL EVAPOTRANSPIRATION      59.55   25.28   16.18   38.76   30.00   24.39
                               29.08   34.48   56.90   75.15   69.64   15.96

LATERAL DRAINAGE COLLECTED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                0.000   0.000   0.000   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED  0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1     0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH    0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  4                     0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON         0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4             0.000   0.000   0.000   0.000   0.000   0.000

STD. DEVIATION OF DAILY       0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4     0.000   0.000   0.000   0.000   0.000   0.000
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                     MONTHLY TOTALS (MM) FOR YEAR 2001
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
                                ------- ------- ------- ------- ------- -------

PRECIPITATION                    12.1    20.1    89.8   127.1    15.7    34.3
                                 11.6    47.2    25.4    55.1    48.6    32.7

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    163.21  139.61  110.16   58.73   36.38   26.21
                                 29.63   43.60   68.32  107.21  124.06  139.72

ACTUAL EVAPOTRANSPIRATION        12.27   38.92   45.23   51.89   36.38   26.21
                                 27.38   38.55   38.89   79.58   53.22   33.37

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   4.356  34.752
  FROM LAYER  3                  17.972   0.002   0.000   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.565   2.621
  LAYER  4                        2.693   0.028   0.000   0.000   0.000   0.000


-------------------------------------------------------------------------------
                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.136   1.117
  TOP OF LAYER  4                0.559   0.000   0.000   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.293   0.039
  HEAD ON TOP OF LAYER  4        0.403   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 2002
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
                                ------- ------- ------- ------- ------- -------

PRECIPITATION                    23.4    50.6    36.1    35.4    26.3    32.5
                                 27.8    27.7    26.4    22.5    14.1     7.7

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    147.35  123.31  109.79   62.00   38.41   26.02
                                 31.21   47.11   71.71  112.58  134.94  153.58
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ACTUAL EVAPOTRANSPIRATION        21.52   52.63   20.18   46.61   22.01   18.88
                                 29.42   36.37   28.18   29.40   12.22   10.31

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   0.000   0.000   0.000   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  4                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.000   0.000   0.000   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 2003
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    19.4    21.0    18.3    53.1    10.7    20.5
                                 66.6    47.5    24.4    64.9    31.8    31.4

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    164.31  126.84  111.80   62.27   38.17   26.00
                                 30.32   43.70   68.51  104.53  140.82  164.05

ACTUAL EVAPOTRANSPIRATION        23.01   24.33   11.99   37.62   17.09   14.87
                                 27.44   43.70   35.08   73.84   61.74   33.87

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   0.000   1.023   7.649   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  4                        0.000   0.260   2.003   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.000   0.032   0.246   0.000   0.000   0.000
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STD. DEVIATION OF DAILY            0.000    0.000    0.000    0.000    0.000    0.000
  HEAD ON TOP OF LAYER  4          0.000    0.108    0.233    0.000    0.000    0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 2004
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                                  JAN/JUL  FEB/AUG  MAR/SEP  APR/OCT  MAY/NOV  JUN/DEC
                                  -------  -------  -------  -------  -------  -------

PRECIPITATION                      23.8     23.4     15.0     46.3     21.2     37.1
                                   29.8     62.2     50.9     48.2     86.2     45.4

RUNOFF                              0.00     0.00     0.00     0.00     0.00     0.00
                                    0.00     0.00     0.00     0.00     0.00     0.00

POTENTIAL EVAPOTRANSPIRATION      151.76   131.99   109.94    60.25    35.81    25.22
                                   29.52    46.32    64.12   117.73   130.50   154.47

ACTUAL EVAPOTRANSPIRATION          12.47    35.88    11.03    12.06    34.33    24.32
                                   28.86    44.57    52.73    49.85    91.62    53.19

LATERAL DRAINAGE COLLECTED          0.000    0.000    0.000    0.000    0.000    0.000
  FROM LAYER  3                     0.000    0.000    3.038    1.818    0.411    1.530

LATERAL DRAINAGE RECIRCULATED       0.000    0.000    0.000    0.000    0.000    0.000
  FROM LAYER  3 INTO L.  1          0.000    0.000    0.000    0.000    0.000    0.000

PERCOLATION/LEAKAGE THROUGH         0.000    0.000    0.000    0.000    0.000    0.000
  LAYER  4                          0.000    0.000    1.018    0.818    0.505    0.910

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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON              0.000    0.000    0.000    0.000    0.000    0.000
  TOP OF LAYER  4                  0.000    0.000    0.098    0.057    0.013    0.048

STD. DEVIATION OF DAILY            0.000    0.000    0.000    0.000    0.000    0.000
  HEAD ON TOP OF LAYER  4          0.000    0.000    0.132    0.103    0.037    0.076

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                     MONTHLY TOTALS (MM) FOR YEAR 2005
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                                  JAN/JUL  FEB/AUG  MAR/SEP  APR/OCT  MAY/NOV  JUN/DEC
                                  -------  -------  -------  -------  -------  -------

PRECIPITATION                      40.1    134.2      7.5     20.9     10.1     41.7
                                   26.8     42.7     51.8     47.3     49.7     30.8

RUNOFF                              0.00     0.00     0.00     0.00     0.00     0.00
                                    0.00     0.00     0.00     0.00     0.00     0.00
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POTENTIAL EVAPOTRANSPIRATION    161.11  118.00  108.50   67.85   38.56   26.28
                                 30.74   47.61   67.61  116.71  145.20  168.36

ACTUAL EVAPOTRANSPIRATION        48.96  118.00   20.13   29.02   13.02   19.88
                                 30.72   45.26   45.46   78.60   48.63   30.94

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   0.000   0.000   0.000   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  4                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.000   0.000   0.000   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 2006
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    48.2    39.3    10.1    35.6    32.7    20.0
                                 24.9    26.3    27.6     6.3    17.1    14.2

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    161.52  128.47  121.29   56.31   34.34   23.61
                                 29.93   48.77   72.24  128.04  136.53  162.32

ACTUAL EVAPOTRANSPIRATION        46.66   35.04   18.35   25.76   29.67   18.28
                                 25.30   29.08   32.01    7.54   25.45    8.47

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   0.000   0.000   0.000   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  4                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
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  TOP OF LAYER  4                0.000   0.000   0.000   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 2007
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    27.8    21.3    24.5    28.1    32.2    41.7
                                 65.7    16.1    15.9    18.3    93.5    54.1

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    157.45  143.82  116.69   65.84   40.46   24.74
                                 28.96   49.45   70.08  120.13  144.10  162.22

ACTUAL EVAPOTRANSPIRATION        29.15    9.87   34.02   13.92   33.82   23.12
                                 28.80   35.92   13.14   28.45  101.46   69.11

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   6.494  11.913   0.000   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  4                        0.740   2.116   0.000   0.000   0.000   0.000

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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.202   0.371   0.000   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.365   0.328   0.000   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 2008
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                    10.2    21.5    20.8     8.0    42.6    24.4
                                 39.1    39.9    15.7    10.5    25.4    75.1

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
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                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    169.82  129.67  120.33   58.63   34.10   25.90
                                 29.03   41.81   74.59  118.80  127.97  147.51

ACTUAL EVAPOTRANSPIRATION         8.85   17.68   17.09   13.77   26.70   22.47
                                 27.72   40.13   18.33   24.09   36.63   74.01

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   0.000   0.000   0.000   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  4                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.000   0.000   0.000   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 2009
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
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PRECIPITATION                       0.9     2.9    38.3    30.3    10.5    22.8
                                   32.3    41.1    64.7    28.3    77.7    35.1

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    175.67  138.87  106.04   59.84   35.22   24.15
                                 30.41   48.12   66.29  112.88  146.04  160.68

ACTUAL EVAPOTRANSPIRATION         8.05    3.72   32.00   15.39   21.49   18.12
                                 26.50   40.13   56.13   39.52   60.12   72.45

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   0.000   0.000   0.000   0.000   0.000   0.000

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  4                        0.000   0.000   0.000   0.000   0.000   0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.000   0.000   0.000   0.000   0.000   0.000

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.000   0.000   0.000   0.000   0.000   0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 2010
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
                                ------- ------- ------- ------- ------- -------

PRECIPITATION                    14.2    24.7    67.4    31.2    27.1    38.5
                                 21.4    66.8    54.2   101.8   130.3    39.8

RUNOFF                            0.00    0.00    0.00    0.00    0.00    0.00
                                  0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION    163.26  135.87  113.65   60.50   37.05   24.00
                                 28.48   41.14   57.86  111.74  126.84  144.95

ACTUAL EVAPOTRANSPIRATION        12.33   26.94   58.92   31.84   22.87   19.82
                                 26.54   41.06   46.44   64.37  117.49  100.84

LATERAL DRAINAGE COLLECTED        0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   0.000   0.000  11.770   1.692   0.000   1.866

LATERAL DRAINAGE RECIRCULATED     0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1        0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH       0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  4                        0.000   0.000   2.187   0.798   0.000   1.260

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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                0.000   0.000   0.378   0.053   0.000   0.058

STD. DEVIATION OF DAILY          0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4        0.000   0.000   0.291   0.099   0.000   0.082

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                     MONTHLY TOTALS (MM) FOR YEAR 2011
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                                JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
                                ------- ------- ------- ------- ------- -------

PRECIPITATION                   107.4   110.6    16.4    48.5    33.4    33.2
                                 29.0    15.2    41.3    69.9   129.2    56.5
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RUNOFF                            0.00     0.00     0.00     0.00     0.00     0.00
                                  0.00     0.00     0.00     0.00     0.00     0.00

POTENTIAL EVAPOTRANSPIRATION    146.71   113.74   100.55    58.68    32.38    25.38
                                 29.30    46.42    70.18   110.13   131.77   158.52

ACTUAL EVAPOTRANSPIRATION        99.60    94.92    30.80    37.70    31.62    25.37
                                 26.91    32.45    29.38    77.15    96.33   115.18

LATERAL DRAINAGE COLLECTED        0.019    0.002    1.968    0.000    0.032    0.023
  FROM LAYER  3                   3.726    1.389    0.000    0.000    0.000    0.000

LATERAL DRAINAGE RECIRCULATED     0.000    0.000    0.000    0.000    0.000    0.000
  FROM LAYER  3 INTO L.  1        0.000    0.000    0.000    0.000    0.000    0.000

PERCOLATION/LEAKAGE THROUGH       0.089    0.028    1.295    0.000    0.160    0.130
  LAYER  4                        1.777    1.144    0.000    0.000    0.000    0.000


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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
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AVERAGE DAILY HEAD ON            0.001    0.000    0.061    0.000    0.001    0.001
  TOP OF LAYER  4                0.116    0.043    0.000    0.000    0.000    0.000

STD. DEVIATION OF DAILY          0.003    0.000    0.081    0.000    0.004    0.003
  HEAD ON TOP OF LAYER  4        0.117    0.062    0.000    0.000    0.000    0.000

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                     MONTHLY TOTALS (MM) FOR YEAR 2012
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                                JAN/JUL  FEB/AUG  MAR/SEP  APR/OCT  MAY/NOV  JUN/DEC
                                -------  -------  -------  -------  -------  -------

PRECIPITATION                    15.5     46.0     35.3     35.5     77.8     79.7
                                 45.1     52.7     42.4     19.0     34.3     27.9

RUNOFF                            0.00     0.00     0.00     0.00     0.00     0.00
                                  0.00     0.00     0.00     0.00     0.00     0.00

POTENTIAL EVAPOTRANSPIRATION    161.47   131.84   106.94    62.11    35.26    23.63
                                 29.67    43.94    65.42   107.77   135.29   156.31

ACTUAL EVAPOTRANSPIRATION        16.46    23.46    57.55    18.80    34.02    23.63
                                 29.67    43.94    58.35    47.69    26.10    44.49

LATERAL DRAINAGE COLLECTED        0.000    0.000    0.000    0.000    0.000    7.798
  FROM LAYER  3                  36.354   36.297    7.921    0.000    0.000    0.000

LATERAL DRAINAGE RECIRCULATED     0.000    0.000    0.000    0.000    0.000    0.000
  FROM LAYER  3 INTO L.  1        0.000    0.000    0.000    0.000    0.000    0.000

PERCOLATION/LEAKAGE THROUGH       0.000    0.000    0.000    0.000    0.000    0.849
  LAYER  4                        2.709    2.709    1.665    0.000    0.000    0.000


-------------------------------------------------------------------------------
                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
```

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AVERAGE DAILY HEAD ON             0.000   0.000   0.000   0.000   0.000   0.251
  TOP OF LAYER  4                 1.131   1.130   0.255   0.000   0.000   0.000

STD. DEVIATION OF DAILY           0.000   0.000   0.000   0.000   0.000   0.406
  HEAD ON TOP OF LAYER  4         0.015   0.035   0.275   0.000   0.000   0.000

********************************************************************************



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                     MONTHLY TOTALS (MM) FOR YEAR 2013
--------------------------------------------------------------------------------

                                 JAN/JUL FEB/AUG MAR/SEP APR/OCT MAY/NOV JUN/DEC
                                 ------- ------- ------- ------- ------- -------

PRECIPITATION                      5.1    53.3    26.8    10.6    30.4    74.0
                                  47.9    39.2    60.8    42.1    50.0    28.7

RUNOFF                             0.00    0.00    0.00    0.00    0.00    0.00
                                   0.00    0.00    0.00    0.00    0.00    0.00

POTENTIAL EVAPOTRANSPIRATION     167.73  139.24  121.10   58.22   35.99   24.10
                                  29.91   42.83   67.61  105.84  124.13  149.32

ACTUAL EVAPOTRANSPIRATION          2.60   27.88   50.78    7.83   16.48   24.10
                                  29.91   35.08   41.51   58.86   68.04   47.69

LATERAL DRAINAGE COLLECTED         0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3                   18.489  24.203   1.340   3.972   0.000   0.000

LATERAL DRAINAGE RECIRCULATED      0.000   0.000   0.000   0.000   0.000   0.000
  FROM LAYER  3 INTO L.  1         0.000   0.000   0.000   0.000   0.000   0.000

PERCOLATION/LEAKAGE THROUGH        0.000   0.000   0.000   0.000   0.000   0.000
  LAYER  4                         2.046   2.699   0.698   1.913   0.000   0.000

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                     MONTHLY SUMMARIES FOR DAILY HEADS (CM)
--------------------------------------------------------------------------------


AVERAGE DAILY HEAD ON             0.000   0.000   0.000   0.000   0.000   0.000
  TOP OF LAYER  4                 0.575   0.753   0.043   0.124   0.000   0.000

STD. DEVIATION OF DAILY           0.000   0.000   0.000   0.000   0.000   0.000
  HEAD ON TOP OF LAYER  4         0.395   0.231   0.087   0.104   0.000   0.000

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                   FINAL WATER STORAGE AT END OF YEAR 2013
-------------------------------------------------------------------------------

                      LAYER          (CM)          (VOL/VOL)
                      -----         ------         ---------
                        1          16.4663           0.3293
```

```
                      2          145.9999         0.0730
                      3            0.9600         0.0320
                      4           42.7000         0.4270
    TOTAL WATER IN LAYERS        206.126
    SNOW WATER                     0.000
    INTERCEPTION WATER             0.000
    TOTAL FINAL WATER            206.126
******************************************************************************


******************************************************************************
                PEAK DAILY VALUES FOR YEARS 1964 THROUGH 2013
------------------------------------------------------------------------------
                                                  (MM)       (CU. METERS)
                                               ----------    ------------
      PRECIPITATION                             98.50           985.000
      RUNOFF                                     0.000            0.0000
      DRAINAGE COLLECTED FROM LAYER  3           1.22544         12.25437
      PERCOLATION/LEAKAGE THROUGH LAYER  4       0.087420         0.87420
      AVERAGE HEAD ON TOP OF LAYER  4           11.821
      MAXIMUM HEAD ON TOP OF LAYER  4           21.139
      LOCATION OF MAXIMUM HEAD IN LAYER  3
            (DISTANCE FROM DRAIN)                5.3 METERS
      SNOW WATER                                 0.00             0.0000
      MAXIMUM VEG. SOIL WATER (VOL/VOL)                  0.4501
      MINIMUM VEG. SOIL WATER (VOL/VOL)                  0.3220

       ***  Maximum heads are computed using McEnroe's equations.  ***

            Reference:  Maximum Saturated Depth over Landfill Liner
                        by Bruce M. McEnroe, University of Kansas
                        ASCE Journal of Environmental Engineering
                        Vol. 119, No. 2, March 1993, pp. 262-270.
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            AVERAGE MONTHLY VALUES (MM) FOR YEARS 1964 THROUGH 2013
-------------------------------------------------------------------------------
                         JAN/JUL  FEB/AUG  MAR/SEP  APR/OCT  MAY/NOV  JUN/DEC
                         -------  -------  -------  -------  -------  -------
```

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  PRECIPITATION
  -------------
    TOTALS                36.56    39.32    32.49    41.30    40.44    36.58
                          37.19    44.00    46.05    52.72    51.13    45.10

    STD. DEVIATIONS       26.73    44.16    20.89    26.14    21.53    18.68
                          18.18    16.85    23.67    30.69    29.83    28.34

  RUNOFF
  ------
    TOTALS                 0.000    0.000    0.000    0.000    0.000    0.000
                           0.000    0.000    0.000    0.000    0.000    0.000

    STD. DEVIATIONS        0.000    0.000    0.000    0.000    0.000    0.000
                           0.000    0.000    0.000    0.000    0.000    0.000

  POTENTIAL EVAPOTRANSPIRATION
  ----------------------------
    TOTALS               157.283  130.688  109.721   59.103   35.980   24.737
                          29.345   44.892   66.113  110.460  131.000  152.446

    STD. DEVIATIONS        8.631    7.768    5.460    3.974    1.662    0.795
                           1.014    2.422    4.434    6.061    7.114    9.530

  ACTUAL EVAPOTRANSPIRATION
  -------------------------
    TOTALS                40.276   35.603   32.042   28.175   28.013   22.632
                          27.269   38.964   46.487   58.709   59.128   54.562

    STD. DEVIATIONS       24.859   31.225   20.504   13.960    7.669    2.926
                           3.155    5.619   13.480   24.233   26.080   30.135

  LATERAL DRAINAGE COLLECTED FROM LAYER  3
  ----------------------------------------
    TOTALS                 0.0047   0.0000   0.1045   0.0842   0.2672   4.1473
                           8.6148   7.0631   3.3494   2.2470   0.7854   0.0679

    STD. DEVIATIONS        0.0308   0.0003   0.5334   0.5956   1.0361   8.9416
                          11.3293  10.2563   5.3619   4.9010   2.9440   0.3378

  LATERAL DRAINAGE RECIRCULATED FROM LAYER  3 INTO L.  1
  ------------------------------------------------------
    TOTALS                 0.0000   0.0000   0.0000   0.0000   0.0000   0.0000
                           0.0000   0.0000   0.0000   0.0000   0.0000   0.0000

    STD. DEVIATIONS        0.0000   0.0000   0.0000   0.0000   0.0000   0.0000
                           0.0000   0.0000   0.0000   0.0000   0.0000   0.0000

  PERCOLATION/LEAKAGE THROUGH LAYER  4
  ------------------------------------
    TOTALS                 0.0130   0.0006   0.0402   0.0303   0.0492   0.5277
                           1.1469   1.0962   0.7551   0.4990   0.1865   0.0434

    STD. DEVIATIONS        0.0802   0.0040   0.2074   0.2143   0.1526   0.9248
                           1.1925   1.1851   0.9338   0.7806   0.5367   0.2177


-------------------------------------------------------------------------------
                 AVERAGES OF MONTHLY AVERAGED DAILY HEADS (CM)
-------------------------------------------------------------------------------


  DAILY AVERAGE HEAD ON TOP OF LAYER  4
  -------------------------------------
    AVERAGES               0.0001   0.0000   0.0033   0.0027   0.0083   0.1334
                           0.2681   0.2198   0.1077   0.0699   0.0253   0.0021

    STD. DEVIATIONS        0.0010   0.0000   0.0166   0.0192   0.0322   0.2875
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                              0.3525   0.3192   0.1724   0.1525   0.0947   0.0105

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     AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1964 THROUGH 2013
-------------------------------------------------------------------------------

                                             MM               CU. METERS     PERCENT
                                   --------------------     ----------   ---------
 PRECIPITATION                       502.88    ( 110.147)       5028.8    100.00

 RUNOFF                                0.000   (  0.0000)          0.00     0.000

 POTENTIAL EVAPOTRANSPIRATION       1051.770   ( 30.6287)      10517.70

 ACTUAL EVAPOTRANSPIRATION           471.859   ( 95.2180)       4718.59    93.831

 LATERAL DRAINAGE COLLECTED           26.73558 ( 27.47737)        267.356    5.31645
   FROM LAYER  3

 DRAINAGE RECIRCULATED                0.00000 (  0.00000)          0.000   0.00000
   FROM LAYER  3 INTO L.  1

 PERCOLATION/LEAKAGE THROUGH          4.38829 (  3.59500)         43.883    0.87262
   LAYER  4

 AVERAGE HEAD ON TOP                  0.701   (    0.721)
   OF LAYER  4

 CHANGE IN WATER STORAGE             -0.099   (  0.7383)         -0.99    -0.020

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Appendix B

Pond Water Balance Model

Scenario 1

Pond Dimensions

Top Length	L	290
Top Width	W	160
max depth	h	1.50
Area	m2	46400

BPEM Pond Surface (m2)

36639 *50 yr*
42799 *5 yr*

Vol Reqd (m3)

66603 *50yr volume*

	Total Inflow m3	Leachate Pond Catchment Area (m2)	Rainfall (mm/month)	Pan Evaporation (mm/month)	Pond Evaporation (mm/month)	Start Month + Rainfall (m3)	Calc start month + rainfall	Calc Pond Depth m	Calc Evaporation area m^2	Evaporation (m3)	End Month (m3)	Max Depth at End Month (m)	Above or Below Freeboard (0.5 m)	Spillage (m3)
Start														
Jan-64	27	46400	1.5	197.8	158.24	70	69.60	0.00	42435	6715	0	0.00	Empty	0
Feb-64	1533	46400	84.2	167.2	133.76	5440	5439.98	0.12	42749	5718	0	0.00	Empty	0
Mar-64	63	46400	30.9	134.8	107.84	1497	1497.07	0.03	42518	4585	0	0.00	Empty	0
Apr-64	3818	46400	89.5	85.6	68.48	7971	7970.92	0.18	42897	2938	5033	0.40	Below	0
May-64	2032	46400	43.2	58	46.40	9069	9069.35	0.20	42962	1993	7076	0.40	Below	0
Jun-64	4467	46400	18.4	40	32.00	12397	12396.95	0.28	43158	1381	11016	0.60	Below	0
Jul-64	8170	46400	65.5	47.2	37.76	22225	22225.43	0.50	43738	1652	20574	0.60	Below	0
Aug-64	5319	46400	37	63.8	51.04	27610	27609.72	0.62	44057	2249	25361	0.60	Below	0
Sep-64	246	46400	66.7	83	66.40	28702	28701.53	0.65	44122	2930	25772	0.60	Below	0
Oct-64	8249	46400	94.4	119.6	95.68	38402	38401.50	0.86	44700	4277	34125	0.80	Below	0
Nov-64	2662	46400	54.2	147.8	118.24	39302	39301.62	0.89	44754	5292	34010	0.80	Below	0
Dec-64	1474	46400	67.5	181.6	145.28	38616	38616.39	0.87	44713	6496	32121	0.80	Below	0
Jan-65	35	46400	9.8	197.8	158.24	32610	32610.26	0.73	44354	7019	25592	0.60	Below	0
Feb-65	1	46400	0.9	162	129.60	25634	25634.28	0.58	43940	5695	19940	0.60	Below	0
Mar-65	2	46400	2.4	134.8	107.84	20053	20053.47	0.45	43609	4703	15351	0.60	Below	0
Apr-65	2159	46400	77.6	85.6	68.48	21110	21110.27	0.48	43672	2991	18120	0.60	Below	0
May-65	3108	46400	48.3	58	46.40	23469	23468.88	0.53	43811	2033	21436	0.60	Below	0
Jun-65	3789	46400	28.1	40	32.00	26529	26528.65	0.60	43993	1408	25121	0.60	Below	0
Jul-65	5112	46400	66.3	47.2	37.76	33309	33309.08	0.75	44396	1676	31633	0.80	Below	0
Aug-65	16987	46400	63	63.8	51.04	51543	51542.76	1.16	45489	2322	49221	1.40	Above	0
Sep-65	3365	46400	21.9	83	66.40	53602	53602.33	1.21	45613	3029	50574	1.40	Above	0
Oct-65	12	46400	12.1	119.6	95.68	51147	51147.18	1.15	45465	4350	46797	1.10	Above	0
Nov-65	59	46400	58.8	147.8	118.24	49584	49584.22	1.12	45371	5365	44220	1.00	Below	0
Dec-65	431	46400	55.1	181.6	145.28	47207	47207.13	1.06	45228	6571	40636	1.00	Below	0
Jan-66	28	46400	28.3	197.8	158.24	41978	41977.85	0.95	44914	7107	34871	0.80	Below	0
Feb-66	2348	46400	56	162	129.60	39818	39817.55	0.90	44785	5804	34013	0.80	Below	0
Mar-66	1456	46400	66.7	134.8	107.84	38564	38564.37	0.87	44710	4821	33743	0.80	Below	0
Apr-66	756	46400	50.2	85.6	68.48	36828	36828.07	0.83	44606	3055	33773	0.80	Below	0
May-66	2571	46400	27	58	46.40	37598	37597.65	0.85	44652	2072	35526	1.00	Below	0
Jun-66	170	46400	18.3	40	32.00	36545	36544.74	0.82	44589	1427	35118	0.80	Below	0
Jul-66	573	46400	38.5	47.2	37.76	37477	37477.43	0.84	44645	1686	35792	1.00	Below	0
Aug-66	3603	46400	62.9	63.8	51.04	42314	42313.68	0.95	44934	2293	40020	1.00	Below	0
Sep-66	7487	46400	80.5	83	66.40	51242	51242.16	1.15	45471	3019	48223	1.10	Above	0
Oct-66	4764	46400	71	119.6	95.68	56281	56281.16	1.27	45775	4380	51901	1.40	Above	0
Nov-66	437	46400	25.4	147.8	118.24	53517	53517.11	1.21	45608	5393	48124	1.10	Above	0
Dec-66	872	46400	73.8	181.6	145.28	52420	52420.31	1.18	45542	6616	45804	1.10	Above	0
Jan-67	24	46400	23.5	197.8	158.24	46919	46918.81	1.06	45210	7154	39765	1.00	Below	0
Feb-67	3	46400	3.2	162	129.60	39916	39916.38	0.90	44791	5805	34112	0.80	Below	0
Mar-67	11	46400	11.4	134.8	107.84	34652	34651.88	0.78	44476	4796	29856	0.80	Below	0
Apr-67	9	46400	9.1	85.6	68.48	30287	30286.92	0.68	44216	3028	27259	0.80	Below	0
May-67	379	46400	34.4	58	46.40	29234	29233.83	0.66	44153	2049	27185	0.80	Below	0
Jun-67	1556	46400	27.5	40	32.00	30017	30017.24	0.68	44200	1414	28603	0.80	Below	0
Jul-67	202	46400	20.9	47.2	37.76	29774	29774.38	0.67	44186	1668	28106	0.80	Below	0
Aug-67	301	46400	55.4	63.8	51.04	30977	30977.07	0.70	44257	2259	28718	0.80	Below	0
Sep-67	577	46400	44.5	83	66.40	31360	31359.94	0.71	44280	2940	28420	0.80	Below	0
Oct-67	482	46400	14.2	119.6	95.68	29561	29560.92	0.67	44173	4226	25334	0.60	Below	0
Nov-67	4	46400	3.7	147.8	118.24	25511	25510.62	0.57	43932	5195	20316	0.60	Below	0
Dec-67	20	46400	19.6	181.6	145.28	21245	21245.10	0.48	43680	6346	14899	0.60	Below	0
Jan-68	1620	46400	55	197.8	158.24	19072	19071.74	0.43	43551	6892	12180	0.60	Below	0
Feb-68	419	46400	6.3	167.2	133.76	12891	12891.24	0.29	43187	5777	7115	0.40	Below	0
Mar-68	35	46400	15	134.8	107.84	7846	7845.77	0.18	42890	4625	3220	0.40	Below	0
Apr-68	106	46400	97.4	85.6	68.48	7846	7846.02	0.18	42890	2937	4909	0.40	Below	0
May-68	11847	46400	59.8	58	46.40	19530	19530.43	0.44	43578	2022	17508	0.60	Below	0
Jun-68	12632	46400	38.9	40	32.00	31945	31945.50	0.72	44315	1418	30527	0.80	Below	0
Jul-68	10629	46400	30.2	47.2	37.76	42558	42557.61	0.96	44949	1697	40860	1.00	Below	0
Aug-68	2943	46400	36.4	63.8	51.04	45492	45492.46	1.02	45125	2303	43189	1.00	Below	0
Sep-68	10	46400	8	83	66.40	43570	43570.05	0.98	45009	2989	40581	1.00	Below	0
Oct-68	31	46400	31.3	119.6	95.68	42065	42065.04	0.95	44919	4298	37767	1.00	Below	0
Nov-68	39	46400	38.5	147.8	118.24	39592	39592.07	0.89	44771	5294	34298	0.80	Below	0
Dec-68	792	46400	53.3	181.6	145.28	37563	37563.21	0.85	44650	6487	31076	0.80	Below	0
Jan-69	35	46400	8	197.8	158.24	31483	31482.83	0.71	44287	7008	24475	0.60	Below	0
Feb-69	1012	46400	92.7	162	129.60	29788	29787.72	0.67	44186	5727	24061	0.60	Below	0
Mar-69	221	46400	17.8	134.8	107.84	25108	25108.13	0.57	43908	4735	20373	0.60	Below	0
Apr-69	22	46400	21.5	85.6	68.48	21392	21392.14	0.48	43688	2992	18400	0.60	Below	0
May-69	1457	46400	71.5	58	46.40	23175	23175.30	0.52	43794	2032	21143	0.60	Below	0
Jun-69	3421	46400	4.1	40	32.00	24755	24754.65	0.56	43887	1404	23350	0.60	Below	0
Jul-69	185	46400	47.5	47.2	37.76	25739	25739.21	0.58	43946	1659	24080	0.60	Below	0
Aug-69	1302	46400	41.1	63.8	51.04	27289	27288.72	0.61	44038	2248	25041	0.60	Below	0
Sep-69	936	46400	40.3	83	66.40	27847	27847.35	0.63	44071	2926	24921	0.60	Below	0
Oct-69	291	46400	21.2	119.6	95.68	26196	26196.14	0.59	43973	4207	21989	0.60	Below	0
Nov-69	653	46400	40.6	147.8	118.24	24526	24525.57	0.55	43874	5188	19338	0.60	Below	0
Dec-69	32	46400	31.4	180.8	144.64	20827	20827.15	0.47	43655	6314	14513	0.60	Below	0
Jan-70	2700	46400	86.1	214.6	171.68	21207	21207.46	0.48	43677	7499	13709	0.60	Below	0
Feb-70	193	46400	5.5	210.8	168.64	14157	14156.95	0.32	43261	7296	6861	0.40	Below	0
Mar-70	1647	46400	79.6	157.6	126.08	12202	12201.59	0.27	43146	5440	6762	0.40	Below	0
Apr-70	2093	46400	62.5	98.4	78.72	11755	11754.86	0.26	43120	3394	8360	0.40	Below	0
May-70	7243	46400	52.8	50.4	40.32	18053	18052.90	0.41	43491	1754	16299	0.60	Below	0
Jun-70	6314	46400	33.7	35.6	28.48	24177	24177.12	0.54	43853	1249	22928	0.60	Below	0
Jul-70	2851	46400	21.3	53	42.40	26767	26767.45	0.60	44007	1866	24902	0.60	Below	0
Aug-70	970	46400	59.3	63.6	50.88	28623	28622.85	0.64	44117	2245	26378	0.60	Below	0
Sep-70	1228	46400	42.4	80.4	64.32	29574	29573.58	0.67	44174	2841	26732	0.80	Below	0
Oct-70	28	46400	24.1	134.2	107.36	27879	27878.55	0.63	44073	4732	23147	0.60	Below	0
Nov-70	3551	46400	89.6	166.8	133.44	30856	30855.71	0.70	44250	5905	24951	0.60	Below	0
Dec-70	2914	46400	86.2	214	171.20	31865	31864.66	0.72	44310	7586	24279	0.60	Below	0
Jan-71	491	46400	54.2	236.8	189.44	27285	27284.91	0.61	44038	8342	18942	0.60	Below	0
Feb-71	3047	46400	85.7	177.8	142.24	25966	25965.91	0.58	43959	6253	19713	0.60	Below	0
Mar-71	261	46400	26.3	159	127.20	21195	21194.81	0.48	43677	5556	15639	0.60	Below	0
Apr-71	39	46400	38.7	102.4	81.92	17474	17473.52	0.39	43457	3560	13914	0.60	Below	0
May-71	44	46400	43.7	53.8	43.04	15985	15984.92	0.36	43369	1867	14118	0.60	Below	0
Jun-71	1849	46400	46.8	40.4	32.32	18139	18138.86	0.41	43496	1406	16733	0.60	Below	0
Jul-71	2540	46400	25.6	39.4	31.52	20461	20461.06	0.46	43633	1375	19086	0.60	Below	0
Aug-71	111	46400	23.7	62	49.60	20296	20296.04	0.46	43623	2164	18132	0.60	Below	0
Sep-71	35	46400	30	82.2	65.76	19559	19558.97	0.44	43580	2866	16693	0.60	Below	0
Oct-71	767	46400	57.4	130	104.00	20123	20123.47	0.45	43613	4536	15588	0.60	Below	0
Nov-71	5057	46400	94	139.2	111.36	25006	25005.84	0.56	43902	4889	20117	0.60	Below	0
Dec-71	1600	46400	64.8	211	168.80	24723	24723.09	0.56	43886	7408	17315	0.60	Below	0
Jan-72	537	46400	28.8	192.6	154.08	19189	19188.99	0.43	43558	6711	12478	0.60	Below	0
Feb-72	4752	46400	126.9	194.4	155.52	23118	23117.72	0.52	43790	6810	16307	0.60	Below	0

Mar-72	3762	46400	30.1	146.8	117.44	21466	21466.36	0.48	43693	5131	16335	0.60	Below	0
Apr-72	102	46400	36.9	89.6	71.68	18149	18149.33	0.41	43497	3118	15031	0.60	Below	0
May-72	103	46400	27.2	53.4	42.72	16397	16396.99	0.37	43393	1854	14543	0.60	Below	0
Jun-72	215	46400	11.2	43	34.40	15278	15277.72	0.34	43327	1490	13787	0.60	Below	0
Jul-72	19	46400	18.2	55.2	44.16	14651	14650.72	0.33	43290	1912	12739	0.60	Below	0
Aug-72	40	46400	30.6	70.6	56.48	14199	14199.10	0.32	43264	2444	11756	0.60	Below	0
Sep-72	11	46400	10.9	116.6	93.28	12272	12272.23	0.28	43150	4025	8247	0.40	Below	0
Oct-72	241	46400	37.4	133.2	106.56	10223	10223.17	0.23	43030	4585	5638	0.40	Below	0
Nov-72	173	46400	35.7	150.8	120.64	7468	7467.63	0.17	42868	5172	2296	0.40	Below	0
Dec-72	18	46400	1.4	239.8	191.84	2379	2379.05	0.05	42570	8167	0	0.00	Empty	0
Jan-73	52	46400	51.7	222.8	178.24	2451	2450.58	0.06	42574	7588	0	0.00	Empty	0
Feb-73	10009	46400	232.1	155	124.00	20779	20778.93	0.47	43652	5413	15366	0.60	Below	0
Mar-73	5816	46400	47.6	107.6	86.08	23391	23390.56	0.53	43807	3771	19620	0.60	Below	0
Apr-73	1574	46400	17.8	91.6	73.28	22020	22019.51	0.50	43725	3204	18815	0.60	Below	0
May-73	41	46400	41.4	58.2	46.56	20778	20777.67	0.47	43652	2032	18745	0.60	Below	0
Jun-73	3570	46400	59.2	39.8	31.84	25062	25061.69	0.56	43906	1398	23664	0.60	Below	0
Jul-73	8338	46400	33	40.6	32.48	33533	33532.89	0.76	44409	1442	32090	0.80	Below	0
Aug-73	2614	46400	46.6	52.2	41.76	36867	36866.92	0.83	44608	1863	35004	0.80	Below	0
Sep-73	149	46400	33.7	94	75.20	36717	36716.51	0.83	44599	3354	33363	0.80	Below	0
Oct-73	138	46400	79	111.6	89.28	37167	37166.61	0.84	44626	3984	33182	0.80	Below	0
Nov-73	164	46400	50.6	138.6	110.88	35694	35693.82	0.80	44538	4938	30755	0.80	Below	0
Dec-73	456	46400	50.9	198.2	158.56	33573	33572.80	0.76	44412	7042	26531	0.60	Below	0
Jan-74	1888	46400	61.8	221.8	177.44	31287	31286.65	0.70	44276	7856	23430	0.60	Below	0
Feb-74	55	46400	19	162	129.60	24367	24366.92	0.55	43864	5685	18682	0.60	Below	0
Mar-74	49	46400	48.8	141.8	113.44	20995	20995.20	0.47	43665	4953	16042	0.60	Below	0
Apr-74	1059	46400	93.1	59.8	47.84	21421	21421.03	0.48	43690	2090	19331	0.60	Below	0
May-74	10706	46400	88.7	43.4	34.72	34153	34153.00	0.77	44446	1543	32610	0.80	Below	0
Jun-74	12766	46400	14.6	36.4	29.12	46053	46053.49	1.04	45158	1315	44738	1.10	Above	0
Jul-74	11423	46400	68.5	50.8	40.64	59340	59339.81	1.34	45960	1868	57472	1.40	Above	0
Aug-74	7550	46400	70.7	58.4	46.72	68303	68302.96	1.54	46503	2173	66130	1.50	Above	0
Sep-74	4889	46400	40.5	73	58.40	72899	72898.74	1.64	46783	2732	66603	1.60	Above	3564
Oct-74	529	46400	56.1	99.2	79.36	69735	69735.17	1.57	46591	3697	66038	1.50	Above	0
Nov-74	42	46400	39.6	137.4	109.92	67917	67917.11	1.53	46480	5109	62808	1.50	Above	0
Dec-74	28	46400	27.8	171.8	137.44	64126	64125.76	1.44	46250	6357	57769	1.40	Above	0
Jan-75	23	46400	23.2	187	149.60	58869	58868.90	1.33	45931	6871	51998	1.40	Above	0
Feb-75	9	46400	8.8	176.2	140.96	52415	52414.74	1.18	45541	6419	45995	1.10	Above	0
Mar-75	653	46400	36.8	141.8	113.44	48355	48355.40	1.09	45297	5138	43217	1.00	Below	0
Apr-75	57	46400	16.3	83.4	66.72	44030	44029.84	0.99	45037	3005	41025	1.00	Below	0
May-75	72	46400	36.1	69.2	55.36	42772	42772.03	0.96	44962	2489	40283	1.00	Below	0
Jun-75	566	46400	31.3	39.2	31.36	42301	42300.93	0.95	44933	1409	40892	1.00	Below	0
Jul-75	94	46400	32.1	68.4	54.72	42476	42475.56	0.96	44944	2459	40016	1.00	Below	0
Aug-75	3164	46400	79.5	54.6	43.68	46869	46869.37	1.06	45208	1975	44895	1.10	Above	0
Sep-75	9217	46400	85.5	81.6	65.28	58079	58079.31	1.31	45883	2995	55084	1.40	Above	0
Oct-75	10066	46400	146	99.4	79.52	71925	71924.54	1.62	46724	3715	66603	1.60	Above	1606
Nov-75	7270	46400	46.7	145.2	116.16	76040	76039.63	1.71	46975	5457	66603	1.60	Above	3980
Dec-75	75	46400	41.2	186.4	149.12	68589	68589.25	1.54	46521	6937	61652	1.40	Above	0
Jan-76	6	46400	6.2	214.6	171.68	61946	61945.95	1.40	46117	7917	54029	1.40	Above	0
Feb-76	13	46400	13.4	180.8	144.64	54664	54663.68	1.23	45677	6607	48057	1.10	Above	0
Mar-76	374	46400	36.1	144.8	115.84	50106	50106.25	1.13	45402	5259	44847	1.10	Above	0
Apr-76	6	46400	6.3	104	83.20	45145	45145.48	1.02	45104	3753	41393	1.00	Below	0
May-76	16	46400	15.9	71.8	57.44	42146	42146.49	0.95	44924	2580	39566	1.00	Below	0
Jun-76	417	46400	30.2	42.8	34.24	41384	41383.85	0.93	44878	1537	39847	1.00	Below	0
Jul-76	82	46400	11.9	49.4	39.52	40481	40481.35	0.91	44824	1771	38710	1.00	Below	0
Aug-76	1437	46400	56.3	67	53.60	42759	42759.09	0.96	44961	2410	40349	1.00	Below	0
Sep-76	2196	46400	97.5	85.6	68.48	47069	47068.70	1.06	45219	3097	43972	1.00	Below	0
Oct-76	8288	46400	82.4	106	84.80	56083	56083.03	1.26	45763	3881	52202	1.40	Above	0
Nov-76	1995	46400	47.9	135.6	108.48	56420	56419.83	1.27	45783	4967	51453	1.40	Above	0
Dec-76	40	46400	39.4	205.6	164.48	53322	53321.64	1.20	45596	7500	45822	1.10	Above	0
Jan-77	585	46400	45.1	200	160.00	48499	48499.38	1.09	45305	7249	41250	1.00	Below	0
Feb-77	24	46400	9.8	169.4	135.52	41729	41729.03	0.94	44899	6085	35644	1.00	Below	0
Mar-77	13	46400	12.7	141.6	113.28	36246	36246.29	0.82	44571	5049	31197	0.80	Below	0
Apr-77	3655	46400	72.8	73	58.40	38231	38230.62	0.86	44690	2610	35621	1.00	Below	0
May-77	664	46400	42.6	59.2	47.36	38262	38261.67	0.86	44692	2117	36145	1.00	Below	0
Jun-77	6670	46400	75.2	37	29.60	46304	46304.26	1.04	45174	1337	44967	1.10	Above	0
Jul-77	12086	46400	32.9	43.4	34.72	58580	58579.59	1.32	45914	1594	56985	1.40	Above	0
Aug-77	2254	46400	17.6	86.6	69.28	60056	60055.73	1.35	46003	3187	56869	1.40	Above	0
Sep-77	4248	46400	67.1	78.4	62.72	64230	64229.83	1.45	46256	2901	61329	1.40	Above	0
Oct-77	1345	46400	22.3	141.4	113.12	63709	63708.68	1.43	46224	5229	58480	1.40	Above	0
Nov-77	69	46400	41.4	159.8	127.84	60469	60469.30	1.36	46028	5884	54585	1.40	Above	0
Dec-77	447	46400	14.7	192.4	153.92	55715	55714.62	1.25	45740	7040	48674	1.10	Above	0
Jan-78	46	46400	45.5	183.8	147.04	50831	50830.97	1.14	45446	6682	44149	1.00	Below	0
Feb-78	809	46400	18.2	157.4	125.92	45802	45802.32	1.03	45143	5684	40118	1.00	Below	0
Mar-78	43	46400	41.4	114.2	91.36	42082	42081.98	0.95	44920	4104	37978	1.00	Below	0
Apr-78	2432	46400	53.8	72.4	57.92	42907	42906.52	0.97	44970	2605	40302	1.00	Below	0
May-78	1720	46400	53.7	65.8	52.64	44513	44513.41	1.00	45066	2372	42141	1.00	Below	0
Jun-78	1388	46400	32	34	27.20	45014	45014.25	1.01	45096	1227	43788	1.00	Below	0
Jul-78	8349	46400	64.5	49	39.20	55130	55129.83	1.24	45705	1792	53338	1.40	Above	0
Aug-78	13642	46400	85.9	53.6	42.88	70966	70965.85	1.60	46665	2001	66603	1.60	Above	2362
Sep-78	6754	46400	43.7	80.2	64.16	75385	75385.12	1.70	46935	3011	66603	1.60	Above	5771
Oct-78	1224	46400	50.1	130.8	104.64	70152	70152.05	1.58	46616	4878	65274	1.50	Above	0
Nov-78	4004	46400	103.8	138.6	110.88	74095	74094.87	1.67	46856	5195	66603	1.60	Above	2296
Dec-78	1637	46400	76.3	155.4	124.32	71780	71780.46	1.62	46715	5808	65973	1.50	Above	0
Jan-79	80	46400	44.6	207.8	166.24	68123	68122.59	1.53	46492	7729	60394	1.40	Above	0
Feb-79	108	46400	51.2	157	125.60	62878	62877.52	1.42	46174	5799	57078	1.40	Above	0
Mar-79	430	46400	28.1	142.4	113.92	58812	58812.11	1.32	45928	5232	53580	1.40	Above	0
Apr-79	24	46400	24.4	82	65.60	54737	54736.60	1.23	45681	2997	51740	1.40	Above	0
May-79	2216	46400	63.6	54.8	43.84	56907	56906.87	1.28	45812	2008	54898	1.40	Above	0
Jun-79	24	46400	17.8	38.8	31.04	55749	55748.59	1.26	45742	1420	54329	1.40	Above	0
Jul-79	210	46400	9.1	53	42.40	54961	54961.07	1.24	45695	1937	53024	1.40	Above	0
Aug-79	243	46400	58.2	56.6	45.28	55967	55967.12	1.26	45756	2072	53895	1.40	Above	0
Sep-79	1512	46400	81.4	84.2	67.36	59185	59184.65	1.33	45950	3095	56089	1.40	Above	0
Oct-79	4472	46400	61	106.8	85.44	63391	63391.36	1.43	46205	3948	59444	1.40	Above	0
Nov-79	140	46400	31.4	140.8	112.64	61040	61040.39	1.37	46062	5188	55852	1.40	Above	0
Dec-79	14	46400	14.3	205.8	164.64	56530	56529.74	1.27	45790	7539	48991	1.40	Above	0
Jan-80	571	46400	35.9	193	154.40	51228	51227.83	1.15	45470	7021	44207	1.00	Below	0
Feb-80	35	46400	21.9	186.2	148.96	45259	45258.51	1.02	45111	6720	38539	1.00	Below	0
Mar-80	8	46400	8.3	141.8	113.44	38932	38932.23	0.88	44732	5074	33858	0.80	Below	0
Apr-80	880	46400	56.2	106.8	85.44	37345	37345.19	0.84	44637	3814	33531	0.80	Below	0
May-80	1603	46400	36	61.8	49.44	36805	36804.98	0.83	44605	2205	34600	0.80	Below	0
Jun-80	613	46400	41.4	38.4	30.72	37134	37133.98	0.84	44624	1371	35763	1.00	Below	0
Jul-80	5599	46400	24.1	44.2	35.36	42481	42480.75	0.96	44944	1589	40892	1.00	Below	0
Aug-80	416	46400	31.7	82.4	65.92	42779	42778.62	0.96	44962	2964	39815	1.00	Below	0
Sep-80	21	46400	20.9	116.8	93.44	40805	40805.38	0.92	44844	4190	36615	1.00	Below	0
Oct-80	1527	46400	92.5	120.4	96.32	42434	42434.32	0.96	44941	4329	38106	1.00	Below	0
Nov-80	194	46400	31.8	159	127.20	39775	39774.82	0.90	44782	5696	34079	0.80	Below	0
Dec-80	41	46400	41.4	210.2	168.16	36041	36040.89	0.81	44559	7493	28548	0.80	Below	0
Jan-81	166	46400	47	216.6	173.28	30895	30894.79	0.70	44252	7668	23227	0.60	Below	0
Feb-81	672	46400	28.5	172	137.60	25222	25221.53	0.57	43915	6043	19179	0.60	Below	0
Mar-81	35	46400	34.6	133.2	106.56	20819	20818.84	0.47	43654	4652	16167	0.60	Below	0
Apr-81	12	46400	11.9	99	79.20	16731	16731.09	0.38	43413	3438	13293	0.60	Below	0
May-81	840	46400	59.1	53.2	42.56	16876	16875.52	0.38	43421	1848	15028	0.60	Below	0
Jun-81	4058	46400	48	44.8	35.84	21312	21312.21	0.48	43684	1566	19747	0.60	Below	0

Jul-81	10608	46400	61.5	51.2	40.96	33208	33207.97	0.75	44390	1818	31390	0.80	Below	0
Aug-81	9221	46400	51.9	66.6	53.28	43019	43018.64	0.97	44976	2396	40622	1.00	Below	0
Sep-81	555	46400	20	93.2	74.56	42106	42105.58	0.95	44922	3349	38756	1.00	Below	0
Oct-81	1012	46400	64.9	136	108.80	42779	42779.27	0.96	44962	4892	37887	1.00	Below	0
Nov-81	104	46400	50.8	138.2	110.56	40348	40348.19	0.91	44816	4955	35393	0.80	Below	0
Dec-81	16	46400	16.2	189.8	151.84	36161	36161.16	0.81	44566	6767	29394	0.80	Below	0
Jan-82	31	46400	31.4	224.2	179.36	30883	30882.60	0.70	44251	7937	22946	0.60	Below	0
Feb-82	6	46400	5.7	182	145.60	23216	23215.83	0.52	43796	6377	16839	0.60	Below	0
Mar-82	34	46400	34.4	135.4	108.32	18470	18469.65	0.42	43516	4714	13756	0.60	Below	0
Apr-82	381	46400	31.6	96.4	77.12	15603	15603.41	0.35	43346	3343	12261	0.60	Below	0
May-82	851	46400	36.9	69.4	55.52	14823	14823.40	0.33	43300	2404	12419	0.60	Below	0
Jun-82	1370	46400	31.4	40.4	32.32	15246	15246.25	0.34	43325	1400	13846	0.60	Below	0
Jul-82	251	46400	11.5	42	33.60	14630	14630.22	0.33	43289	1455	13176	0.60	Below	0
Aug-82	16	46400	15.5	82	65.60	13910	13910.41	0.31	43247	2837	11073	0.60	Below	0
Sep-82	36	46400	35.8	100	80.00	12770	12770.35	0.29	43180	3454	9316	0.60	Below	0
Oct-82	40	46400	40	137	109.60	11212	11211.99	0.25	43088	4722	6490	0.40	Below	0
Nov-82	6	46400	5.9	209.2	167.36	6769	6769.22	0.15	42827	7168	0	0.00	Empty	0
Dec-82	1568	46400	57.3	189.2	151.36	4227	4227.12	0.10	42678	6460	0	0.00	Empty	0
Jan-83	27	46400	20.9	213.4	170.72	997	996.79	0.02	42489	7254	0	0.00	Empty	0
Feb-83	5	46400	4.6	207.2	165.76	218	218.04	0.00	42444	7035	0	0.00	Empty	0
Mar-83	1180	46400	41.4	136	108.80	3101	3101.16	0.07	42612	4636	0	0.00	Empty	0
Apr-83	365	46400	47	78.4	62.72	2546	2545.79	0.06	42580	2671	0	0.00	Empty	0
May-83	1510	46400	67.7	51.2	40.96	4651	4651.43	0.10	42703	1749	2902	0.40	Below	0
Jun-83	1545	46400	29.4	35.2	28.16	5811	5811.24	0.13	42771	1204	4607	0.40	Below	0
Jul-83	7070	46400	50.4	40.8	32.64	14015	14015.34	0.32	43253	1412	12604	0.60	Below	0
Aug-83	3043	46400	45.4	59.2	47.36	17753	17753.36	0.40	43473	2059	15694	0.60	Below	0
Sep-83	7197	46400	72.2	77.6	62.08	26242	26241.70	0.59	43976	2730	23512	0.60	Below	0
Oct-83	7036	46400	99.2	93	74.40	35150	35150.38	0.79	44506	3311	31839	0.80	Below	0
Nov-83	3279	46400	67.6	121.4	97.12	38255	38254.90	0.86	44691	4340	33914	0.80	Below	0
Dec-83	1255	46400	13.1	177	141.60	35777	35777.44	0.81	44543	6307	29470	0.80	Below	0
Jan-84	53	46400	43.3	182	145.60	31533	31532.62	0.71	44290	6449	25084	0.60	Below	0
Feb-84	12	46400	12.3	178	142.40	25667	25666.99	0.58	43942	6257	19410	0.60	Below	0
Mar-84	550	46400	53.7	135	108.00	22452	22451.78	0.51	43751	4725	17727	0.60	Below	0
Apr-84	1542	46400	47.1	80.8	64.64	21455	21454.55	0.48	43692	2824	18630	0.60	Below	0
May-84	970	46400	12.7	62.4	49.92	20189	20189.35	0.45	43617	2177	18012	0.60	Below	0
Jun-84	22	46400	13.2	44	35.20	18646	18646.20	0.42	43526	1532	17114	0.60	Below	0
Jul-84	77	46400	33.4	39.6	31.68	18741	18740.70	0.42	43532	1379	17362	0.60	Below	0
Aug-84	2195	46400	62.8	66.2	52.96	22471	22470.85	0.51	43752	2317	20154	0.60	Below	0
Sep-84	3320	46400	77	66.8	53.44	27046	27046.10	0.61	44023	2353	24693	0.60	Below	0
Oct-84	3974	46400	38.1	128.8	103.04	30435	30434.87	0.69	44225	4557	25878	0.60	Below	0
Nov-84	73	46400	37.5	145	116.00	27691	27690.55	0.62	44062	5111	22579	0.60	Below	0
Dec-84	31	46400	30.8	173.2	138.56	24039	24039.31	0.54	43845	6075	17964	0.60	Below	0
Jan-85	9	46400	9.2	198	158.40	18400	18400.22	0.41	43511	6892	11508	0.60	Below	0
Feb-85	5	46400	4.6	163	130.40	11726	11726.04	0.26	43118	5623	6103	0.40	Below	0
Mar-85	1282	46400	55.8	135	108.00	9975	9974.77	0.22	43015	4646	5329	0.40	Below	0
Apr-85	244	46400	38.1	91.2	72.96	7341	7340.93	0.17	42861	3127	4214	0.40	Below	0
May-85	35	46400	35.4	59.2	47.36	5892	5891.79	0.13	42776	2026	3866	0.40	Below	0
Jun-85	780	46400	37.3	41.6	33.28	6377	6376.80	0.14	42804	1425	4952	0.40	Below	0
Jul-85	638	46400	34.1	49.6	39.68	7173	7172.91	0.16	42851	1700	5473	0.40	Below	0
Aug-85	5964	46400	61.4	57.6	46.08	14285	14285.10	0.32	43269	1994	12291	0.60	Below	0
Sep-85	2347	46400	25.8	72.2	57.76	15835	15835.09	0.36	43360	2504	13331	0.60	Below	0
Oct-85	444	46400	59.8	119.4	95.52	16549	16549.19	0.37	43402	4146	12403	0.60	Below	0
Nov-85	1532	46400	60.1	127.4	101.92	16724	16723.96	0.38	43412	4425	12299	0.60	Below	0
Dec-85	4732	46400	117.7	141	112.80	22492	22492.43	0.51	43753	4935	17557	0.60	Below	0
Jan-86	552	46400	18.2	182.6	146.08	18954	18953.57	0.43	43544	6361	12593	0.60	Below	0
Feb-86	14	46400	13.8	171.4	137.12	13247	13246.76	0.30	43208	5925	7322	0.40	Below	0
Mar-86	12	46400	12.3	156.4	125.12	7905	7905.16	0.18	42894	5367	2538	0.40	Below	0
Apr-86	365	46400	47	98.4	78.72	5084	5084.10	0.11	42728	3364	1721	0.40	Below	0
May-86	5185	46400	76	51.8	41.44	10432	10432.15	0.23	43042	1784	8648	0.40	Below	0
Jun-86	5223	46400	20	35.6	28.48	14800	14799.81	0.33	43299	1233	13567	0.60	Below	0
Jul-86	8227	46400	69	40.2	32.16	24995	24994.76	0.56	43902	1412	23583	0.60	Below	0
Aug-86	7116	46400	45.9	61.6	49.28	32828	32828.16	0.74	44367	2186	30642	0.80	Below	0
Sep-86	1013	46400	38	71.2	56.96	33418	33418.11	0.75	44403	2529	30889	0.80	Below	0
Oct-86	827	46400	75.7	108	86.40	35228	35228.06	0.79	44510	3846	31382	0.80	Below	0
Nov-86	370	46400	23.8	151.6	121.28	32857	32856.56	0.74	44369	5381	27475	0.80	Below	0
Dec-86	57	46400	47.1	156.8	125.44	29718	29718.23	0.67	44182	5542	24176	0.60	Below	0
Jan-87	4530	46400	104.2	185	148.00	33541	33540.65	0.76	44410	6573	26968	0.80	Below	0
Feb-87	57	46400	43.9	168.2	134.56	29062	29062.00	0.65	44143	5940	23122	0.60	Below	0
Mar-87	408	46400	28.2	120.6	96.48	24838	24838.08	0.56	43892	4235	20603	0.60	Below	0
Apr-87	23	46400	22.9	93.6	74.88	21689	21688.80	0.49	43706	3273	18416	0.60	Below	0
May-87	6615	46400	99.9	57	45.60	29666	29666.29	0.67	44179	2015	27652	0.80	Below	0
Jun-87	8351	46400	38.7	39.4	31.52	37799	37798.65	0.85	44664	1408	36391	1.00	Below	0
Jul-87	6985	46400	63	44.2	35.36	46299	46299.13	1.04	45173	1597	44702	1.10	Above	0
Aug-87	10880	46400	35.1	58.8	47.04	57210	57210.49	1.29	45831	2156	55055	1.40	Above	0
Sep-87	2191	46400	32.1	99.6	79.68	58735	58734.66	1.32	45923	3659	55076	1.40	Above	0
Oct-87	30	46400	29.5	124.2	99.36	56474	56473.82	1.27	45786	4549	51925	1.40	Above	0
Nov-87	52	46400	51.5	161.8	129.44	54366	54365.60	1.22	45659	5910	48456	1.10	Above	0
Dec-87	4084	46400	106.8	171	136.80	57495	57494.88	1.29	45848	6272	51223	1.40	Above	0
Jan-88	1171	46400	65	194.8	155.84	55410	55410.27	1.25	45722	7125	48285	1.10	Above	0
Feb-88	8	46400	7.3	171.6	137.28	48632	48631.85	1.10	45313	6221	42411	1.00	Below	0
Mar-88	24	46400	23.7	142.4	113.92	43535	43534.60	0.98	45007	5127	38407	1.00	Below	0
Apr-88	11	46400	11.4	91	72.80	38948	38947.73	0.88	44733	3257	35691	1.00	Below	0
May-88	629	46400	58.9	51.6	41.28	39053	39053.33	0.88	44739	1847	37207	1.00	Below	0
Jun-88	1943	46400	44	42.8	34.24	41191	41191.13	0.93	44867	1536	39655	1.00	Below	0
Jul-88	1975	46400	30.3	45.4	36.32	43036	43035.89	0.97	44977	1634	41402	1.00	Below	0
Aug-88	486	46400	46.9	66.8	53.44	44064	44064.23	0.99	45039	2407	41657	1.00	Below	0
Sep-88	156	46400	37.4	100.2	80.16	43549	43549.15	0.98	45008	3608	39941	1.00	Below	0
Oct-88	19	46400	18.4	163.4	130.72	40814	40814.23	0.92	44844	5862	34952	0.80	Below	0
Nov-88	1483	46400	94.9	155.8	124.64	40839	40838.90	0.92	44846	5590	35249	0.80	Below	0
Dec-88	4265	46400	93.5	161.6	129.28	43852	43852.49	0.99	45026	5821	38031	1.00	Below	0
Jan-89	1055	46400	45.5	186	148.80	41197	41197.19	0.93	44867	6676	34521	0.80	Below	0
Feb-89	64	46400	12.3	171	136.80	35155	35155.28	0.79	44506	6088	29067	0.80	Below	0
Mar-89	1346	46400	79.5	125.6	100.48	34102	34101.84	0.77	44443	4466	29636	0.80	Below	0
Apr-89	552	46400	52.8	72.4	57.92	32639	32638.60	0.74	44356	2569	30069	0.80	Below	0
May-89	527	46400	45.7	45.6	36.48	32717	32716.87	0.74	44361	1618	31099	0.80	Below	0
Jun-89	5521	46400	64.1	35.8	28.64	39594	39594.08	0.89	44771	1282	38312	1.00	Below	0
Jul-89	10476	46400	37.2	43.2	34.56	50514	50513.58	1.14	45427	1570	48944	1.40	Above	0
Aug-89	2378	46400	58.6	52.2	41.76	54041	54040.61	1.22	45639	1906	52135	1.40	Above	0
Sep-89	3048	46400	40.5	86.6	69.28	57061	57061.41	1.29	45822	3175	53887	1.40	Above	0
Oct-89	396	46400	64.9	119.6	95.68	57294	57293.80	1.29	45836	4386	52908	1.40	Above	0
Nov-89	236	46400	40	131.6	105.28	55000	55000.46	1.24	45697	4811	50189	1.40	Above	0
Dec-89	25	46400	25.1	186.6	149.28	51379	51379.20	1.16	45479	6789	44590	1.10	Above	0
Jan-90	3	46400	3.3	214.6	171.68	44747	44746.54	1.01	45080	7739	37007	1.00	Below	0
Feb-90	1471	46400	78.6	122	97.60	42125	42124.80	0.95	44923	4384	37740	1.00	Below	0
Mar-90	25	46400	23.5	141.6	113.28	38856	38855.98	0.88	44727	5067	33789	0.80	Below	0
Apr-90	1511	46400	58.7	83	66.40	38024	38024.08	0.86	44677	2967	35057	0.80	Below	0
May-90	474	46400	8.3	60.2	48.16	35917	35916.95	0.81	44552	2146	33771	0.80	Below	0
Jun-90	39	46400	38.6	43.4	34.72	35601	35600.99	0.80	44533	1546	34055	0.80	Below	0
Jul-90	3647	46400	56.2	49.8	39.84	40309	40309.30	0.91	44814	1785	38524	1.00	Below	0
Aug-90	3027	46400	31	62.2	49.76	42989	42989.24	0.97	44975	2238	40751	1.00	Below	0
Sep-90	36	46400	33.2	85.8	68.64	42327	42327.31	0.95	44935	3084	39243	1.00	Below	0
Oct-90	1279	46400	68.4	111.2	88.96	43696	43695.76	0.98	45017	4005	39691	1.00	Below	0

Nov-90	36	46400	27.6	160.2	128.16	41008	41008.05	0.92	44856	5749	35259	0.80	Below	0
Dec-90	509	46400	43.2	182.8	146.24	37773	37773.03	0.85	44662	6531	31242	0.80	Below	0
Jan-91	57	46400	55.7	181.8	145.44	33884	33883.53	0.76	44430	6462	27422	0.80	Below	0
Feb-91	2	46400	1.6	158.6	126.88	27497	27497.43	0.62	44050	5589	21908	0.60	Below	0
Mar-91	12	46400	11.5	134.4	107.52	22453	22453.44	0.51	43751	4704	17749	0.60	Below	0
Apr-91	25	46400	24.9	85	68.00	18930	18929.58	0.43	43543	2961	15969	0.60	Below	0
May-91	17	46400	16.7	44.4	35.52	16760	16760.25	0.38	43415	1542	15218	0.60	Below	0
Jun-91	6036	46400	100.7	40.6	32.48	25926	25926.25	0.58	43957	1428	24499	0.60	Below	0
Jul-91	8499	46400	40.1	40.8	32.64	34858	34858.27	0.79	44488	1452	33406	0.80	Below	0
Aug-91	5021	46400	32.4	71	56.80	39931	39930.67	0.90	44791	2544	37387	1.00	Below	0
Sep-91	94	46400	60.4	73.8	59.04	40283	40282.67	0.91	44813	2646	37637	1.00	Below	0
Oct-91	537	46400	16.9	136.8	109.44	38958	38957.86	0.88	44733	4896	34062	0.80	Below	0
Nov-91	25	46400	22.7	153	122.40	35141	35140.56	0.79	44505	5447	29693	0.80	Below	0
Dec-91	2763	46400	96.8	153.8	123.04	36948	36947.98	0.83	44613	5489	31459	0.80	Below	0
Jan-92	546	46400	21	162	129.60	32979	32979.27	0.74	44376	5751	27228	0.80	Below	0
Feb-92	35	46400	13.4	150.4	120.32	27885	27884.98	0.63	44073	5303	22582	0.60	Below	0
Mar-92	34	46400	34.4	124.8	99.84	24213	24212.65	0.55	43855	4379	19834	0.60	Below	0
Apr-92	319	46400	60.2	88.8	71.04	22946	22946.03	0.52	43780	3110	19836	0.60	Below	0
May-92	4721	46400	55.1	53.8	43.04	27114	27114.00	0.61	44027	1895	25219	0.60	Below	0
Jun-92	1909	46400	31.7	39.6	31.68	28599	28598.65	0.64	44116	1398	27201	0.80	Below	0
Jul-92	954	46400	19	54.8	43.84	29037	29037.16	0.65	44142	1935	27102	0.80	Below	0
Aug-92	538	46400	54.1	62.8	50.24	30150	30150.35	0.68	44208	2221	27929	0.80	Below	0
Sep-92	8703	46400	96.8	62.6	50.08	41124	41124.28	0.93	44863	2247	38878	1.00	Below	0
Oct-92	11223	46400	95.1	92.4	73.92	54514	54513.65	1.23	45668	3376	51138	1.40	Above	0
Nov-92	3576	46400	101.1	116	92.80	59405	59405.12	1.34	45963	4265	55140	1.40	Above	0
Dec-92	1768	46400	77.7	133.8	107.04	60513	60512.86	1.36	46031	4927	55586	1.40	Above	0
Jan-93	1369	46400	105.3	165.8	132.64	61841	61840.54	1.39	46111	6116	55724	1.40	Above	0
Feb-93	1436	46400	30.3	152.8	122.24	58566	58566.17	1.32	45913	5612	52954	1.40	Above	0
Mar-93	30	46400	23.1	110	88.00	54056	54055.72	1.22	45640	4016	50039	1.40	Above	0
Apr-93	11	46400	11.3	97.2	77.76	50575	50575.00	1.14	45430	3533	47042	1.10	Above	0
May-93	17	46400	17	57.6	46.08	47848	47848.14	1.08	45266	2086	45762	1.10	Above	0
Jun-93	366	46400	37.3	43.8	35.04	47859	47858.61	1.08	45267	1586	46272	1.10	Above	0
Jul-93	3137	46400	38.5	47.4	37.92	51196	51195.68	1.15	45468	1724	49472	1.40	Above	0
Aug-93	444	46400	37.2	74.6	59.68	51642	51642.04	1.16	45495	2715	48927	1.40	Above	0
Sep-93	4439	46400	97.6	75.6	60.48	57895	57895.03	1.30	45872	2774	55121	1.40	Above	0
Oct-93	2679	46400	59.5	112.6	90.08	60561	60560.70	1.36	46033	4147	56414	1.40	Above	0
Nov-93	794	46400	48.4	134.4	107.52	59454	59453.55	1.34	45966	4942	54511	1.40	Above	0
Dec-93	242	46400	88.9	154.6	123.68	58878	58878.40	1.33	45932	5681	53198	1.40	Above	0
Jan-94	889	46400	16	178.8	143.04	54829	54829.35	1.23	45687	6535	48294	1.10	Above	0
Feb-94	1948	46400	100.3	123.6	98.88	54897	54896.53	1.24	45691	4518	50379	1.40	Above	0
Mar-94	443	46400	20.3	109.8	87.84	51763	51763.42	1.17	45502	3997	47767	1.10	Above	0
Apr-94	29	46400	28.7	85.2	68.16	49127	49126.90	1.11	45343	3091	46036	1.10	Above	0
May-94	17	46400	16.8	74.4	59.52	46833	46832.63	1.05	45205	2691	44142	1.00	Below	0
Jun-94	25	46400	24.9	43	34.40	45322	45322.27	1.02	45115	1552	43770	1.00	Below	0
Jul-94	12	46400	12.3	55.8	44.64	44353	44353.35	1.00	45056	2011	42342	1.00	Below	0
Aug-94	21	46400	21.3	66	52.80	43352	43351.65	0.98	44996	2376	40976	1.00	Below	0
Sep-94	40	46400	39.9	76.2	60.96	42867	42867.10	0.97	44967	2741	40126	1.00	Below	0
Oct-94	35	46400	34.6	129.6	103.68	41766	41765.93	0.94	44901	4655	37111	1.00	Below	0
Nov-94	33	46400	33.2	145.6	116.48	38684	38684.24	0.87	44717	5209	33476	0.80	Below	0
Dec-94	18	46400	17.6	215.8	172.64	34310	34309.86	0.77	44456	7675	26635	0.60	Below	0
Jan-95	1524	46400	74.8	173.8	139.04	31629	31629.46	0.71	44296	6159	25471	0.60	Below	0
Feb-95	14	46400	11.8	159	127.20	26032	26032.50	0.59	43963	5592	20440	0.60	Below	0
Mar-95	610	46400	61.5	140	112.00	23904	23903.84	0.54	43837	4910	18994	0.60	Below	0
Apr-95	1723	46400	68.9	75	60.00	23914	23913.74	0.54	43838	2630	21283	0.60	Below	0
May-95	4585	46400	62.2	44.4	35.52	28755	28754.72	0.65	44125	1567	27187	0.80	Below	0
Jun-95	8166	46400	59.8	38.2	30.56	38128	38128.36	0.86	44684	1366	36763	1.00	Below	0
Jul-95	10776	46400	48.7	38.2	30.56	49799	49798.51	1.12	45384	1387	48412	1.10	Above	0
Aug-95	9732	46400	40.7	72.4	57.92	60032	60031.57	1.35	46001	2664	57367	1.40	Above	0
Sep-95	513	46400	31.3	73.6	58.88	59333	59332.76	1.34	45959	2706	56627	1.40	Above	0
Oct-95	2509	46400	99	105.6	84.48	63729	63729.05	1.44	46225	3905	59824	1.40	Above	0
Nov-95	5476	46400	76.1	129.8	103.84	68831	68831.06	1.55	46535	4832	63999	1.50	Above	0
Dec-95	252	46400	27.4	140.2	112.16	65523	65522.54	1.48	46334	5197	60326	1.40	Above	0
Jan-96	1136	46400	46.3	170.4	136.32	63610	63610.04	1.43	46218	6300	57310	1.40	Above	0
Feb-96	61	46400	60.9	137.8	110.24	60196	60196.23	1.36	46011	5072	55124	1.40	Above	0
Mar-96	344	46400	49.1	128.2	102.56	57746	57746.49	1.30	45863	4704	53043	1.40	Above	0
Apr-96	2056	46400	57.7	65.4	52.32	57776	57775.90	1.30	45865	2400	55376	1.40	Above	0
May-96	180	46400	21	47.4	37.92	56531	56530.86	1.27	45790	1736	54795	1.40	Above	0
Jun-96	335	46400	46.2	38.4	30.72	57273	57273.47	1.29	45835	1408	55865	1.40	Above	0
Jul-96	8015	46400	69.5	41.2	32.96	67105	67105.27	1.51	46431	1530	65575	1.50	Above	0
Aug-96	9968	46400	47.6	58.6	46.88	77752	77751.93	1.75	47080	2207	66603	1.60	Above	8942
Sep-96	2857	46400	71.5	91	72.80	72778	72778.09	1.64	46776	3405	66603	1.60	Above	2770
Oct-96	1443	46400	36.3	122.2	97.76	69731	69730.72	1.57	46590	4555	65176	1.50	Above	0
Nov-96	62	46400	20.1	152.6	122.08	66171	66170.70	1.49	46374	5661	60509	1.40	Above	0
Dec-96	17	46400	17.1	169	135.20	61320	61319.94	1.38	46079	6230	55090	1.40	Above	0
Jan-97	296	46400	37.1	226.8	181.44	57107	57106.96	1.29	45824	8314	48793	1.10	Above	0
Feb-97	103	46400	2.6	179	143.20	49017	49016.55	1.10	45337	6492	42524	1.00	Below	0
Mar-97	16	46400	16.3	122.2	97.76	43297	43296.97	0.98	44993	4399	38898	1.00	Below	0
Apr-97	8	46400	8.4	87.8	70.24	39297	39296.60	0.89	44754	3143	36153	1.00	Below	0
May-97	975	46400	52.3	48.4	38.72	39555	39554.56	0.89	44769	1733	37821	1.00	Below	0
Jun-97	34	46400	22.3	40.8	32.64	38890	38889.52	0.88	44729	1460	37430	1.00	Below	0
Jul-97	17	46400	13.8	43.4	34.72	38087	38087.18	0.86	44681	1551	36536	1.00	Below	0
Aug-97	28	46400	27.6	66.4	53.12	37844	37844.09	0.85	44667	2373	35471	0.80	Below	0
Sep-97	1517	46400	67.3	72	57.60	40111	40111.26	0.90	44802	2581	37531	1.00	Below	0
Oct-97	474	46400	40.9	125	100.00	39902	39902.01	0.90	44790	4479	35423	0.80	Below	0
Nov-97	2894	46400	64.7	151.4	121.12	41319	41319.41	0.93	44875	5435	35884	1.00	Below	0
Dec-97	509	46400	2.7	188.2	150.56	36518	36518.28	0.82	44587	6713	29805	0.80	Below	0
Jan-98	204	46400	39.8	192	153.60	31856	31856.40	0.72	44309	6806	25050	0.60	Below	0
Feb-98	495	46400	47.9	175.4	140.32	27768	27767.69	0.63	44066	6183	21584	0.60	Below	0
Mar-98	38	46400	7.5	143.2	114.56	21970	21970.46	0.49	43723	5009	16962	0.60	Below	0
Apr-98	45	46400	45.4	77.6	62.08	19114	19113.57	0.43	43554	2704	16410	0.60	Below	0
May-98	316	46400	28	51	40.80	18025	18025.17	0.41	43489	1774	16251	0.60	Below	0
Jun-98	1657	46400	51.7	46.6	37.28	20307	20307.09	0.46	43624	1626	18681	0.60	Below	0
Jul-98	2256	46400	39	39.8	31.84	22747	22746.67	0.51	43768	1394	21353	0.60	Below	0
Aug-98	1142	46400	22.8	54.4	43.52	23553	23552.69	0.53	43816	1907	21646	0.60	Below	0
Sep-98	217	46400	24.5	97	77.60	23000	22999.98	0.52	43783	3398	19602	0.60	Below	0
Oct-98	53	46400	53.4	124.4	99.52	22134	22133.54	0.50	43732	4352	17781	0.60	Below	0
Nov-98	1506	46400	62.6	138.8	111.04	22192	22192.20	0.50	43736	4856	17336	0.60	Below	0
Dec-98	432	46400	54.6	185.2	148.16	20301	20300.83	0.46	43624	6463	13838	0.60	Below	0
Jan-99	336	46400	63.1	181.8	145.44	17102	17101.79	0.39	43435	6317	10785	0.60	Below	0
Feb-99	510	46400	49.1	149.2	119.36	13573	13572.75	0.31	43227	5160	8413	0.40	Below	0
Mar-99	855	46400	58.3	127.2	101.76	11973	11972.91	0.27	43133	4389	7584	0.40	Below	0
Apr-99	12	46400	11.7	76.8	61.44	8138	8138.31	0.18	42907	2636	5502	0.40	Below	0
May-99	250	46400	41.7	71.6	57.28	7687	7687.15	0.17	42881	2456	5231	0.40	Below	0
Jun-99	831	46400	27.1	45.6	36.48	7320	7319.65	0.16	42859	1564	5756	0.40	Below	0
Jul-99	66	46400	14.8	54.2	43.36	6508	6508.47	0.15	42812	1856	4652	0.40	Below	0
Aug-99	309	46400	55.4	67.2	53.76	7531	7531.27	0.17	42872	2305	5226	0.40	Below	0
Sep-99	784	46400	23.1	98	78.40	7082	7082.45	0.16	42845	3359	3723	0.40	Below	0
Oct-99	1097	46400	44.6	123	98.40	6890	6890.27	0.16	42834	4215	2675	0.40	Below	0
Nov-99	33	46400	26.6	156.8	125.44	3942	3942.36	0.09	42661	5351	0	0.00	Empty	0
Dec-99	302	46400	70.1	186.6	149.28	3555	3554.88	0.08	42639	6365	0	0.00	Empty	0
Jan-00	2651	46400	23.4	182	145.60	3736	3736.28	0.08	42649	6210	0	0.00	Empty	0
Feb-00	32	46400	31.6	197.4	157.92	1498	1497.84	0.03	42518	6715	0	0.00	Empty	0

Mar-00	9	46400	8.9	156	124.80	422	421.86	0.01	42456	5298	0	0.00	Empty	0
Apr-00	45	46400	44.7	92	73.60	2119	2118.78	0.05	42555	3132	0	0.00	Empty	0
May-00	876	46400	54.1	59.2	47.36	3386	3386.03	0.08	42629	2019	1367	0.40	Below	0
Jun-00	1214	46400	33.3	41	32.80	4126	4126.39	0.09	42672	1400	2727	0.40	Below	0
Jul-00	306	46400	39.3	50.2	40.16	4856	4855.87	0.11	42715	1715	3140	0.40	Below	0
Aug-00	999	46400	26	58	46.40	5346	5345.57	0.12	42744	1983	3362	0.40	Below	0
Sep-00	129	46400	61.2	95.2	76.16	6331	6330.76	0.14	42801	3260	3071	0.40	Below	0
Oct-00	1739	46400	110.3	109.4	87.52	9927	9927.43	0.22	43012	3764	6163	0.40	Below	0
Nov-00	6043	46400	19.8	135.4	108.32	13124	13124.46	0.30	43200	4679	8445	0.40	Below	0
Dec-00	146	46400	12.9	209	167.20	9189	9189.26	0.21	42969	7184	2005	0.40	Below	0
Jan-01	12	46400	12.1	207	165.60	2578	2578.38	0.06	42582	7052	0	0.00	Empty	0
Feb-01	64	46400	20.1	193.6	154.88	997	996.54	0.02	42489	6581	0	0.00	Empty	0
Mar-01	3045	46400	89.8	141	112.80	7212	7212.14	0.16	42853	4834	2378	0.40	Below	0
Apr-01	3557	46400	127.1	88	70.40	11832	11832.29	0.27	43124	3036	8796	0.40	Below	0
May-01	12512	46400	15.7	48.2	38.56	22036	22036.34	0.50	43726	1686	20350	0.60	Below	0
Jun-01	10209	46400	34.3	47	37.60	32151	32150.59	0.72	44327	1667	30484	0.80	Below	0
Jul-01	5594	46400	11.6	37.4	29.92	36616	36616.39	0.82	44593	1334	35282	0.80	Below	0
Aug-01	266	46400	47.2	72.4	57.92	37739	37738.71	0.85	44660	2587	35152	0.80	Below	0
Sep-01	536	46400	25.4	90	72.00	36866	36866.46	0.83	44608	3212	33655	0.80	Below	0
Oct-01	62	46400	55.1	117.4	93.92	36273	36273.38	0.82	44573	4186	32087	0.80	Below	0
Nov-01	49	46400	48.6	124.2	99.36	34391	34390.74	0.77	44460	4418	29973	0.80	Below	0
Dec-01	33	46400	32.7	147.8	118.24	31523	31523.13	0.71	44290	5237	26286	0.60	Below	0
Jan-02	23	46400	23.4	176.2	140.96	27395	27395.49	0.62	44044	6208	21187	0.60	Below	0
Feb-02	290	46400	50.6	153.4	122.72	23825	23824.61	0.54	43832	5379	18446	0.60	Below	0
Mar-02	156	46400	36.1	136.4	109.12	20277	20276.65	0.46	43622	4760	15517	0.60	Below	0
Apr-02	433	46400	35.4	78.2	62.56	17592	17592.25	0.40	43464	2719	14873	0.60	Below	0
May-02	27	46400	26.3	61.4	49.12	16121	16120.65	0.36	43377	2131	13990	0.60	Below	0
Jun-02	33	46400	32.5	55.6	44.48	15530	15530.48	0.35	43342	1928	13603	0.60	Below	0
Jul-02	28	46400	27.8	67.8	54.24	14920	14920.34	0.34	43306	2349	12571	0.60	Below	0
Aug-02	28	46400	27.7	68.4	54.72	13884	13884.40	0.31	43245	2366	11518	0.60	Below	0
Sep-02	26	46400	26.4	114.8	91.84	12769	12769.39	0.29	43179	3966	8804	0.40	Below	0
Oct-02	23	46400	22.5	137.8	110.24	9870	9870.28	0.22	43009	4741	5129	0.40	Below	0
Nov-02	14	46400	14.1	163.6	130.88	5797	5797.31	0.13	42770	5598	200	0.40	Below	0
Dec-02	8	46400	7.7	189.2	151.36	565	564.55	0.01	42464	6427	0	0.00	Empty	0
Jan-03	19	46400	19.4	220.4	176.32	920	919.56	0.02	42485	7491	0	0.00	Empty	0
Feb-03	21	46400	21	152	121.60	995	995.40	0.02	42489	5167	0	0.00	Empty	0
Mar-03	18	46400	18.3	137.2	109.76	867	867.42	0.02	42482	4663	0	0.00	Empty	0
Apr-03	2412	46400	53.1	86.8	69.44	4876	4876.01	0.11	42716	2966	1910	0.40	Below	0
May-03	69	46400	10.7	56.2	44.96	2475	2474.80	0.06	42576	1914	561	0.40	Below	0
Jun-03	21	46400	20.5	52.4	41.92	1532	1532.30	0.03	42520	1782	0	0.00	Empty	0
Jul-03	882	46400	66.6	58	46.40	3972	3972.40	0.09	42663	1980	1993	0.40	Below	0
Aug-03	3145	46400	47.5	72.2	57.76	7342	7341.56	0.17	42861	2476	4866	0.40	Below	0
Sep-03	2857	46400	24.4	99.8	79.84	8855	8854.72	0.20	42949	3429	5426	0.40	Below	0
Oct-03	79	46400	64.9	102.6	82.08	8516	8515.88	0.19	42929	3524	4992	0.40	Below	0
Nov-03	32	46400	31.8	161.2	128.96	6500	6499.54	0.15	42811	5521	979	0.40	Below	0
Dec-03	335	46400	31.4	200.2	160.16	2771	2770.94	0.06	42593	6822	0	0.00	Empty	0
Jan-04	62	46400	23.8	180	144.00	1167	1166.66	0.03	42499	6120	0	0.00	Empty	0
Feb-04	23	46400	23.4	160.4	128.32	1109	1109.16	0.02	42496	5453	0	0.00	Empty	0
Mar-04	15	46400	15	144.8	115.84	711	711.00	0.02	42473	4920	0	0.00	Empty	0
Apr-04	695	46400	46.3	98.8	79.04	2843	2842.86	0.06	42597	3367	0	0.00	Empty	0
May-04	583	46400	21.2	61.6	49.28	1566	1566.40	0.04	42522	2096	0	0.00	Empty	0
Jun-04	514	46400	37.1	54.8	43.84	2235	2235.08	0.05	42562	1866	369	0.40	Below	0
Jul-04	300	46400	29.8	54.8	43.84	2052	2052.39	0.05	42551	1865	187	0.40	Below	0
Aug-04	913	46400	62.2	73.2	58.56	3986	3986.49	0.09	42664	2498	1488	0.40	Below	0
Sep-04	3758	46400	50.9	76.2	60.96	7608	7607.62	0.17	42876	2614	4994	0.40	Below	0
Oct-04	917	46400	48.2	130.8	104.64	8148	8147.61	0.18	42908	4490	3658	0.40	Below	0
Nov-04	3986	46400	86.2	142	113.60	11644	11643.76	0.26	43113	4898	6746	0.40	Below	0
Dec-04	796	46400	45.4	171.8	137.44	9649	9648.67	0.22	42996	5909	3739	0.40	Below	0
Jan-05	40	46400	40.1	195.8	156.64	5640	5640.04	0.13	42761	6698	0	0.00	Empty	0
Feb-05	8588	46400	134.2	140.4	112.32	14814	14814.39	0.33	43300	4863	9951	0.60	Below	0
Mar-05	920	46400	7.5	132.2	105.76	11219	11218.99	0.25	43088	4557	6662	0.40	Below	0
Apr-05	22	46400	20.9	117.2	93.76	7654	7654.18	0.17	42879	4020	3634	0.40	Below	0
May-05	10	46400	10.1	66.4	53.12	4113	4112.60	0.09	42671	2267	1846	0.40	Below	0
Jun-05	1478	46400	41.7	47.8	38.24	5259	5258.69	0.12	42738	1634	3624	0.40	Below	0
Jul-05	905	46400	26.8	50	40.00	5773	5773.13	0.13	42769	1711	4062	0.40	Below	0
Aug-05	45	46400	42.7	82.4	65.92	6089	6088.69	0.14	42787	2821	3268	0.40	Below	0
Sep-05	299	46400	51.8	89.4	71.52	5971	5970.52	0.13	42780	3060	2911	0.40	Below	0
Oct-05	151	46400	47.3	136.2	108.96	5257	5256.90	0.12	42738	4657	600	0.40	Below	0
Nov-05	717	46400	49.7	173.2	138.56	3623	3623.42	0.08	42643	5909	0	0.00	Empty	0
Dec-05	49	46400	30.8	227	181.60	1478	1478.32	0.03	42517	7721	0	0.00	Empty	0
Jan-06	48	46400	48.2	209.2	167.36	2285	2284.68	0.05	42564	7124	0	0.00	Empty	0
Feb-06	39	46400	39.3	159	127.20	1863	1862.82	0.04	42540	5411	0	0.00	Empty	0
Mar-06	10	46400	10.1	158.8	127.04	479	478.74	0.01	42459	5394	0	0.00	Empty	0
Apr-06	299	46400	35.6	92.2	73.76	1951	1951.12	0.04	42545	3138	0	0.00	Empty	0
May-06	43	46400	32.7	52.4	41.92	1560	1560.49	0.04	42522	1783	0	0.00	Empty	0
Jun-06	20	46400	20	37.4	29.92	948	948.00	0.02	42486	1271	0	0.00	Empty	0
Jul-06	25	46400	24.9	51.8	41.44	1180	1180.26	0.03	42500	1761	0	0.00	Empty	0
Aug-06	26	46400	26.3	72	57.60	1247	1246.62	0.03	42504	2448	0	0.00	Empty	0
Sep-06	28	46400	27.6	111.2	88.96	1308	1308.24	0.03	42507	3781	0	0.00	Empty	0
Oct-06	6	46400	6.3	172.8	138.24	299	298.62	0.01	42448	5868	0	0.00	Empty	0
Nov-06	17	46400	17.1	167.8	134.24	811	810.54	0.02	42478	5702	0	0.00	Empty	0
Dec-06	14	46400	14.2	219.2	175.36	673	673.08	0.02	42470	7448	0	0.00	Empty	0
Jan-07	598	46400	27.8	217.8	174.24	1888	1888.00	0.04	42541	7412	0	0.00	Empty	0
Feb-07	80	46400	21.3	183	146.40	1068	1068.31	0.02	42493	6221	0	0.00	Empty	0
Mar-07	25	46400	24.5	165.4	132.32	1161	1161.30	0.03	42499	5623	0	0.00	Empty	0
Apr-07	28	46400	28.1	97.6	78.08	1332	1331.94	0.03	42509	3319	0	0.00	Empty	0
May-07	32	46400	32.2	88	70.40	1526	1526.28	0.03	42520	2993	0	0.00	Empty	0
Jun-07	531	46400	41.7	41.8	33.44	2466	2466.26	0.06	42575	1424	1043	0.40	Below	0
Jul-07	8393	46400	65.7	51.4	41.12	12484	12483.70	0.28	43163	1775	10709	0.60	Below	0
Aug-07	3861	46400	16.1	83.2	66.56	15317	15317.11	0.35	43330	2884	12433	0.60	Below	0
Sep-07	17	46400	15.9	105.2	84.16	13188	13187.53	0.30	43204	3636	9551	0.60	Below	0
Oct-07	18	46400	18.3	154.2	123.36	10419	10418.89	0.23	43041	5310	5109	0.40	Below	0
Nov-07	2734	46400	93.5	164.2	131.36	12181	12181.43	0.27	43145	5668	6514	0.40	Below	0
Dec-07	446	46400	54.1	204.2	163.36	9470	9470.15	0.21	42986	7022	2448	0.40	Below	0
Jan-08	87	46400	10.2	218.8	175.04	3009	3008.61	0.07	42607	7458	0	0.00	Empty	0
Feb-08	22	46400	21.5	154.8	123.84	1019	1019.10	0.02	42491	5262	0	0.00	Empty	0
Mar-08	21	46400	20.8	175.8	140.64	986	985.92	0.02	42489	5976	0	0.00	Empty	0
Apr-08	8	46400	8	91.8	73.44	379	379.20	0.01	42453	3118	0	0.00	Empty	0
May-08	726	46400	42.6	51.4	41.12	2703	2702.52	0.06	42589	1751	951	0.40	Below	0
Jun-08	204	46400	24.4	48.6	38.88	2287	2287.40	0.05	42565	1655	632	0.40	Below	0
Jul-08	411	46400	39.1	49.6	39.68	2857	2857.26	0.06	42598	1690	1167	0.40	Below	0
Aug-08	1309	46400	39.9	57.4	45.92	4327	4326.94	0.10	42684	1960	2367	0.40	Below	0
Sep-08	588	46400	15.7	117.8	94.24	3683	3682.89	0.08	42646	4019	0	0.00	Empty	0
Oct-08	13	46400	10.5	155.4	124.32	500	500.03	0.01	42460	5279	0	0.00	Empty	0
Nov-08	25	46400	25.4	155.6	124.48	1204	1203.96	0.03	42501	5291	0	0.00	Empty	0
Dec-08	2707	46400	75.1	176	140.80	6192	6192.12	0.14	42793	6025	167	0.40	Below	0
Jan-09	390	46400	0.9	249.8	199.84	598	598.29	0.01	42466	8486	0	0.00	Empty	0
Feb-09	4	46400	2.9	189	151.20	138	138.24	0.00	42439	6417	0	0.00	Empty	0
Mar-09	43	46400	38.3	135.8	108.64	1820	1819.80	0.04	42537	4621	0	0.00	Empty	0
Apr-09	873	46400	30.3	89.8	71.84	2279	2278.93	0.05	42564	3058	0	0.00	Empty	0
May-09	778	46400	10.5	53.2	42.56	1265	1265.08	0.03	42505	1809	0	0.00	Empty	0
Jun-09	23	46400	22.8	38.4	30.72	1081	1080.72	0.02	42494	1305	0	0.00	Empty	0

Jul-09	177	46400	32.3	57.2	45.76	1676	1676.13	0.04	42529	1946	0	0.00	Empty	0
Aug-09	41	46400	41.1	86.4	69.12	1948	1948.14	0.04	42545	2941	0	0.00	Empty	0
Sep-09	688	46400	64.7	106.4	85.12	3690	3689.62	0.08	42647	3630	60	0.40	Below	0
Oct-09	693	46400	28.3	119.2	95.36	2066	2065.99	0.05	42552	4058	0	0.00	Empty	0
Nov-09	1034	46400	77.7	184.6	147.68	4639	4639.17	0.10	42702	6306	0	0.00	Empty	0
Dec-09	1010	46400	35.1	196	156.80	2639	2638.58	0.06	42585	6677	0	0.00	Empty	0
Jan-10	21	46400	14.2	213	170.40	680	680.06	0.02	42471	7237	0	0.00	Empty	0
Feb-10	77	46400	24.7	173.2	138.56	1223	1223.34	0.03	42502	5889	0	0.00	Empty	0
Mar-10	1397	46400	67.4	134.4	107.52	4525	4524.53	0.10	42696	4591	0	0.00	Empty	0
Apr-10	36	46400	31.2	86.4	69.12	1483	1483.26	0.03	42518	2939	0	0.00	Empty	0
May-10	27	46400	27.1	55.4	44.32	1285	1284.54	0.03	42506	1884	0	0.00	Empty	0
Jun-10	39	46400	38.5	40	32.00	1825	1824.90	0.04	42538	1361	464	0.40	Below	0
Jul-10	699	46400	21.4	40.2	32.16	2155	2155.21	0.05	42557	1369	787	0.40	Below	0
Aug-10	2534	46400	66.8	61.2	48.96	6420	6420.01	0.14	42807	2096	4324	0.40	Below	0
Sep-10	6444	46400	54.2	75.2	60.16	13283	13282.79	0.30	43210	2599	10683	0.60	Below	0
Oct-10	1407	46400	101.8	123.6	98.88	16814	16813.96	0.38	43418	4293	12521	0.60	Below	0
Nov-10	4623	46400	130.3	135.8	108.64	23190	23189.74	0.52	43795	4758	18432	0.60	Below	0
Dec-10	5917	46400	39.8	160.6	128.48	26195	26195.17	0.59	43973	5650	20546	0.60	Below	0
Jan-11	4371	46400	107.4	166.6	133.28	29899	29899.47	0.67	44193	5890	24009	0.60	Below	0
Feb-11	5403	46400	110.6	121.2	96.96	34545	34544.75	0.78	44470	4312	30233	0.80	Below	0
Mar-11	1311	46400	16.4	112.2	89.76	32305	32305.13	0.73	44336	3980	28326	0.80	Below	0
Apr-11	1470	46400	48.5	77.4	61.92	32046	32046.11	0.72	44321	2744	29302	0.80	Below	0
May-11	561	46400	33.4	45.6	36.48	31413	31412.54	0.71	44283	1615	29797	0.80	Below	0
Jun-11	244	46400	33.2	43.4	34.72	31582	31581.92	0.71	44293	1538	30044	0.80	Below	0
Jul-11	1863	46400	29	48.4	38.72	33252	33252.49	0.75	44393	1719	31534	0.80	Below	0
Aug-11	615	46400	15.2	62.4	49.92	32854	32854.13	0.74	44369	2215	30639	0.80	Below	0
Sep-11	44	46400	41.3	102.8	82.24	32600	32599.96	0.73	44354	3648	28952	0.80	Below	0
Oct-11	1525	46400	69.9	116.4	93.12	33721	33720.58	0.76	44421	4136	29584	0.80	Below	0
Nov-11	286	46400	129.2	139.8	111.84	35865	35865.46	0.81	44548	4982	30883	0.80	Below	0
Dec-11	4790	46400	56.5	179.4	143.52	38295	38295.15	0.86	44694	6414	31881	0.80	Below	0
Jan-12	72	46400	15.5	220.2	176.16	32672	32672.16	0.74	44358	7814	24858	0.60	Below	0
Feb-12	46	46400	46	159.4	127.52	27038	27038.45	0.61	44023	5614	21425	0.60	Below	0
Mar-12	1947	46400	35.3	126.6	101.28	25009	25009.29	0.56	43903	4446	20563	0.60	Below	0
Apr-12	44	46400	35.5	91.6	73.28	22254	22254.30	0.50	43739	3205	19049	0.60	Below	0
May-12	2106	46400	77.8	60.6	48.48	24765	24764.83	0.56	43888	2128	22637	0.60	Below	0
Jun-12	13278	46400	79.7	41.6	33.28	39614	39613.50	0.89	44772	1490	38123	1.00	Below	0
Jul-12	13700	46400	45.1	41.8	33.44	53916	53916.22	1.21	45632	1526	52390	1.40	Above	0
Aug-12	12119	46400	52.7	71	56.80	66955	66954.58	1.51	46421	2637	64318	1.50	Above	0
Sep-12	2792	46400	42.4	97	77.60	69077	69077.08	1.56	46550	3612	65465	1.50	Above	0
Oct-12	20	46400	19	122.8	98.24	66366	66366.14	1.49	46386	4557	61809	1.40	Above	0
Nov-12	34	46400	34.3	157.8	126.24	63435	63435.04	1.43	46208	5833	57602	1.40	Above	0
Dec-12	28	46400	27.9	200.8	160.64	58924	58924.25	1.33	45934	7379	51545	1.40	Above	0
Jan-13	5	46400	5.1	231	184.80	51787	51787.09	1.17	45503	8409	43378	1.00	Below	0
Feb-13	53	46400	53.3	184	147.20	45904	45904.48	1.03	45150	6646	39258	1.00	Below	0
Mar-13	27	46400	26.8	173.4	138.72	40529	40528.79	0.91	44827	6218	34310	0.80	Below	0
Apr-13	11	46400	10.6	89.2	71.36	34813	34812.79	0.78	44486	3174	31638	0.80	Below	0
May-13	30	46400	30.4	65.8	52.64	33079	33079.26	0.75	44382	2336	30743	0.80	Below	0
Jun-13	5697	46400	74	37.6	30.08	39873	39873.31	0.90	44788	1347	38526	1.00	Below	0
Jul-13	7681	46400	47.9	57.2	45.76	48430	48430.14	1.09	45301	2073	46357	1.10	Above	0
Aug-13	8456	46400	39.2	77.6	62.08	56632	56632.25	1.28	45796	2843	53789	1.40	Above	0
Sep-13	1089	46400	60.8	101	80.80	57699	57699.18	1.30	45860	3706	53994	1.40	Above	0
Oct-13	2130	46400	42.1	130.2	104.16	58077	58077.26	1.31	45883	4779	53298	1.40	Above	0
Nov-13	446	46400	50	138.6	110.88	56064	56064.21	1.26	45761	5074	50990	1.40	Above	0
Dec-13	205	46400	28.7	184.4	147.52	52527	52526.63	1.18	45548	6719	45807	1.10	Above	0

Scenario 2

Pond Dimensions

Top Length	L	220
Top Width	W	150
max depth	h	1.50
Area	m2	33000

BPEM Pond Surface (m2)

25134 *50 yr*
29127 *5 yr*

Vol Reqd (m3)

47043 *50yr volume*

	Total Inflow m3	Leachate Pond Catchment Area (m2)	Rainfall (mm/month)	Pan Evaporation (mm/month)	Pond Evaporation (mm/month)	Start Month + Rainfall (m3)	Calc start month + rainfall	Calc Pond Depth m	Calc Evaporation area m^2	Evaporation (m3)	End Month (m3)	Max Depth at End Month (m)	Above or Below Freeboard (0.5 m)	Spillage (m3)
Start														
Jan-64	27	33000	1.5	197.8	158.24	50	49.50	0.00	29754	4708	0	0.00	Empty	0
Feb-64	1533	33000	84.2	167.2	133.76	4312	4311.70	0.14	30042	4018	293	0.40	Below	0
Mar-64	63	33000	30.9	134.8	107.84	1376	1376.29	0.04	29844	3218	0	0.00	Empty	0
Apr-64	3818	33000	89.5	85.6	68.48	6772	6771.62	0.22	30209	2069	4703	0.40	Below	0
May-64	2032	33000	43.2	58	46.40	8160	8160.09	0.26	30303	1406	6754	0.60	Below	0
Jun-64	2146	33000	18.4	40	32.00	9507	9506.98	0.30	30395	973	8534	0.60	Below	0
Jul-64	4307	33000	65.5	47.2	37.76	15003	15002.75	0.48	30770	1162	13841	0.60	Below	0
Aug-64	1408	33000	37	63.8	51.04	16470	16470.31	0.53	30870	1576	14895	0.60	Below	0
Sep-64	79	33000	66.7	83	66.40	17175	17175.03	0.55	30919	2053	15122	0.60	Below	0
Oct-64	5580	33000	94.4	119.6	95.68	23818	23817.59	0.76	31376	3002	20816	0.80	Below	0
Nov-64	1570	33000	54.2	147.8	118.24	24174	24173.78	0.77	31401	3713	20461	0.80	Below	0
Dec-64	1474	33000	67.5	181.6	145.28	24163	24162.92	0.77	31400	4562	19601	0.80	Below	0
Jan-65	35	33000	9.8	197.8	158.24	19960	19959.57	0.64	31110	4923	15037	0.60	Below	0
Feb-65	1	33000	0.9	162	129.60	15067	15067.32	0.48	30774	3988	11079	0.60	Below	0
Mar-65	2	33000	2.4	134.8	107.84	11161	11160.59	0.36	30507	3290	7871	0.60	Below	0
Apr-65	2159	33000	77.6	85.6	68.48	12590	12590.46	0.40	30605	2096	10495	0.60	Below	0
May-65	3103	33000	48.3	58	46.40	15192	15191.69	0.48	30783	1428	13763	0.60	Below	0
Jun-65	1552	33000	28.1	40	32.00	16242	16242.34	0.52	30855	987	15255	0.60	Below	0
Jul-65	3600	33000	66.3	47.2	37.76	21043	21042.66	0.67	31185	1178	19865	0.80	Below	0
Aug-65	8125	33000	63	63.8	51.04	30069	30069.47	0.96	31809	1624	28446	1.00	Below	0
Sep-65	592	33000	21.9	83	66.40	29760	29760.35	0.95	31788	2111	27650	1.00	Below	0
Oct-65	12	33000	12.1	119.6	95.68	28061	28061.03	0.89	31670	3030	25031	0.80	Below	0
Nov-65	59	33000	58.8	147.8	118.24	27030	27030.05	0.86	31598	3736	23294	0.80	Below	0
Dec-65	431	33000	55.1	181.6	145.28	25543	25543.06	0.81	31495	4576	20967	0.80	Below	0
Jan-66	28	33000	28.3	197.8	158.24	21930	21929.60	0.70	31246	4944	16985	0.60	Below	0
Feb-66	2348	33000	56	162	129.60	21182	21181.77	0.68	31194	4043	17139	0.60	Below	0
Mar-66	1456	33000	66.7	134.8	107.84	20796	20796.15	0.66	31168	3361	17435	0.60	Below	0
Apr-66	756	33000	50.2	85.6	68.48	19848	19847.55	0.63	31102	2130	17718	0.60	Below	0
May-66	2571	33000	27	58	46.40	21180	21180.06	0.68	31194	1447	19733	0.80	Below	0
Jun-66	170	33000	18.3	40	32.00	20506	20506.37	0.65	31148	997	19510	0.80	Below	0
Jul-66	573	33000	38.5	47.2	37.76	21353	21353.29	0.68	31206	1178	20175	0.80	Below	0
Aug-66	3527	33000	62.9	63.8	51.04	25777	25777.16	0.82	31512	1608	24169	0.80	Below	0
Sep-66	3767	33000	80.5	83	66.40	30593	30592.61	0.98	31846	2115	28478	1.00	Below	0
Oct-66	2974	33000	71	119.6	95.68	33795	33794.71	1.08	32069	3068	30726	1.00	Below	0
Nov-66	437	33000	25.4	147.8	118.24	32002	32001.64	1.02	31944	3777	28225	1.00	Below	0
Dec-66	872	33000	73.8	181.6	145.28	31532	31531.52	1.01	31911	4636	26895	1.00	Below	0
Jan-67	24	33000	23.5	197.8	158.24	27695	27695.33	0.88	31645	5007	22688	0.80	Below	0
Feb-67	3	33000	3.2	162	129.60	22797	22796.70	0.73	31306	4057	18739	0.60	Below	0
Mar-67	11	33000	11.4	134.8	107.84	19127	19127.10	0.61	31053	3349	15778	0.60	Below	0
Apr-67	9	33000	9.1	85.6	68.48	16088	16087.77	0.51	30844	2112	13976	0.60	Below	0
May-67	379	33000	34.4	58	46.40	15489	15489.44	0.49	30803	1429	14060	0.60	Below	0
Jun-67	1556	33000	27.5	40	32.00	16524	16523.80	0.53	30874	988	15536	0.60	Below	0
Jul-67	202	33000	20.9	47.2	37.76	16427	16427.31	0.52	30867	1166	15262	0.60	Below	0
Aug-67	301	33000	55.4	63.8	51.04	17391	17390.54	0.55	30933	1579	15812	0.60	Below	0
Sep-67	577	33000	44.5	83	66.40	17857	17857.14	0.57	30965	2056	15801	0.60	Below	0
Oct-67	482	33000	14.2	119.6	95.68	16752	16751.93	0.53	30890	2956	13796	0.60	Below	0
Nov-67	4	33000	3.7	147.8	118.24	13923	13922.98	0.44	30696	3629	10294	0.60	Below	0
Dec-67	20	33000	19.6	181.6	145.28	10960	10959.90	0.35	30494	4430	6530	0.60	Below	0
Jan-68	1620	33000	55	197.8	158.24	9965	9965.21	0.32	30426	4815	5151	0.40	Below	0
Feb-68	419	33000	6.3	167.2	133.76	5777	5777.24	0.18	30141	4032	1746	0.40	Below	0
Mar-68	35	33000	15	134.8	107.84	2276	2275.71	0.07	29904	3225	0	0.00	Empty	0
Apr-68	106	33000	97.4	85.6	68.48	3320	3320.36	0.11	29975	2053	1268	0.40	Below	0
May-68	11847	33000	59.8	58	46.40	15088	15087.88	0.48	30776	1428	13660	0.60	Below	0
Jun-68	5449	33000	38.9	40	32.00	20393	20392.64	0.65	31140	996	19396	0.80	Below	0
Jul-68	1574	33000	30.2	47.2	37.76	21966	21966.46	0.70	31248	1180	20787	0.80	Below	0
Aug-68	746	33000	36.4	63.8	51.04	22734	22733.51	0.73	31301	1598	21136	0.80	Below	0
Sep-68	10	33000	8	83	66.40	21409	21409.45	0.68	31210	2072	19337	0.80	Below	0
Oct-68	31	33000	31.3	119.6	95.68	20401	20401.31	0.65	31140	2980	17422	0.60	Below	0
Nov-68	39	33000	38.5	147.8	118.24	18731	18730.80	0.60	31025	3668	15062	0.60	Below	0
Dec-68	792	33000	53.3	181.6	145.28	17613	17613.01	0.56	30949	4496	13117	0.60	Below	0
Jan-69	35	33000	8	197.8	158.24	13416	13415.94	0.43	30661	4852	8564	0.60	Below	0
Feb-69	1012	33000	92.7	162	129.60	12635	12634.83	0.40	30608	3967	8668	0.60	Below	0
Mar-69	221	33000	17.8	134.8	107.84	9476	9476.49	0.30	30393	3278	6199	0.40	Below	0
Apr-69	22	33000	21.5	85.6	68.48	6930	6929.95	0.22	30219	2069	4861	0.40	Below	0
May-69	1457	33000	71.5	58	46.40	8677	8677.36	0.28	30338	1408	7270	0.60	Below	0
Jun-69	3421	33000	4.1	40	32.00	10826	10826.12	0.35	30484	976	9851	0.60	Below	0
Jul-69	185	33000	47.5	47.2	37.76	11603	11603.07	0.37	30537	1153	10450	0.60	Below	0
Aug-69	470	33000	41.1	63.8	51.04	12276	12276.37	0.39	30583	1561	10715	0.60	Below	0
Sep-69	457	33000	40.3	83	66.40	12502	12502.49	0.40	30599	2032	10471	0.60	Below	0
Oct-69	150	33000	21.2	119.6	95.68	11320	11320.22	0.36	30518	2920	8400	0.60	Below	0
Nov-69	653	33000	40.6	147.8	118.24	10393	10392.97	0.33	30455	3601	6792	0.60	Below	0
Dec-69	32	33000	31.4	180.8	144.64	7860	7860.45	0.25	30283	4380	3480	0.40	Below	0
Jan-70	2700	33000	86.1	214.6	171.68	9021	9021.18	0.29	30362	5212	3809	0.40	Below	0
Feb-70	193	33000	5.5	210.8	168.64	4183	4183.02	0.13	30033	5065	0	0.00	Empty	0
Mar-70	1647	33000	79.6	157.6	126.08	4274	4273.56	0.14	30039	3787	486	0.40	Below	0
Apr-70	2093	33000	62.5	98.4	78.72	4642	4641.81	0.15	30064	2367	2275	0.40	Below	0
May-70	6436	33000	52.8	50.4	40.32	10453	10453.11	0.33	30459	1228	9225	0.60	Below	0
Jun-70	1127	33000	33.7	35.6	28.48	11464	11464.37	0.37	30528	869	10595	0.60	Below	0
Jul-70	1016	33000	21.3	53	42.40	12314	12313.91	0.39	30586	1297	11017	0.60	Below	0
Aug-70	873	33000	59.3	63.6	50.88	13847	13846.90	0.44	30691	1562	12285	0.60	Below	0
Sep-70	617	33000	42.4	80.4	64.32	14302	14301.81	0.46	30722	1976	12326	0.60	Below	0
Oct-70	28	33000	24.1	134.2	107.36	13149	13149.06	0.42	30643	3290	9859	0.60	Below	0
Nov-70	3551	33000	89.6	166.8	133.44	16367	16367.41	0.52	30863	4118	12249	0.60	Below	0
Dec-70	2914	33000	86.2	214	171.20	18008	18007.59	0.57	30976	5303	12705	0.60	Below	0
Jan-71	491	33000	54.2	236.8	189.44	14984	14984.37	0.48	30768	5829	9156	0.60	Below	0
Feb-71	3047	33000	85.7	177.8	142.24	15031	15030.69	0.48	30772	4377	10654	0.60	Below	0
Mar-71	261	33000	26.3	159	127.20	11783	11782.98	0.38	30550	3886	7897	0.60	Below	0
Apr-71	39	33000	38.7	102.4	81.92	9213	9212.86	0.29	30375	2488	6725	0.60	Below	0
May-71	44	33000	43.7	53.8	43.04	8210	8210.37	0.26	30306	1304	6906	0.60	Below	0
Jun-71	1849	33000	46.8	40.4	32.32	10299	10299.39	0.33	30449	984	9315	0.60	Below	0

Jul-71	1847	33000	25.6	39.4	31.52	12008	12007.52	0.38	30565	963	11044	0.60	Below	0
Aug-71	111	33000	23.7	62	49.60	11937	11936.82	0.38	30560	1516	10421	0.60	Below	0
Sep-71	35	33000	30	82.2	65.76	11446	11445.69	0.37	30527	2007	9438	0.60	Below	0
Oct-71	767	33000	57.4	130	104.00	12099	12099.41	0.39	30571	3179	8920	0.60	Below	0
Nov-71	5057	33000	94	139.2	111.36	17079	17078.54	0.54	30912	3442	13636	0.60	Below	0
Dec-71	1600	33000	64.8	211	168.80	17374	17374.08	0.55	30932	5221	12153	0.60	Below	0
Jan-72	537	33000	28.8	192.6	154.08	13641	13640.58	0.44	30677	4727	8914	0.60	Below	0
Feb-72	4752	33000	126.9	194.4	155.52	17854	17853.62	0.57	30965	4816	13038	0.60	Below	0
Mar-72	3762	33000	30.1	146.8	117.44	17793	17793.50	0.57	30961	3636	14157	0.60	Below	0
Apr-72	102	33000	36.9	89.6	71.68	15477	15477.21	0.49	30802	2208	13269	0.60	Below	0
May-72	103	33000	27.2	53.4	42.72	14270	14270.32	0.46	30720	1312	12958	0.60	Below	0
Jun-72	215	33000	11.2	43	34.40	13542	13542.39	0.43	30670	1055	12487	0.60	Below	0
Jul-72	19	33000	18.2	55.2	44.16	13107	13106.92	0.42	30640	1353	11754	0.60	Below	0
Aug-72	40	33000	30.6	70.6	56.48	12804	12803.89	0.41	30619	1729	11075	0.60	Below	0
Sep-72	11	33000	10.9	116.6	93.28	11445	11445.11	0.36	30527	2848	8598	0.60	Below	0
Oct-72	241	33000	37.4	133.2	106.56	10072	10072.42	0.32	30433	3243	6829	0.60	Below	0
Nov-72	173	33000	35.7	150.8	120.64	8181	8180.80	0.26	30304	3656	4525	0.40	Below	0
Dec-72	18	33000	1.4	239.8	191.84	4589	4589.11	0.15	30061	5767	0	0.00	Empty	0
Jan-73	52	33000	51.7	222.8	178.24	1758	1757.80	0.06	29869	5324	0	0.00	Empty	0
Feb-73	10009	33000	232.1	155	124.00	17669	17668.79	0.56	30953	3838	13831	0.60	Below	0
Mar-73	5006	33000	47.6	107.6	86.08	20408	20407.89	0.65	31141	2681	17727	0.60	Below	0
Apr-73	529	33000	17.8	91.6	73.28	18843	18843.27	0.60	31033	2274	16569	0.60	Below	0
May-73	41	33000	41.4	58.2	46.56	17977	17976.76	0.57	30974	1442	16535	0.60	Below	0
Jun-73	3366	33000	59.2	39.8	31.84	21854	21854.20	0.70	31241	995	20860	0.80	Below	0
Jul-73	2590	33000	33	40.6	32.48	24539	24538.50	0.78	31426	1021	23518	0.80	Below	0
Aug-73	1157	33000	46.6	52.2	41.76	26212	26212.32	0.84	31542	1317	24895	0.80	Below	0
Sep-73	149	33000	33.7	94	75.20	26156	26155.98	0.83	31538	2372	23784	0.80	Below	0
Oct-73	138	33000	79	111.6	89.28	26530	26529.71	0.85	31564	2818	23712	0.80	Below	0
Nov-73	164	33000	50.6	138.6	110.88	25545	25545.10	0.81	31496	3492	22053	0.80	Below	0
Dec-73	456	33000	50.9	198.2	158.56	24188	24188.19	0.77	31402	4979	19209	0.80	Below	0
Jan-74	1888	33000	61.8	221.8	177.44	23137	23136.80	0.74	31329	5559	17578	0.60	Below	0
Feb-74	55	33000	19	162	129.60	18260	18259.69	0.58	30993	4017	14243	0.60	Below	0
Mar-74	49	33000	48.8	141.8	113.44	15902	15902.18	0.51	30831	3498	12405	0.60	Below	0
Apr-74	1059	33000	93.1	59.8	47.84	16536	16536.30	0.53	30875	1477	15059	0.60	Below	0
May-74	9433	33000	88.7	43.4	34.72	27419	27419.03	0.87	31625	1098	26321	1.00	Below	0
Jun-74	4096	33000	14.6	36.4	29.12	30899	30898.67	0.99	31867	928	29971	1.00	Below	0
Jul-74	3977	33000	68.5	50.8	40.64	36208	36207.85	1.15	32238	1310	34898	1.40	Above	0
Aug-74	2796	33000	70.7	58.4	46.72	40026	40026.48	1.28	32505	1519	38508	1.40	Above	0
Sep-74	2868	33000	40.5	73	58.40	42712	42712.45	1.36	32694	1909	40803	1.40	Above	0
Oct-74	450	33000	56.1	99.2	79.36	43104	43104.07	1.37	32722	2597	40507	1.40	Above	0
Nov-74	42	33000	39.6	137.4	109.92	41856	41855.99	1.33	32634	3587	38269	1.40	Above	0
Dec-74	28	33000	27.8	171.8	137.44	39214	39214.05	1.25	32448	4460	34754	1.40	Above	0
Jan-75	23	33000	23.2	187	149.60	35543	35543.14	1.13	32191	4816	30727	1.00	Below	0
Feb-75	9	33000	8.8	176.2	140.96	31027	31026.54	0.99	31876	4493	26533	1.00	Below	0
Mar-75	653	33000	36.8	141.8	113.44	28400	28400.32	0.91	31693	3595	24805	0.80	Below	0
Apr-75	57	33000	16.3	83.4	66.72	25400	25399.51	0.81	31485	2101	23299	0.80	Below	0
May-75	72	33000	36.1	69.2	55.36	24562	24562.11	0.78	31428	1740	22822	0.80	Below	0
Jun-75	566	33000	31.3	39.2	31.36	24421	24420.85	0.78	31418	985	23436	0.80	Below	0
Jul-75	94	33000	32.1	68.4	54.72	24589	24589.18	0.78	31429	1720	22869	0.80	Below	0
Aug-75	3164	33000	79.5	54.6	43.68	28657	28657.21	0.91	31711	1385	27272	1.00	Below	0
Sep-75	4932	33000	85.5	81.6	65.28	35025	35025.44	1.12	32155	2099	32926	1.10	Above	0
Oct-75	5083	33000	146	99.4	79.52	42827	42827.23	1.37	32702	2600	40227	1.40	Above	0
Nov-75	2612	33000	46.7	145.2	116.16	44380	44379.62	1.42	32812	3811	40568	1.40	Above	0
Dec-75	75	33000	41.2	186.4	149.12	42002	42002.36	1.34	32644	4868	37134	1.40	Above	0
Jan-76	6	33000	6.2	214.6	171.68	37345	37345.23	1.19	32317	5548	31797	1.10	Above	0
Feb-76	13	33000	13.4	180.8	144.64	32253	32252.59	1.03	31961	4623	27630	1.00	Below	0
Mar-76	374	33000	36.1	144.8	115.84	29195	29195.22	0.93	31749	3678	25517	1.00	Below	0
Apr-76	6	33000	6.3	104	83.20	25732	25731.65	0.82	31508	2622	23110	0.80	Below	0
May-76	16	33000	15.9	71.8	57.44	23651	23650.75	0.75	31365	1802	21849	0.80	Below	0
Jun-76	417	33000	30.2	42.8	34.24	23262	23262.29	0.74	31338	1073	22189	0.80	Below	0
Jul-76	82	33000	11.9	49.4	39.52	22664	22663.96	0.72	31296	1237	21427	0.80	Below	0
Aug-76	1437	33000	56.3	67	53.60	24722	24721.91	0.79	31439	1685	23037	0.80	Below	0
Sep-76	2196	33000	97.5	85.6	68.48	28450	28449.82	0.91	31697	2171	26279	1.00	Below	0
Oct-76	6207	33000	82.4	106	84.80	35205	35205.32	1.12	32168	2728	32478	1.10	Above	0
Nov-76	763	33000	47.9	135.6	108.48	34822	34821.59	1.11	32141	3487	31335	1.00	Below	0
Dec-76	40	33000	39.4	205.6	164.48	32675	32675.34	1.04	31991	5262	27413	1.00	Below	0
Jan-77	585	33000	45.1	200	160.00	29486	29486.49	0.94	31769	5083	24403	0.80	Below	0
Feb-77	24	33000	9.8	169.4	135.52	24751	24750.67	0.79	31441	4261	20490	0.80	Below	0
Mar-77	13	33000	12.7	141.6	113.28	20922	20921.65	0.67	31176	3532	17390	0.60	Below	0
Apr-77	3655	33000	72.8	73	58.40	23448	23447.84	0.75	31351	1831	21617	0.80	Below	0
May-77	664	33000	42.6	59.2	47.36	23687	23687.07	0.76	31367	1486	22202	0.80	Below	0
Jun-77	4770	33000	75.2	37	29.60	29454	29453.60	0.94	31767	940	28513	1.00	Below	0
Jul-77	4342	33000	32.9	43.4	34.72	33941	33940.69	1.08	32079	1114	32827	1.10	Above	0
Aug-77	642	33000	17.6	86.6	69.28	34050	34049.89	1.09	32087	2223	31827	1.10	Above	0
Sep-77	3327	33000	67.1	78.4	62.72	37368	37367.79	1.19	32319	2027	35341	1.40	Above	0
Oct-77	504	33000	22.3	141.4	113.12	36580	36580.23	1.17	32264	3650	32931	1.10	Above	0
Nov-77	69	33000	41.4	159.8	127.84	34365	34365.31	1.10	32109	4105	30261	1.00	Below	0
Dec-77	447	33000	14.7	192.4	153.92	31193	31193.06	0.99	31888	4908	26285	1.00	Below	0
Jan-78	46	33000	45.5	183.8	147.04	27832	27831.91	0.89	31654	4654	23178	0.80	Below	0
Feb-78	809	33000	18.2	157.4	125.92	24587	24587.33	0.78	31429	3958	20630	0.80	Below	0
Mar-78	43	33000	41.4	114.2	91.36	22039	22039.11	0.70	31253	2855	19184	0.80	Below	0
Apr-78	2432	33000	53.8	72.4	57.92	23391	23391.35	0.75	31347	1816	21576	0.80	Below	0
May-78	1720	33000	53.7	65.8	52.64	25068	25067.70	0.80	31462	1656	23412	0.80	Below	0
Jun-78	1145	33000	32	34	27.20	25613	25612.51	0.82	31500	857	24756	0.80	Below	0
Jul-78	4714	33000	64.5	49	39.20	31599	31598.60	1.01	31916	1251	30347	1.00	Below	0
Aug-78	8083	33000	85.9	53.6	42.88	41265	41264.83	1.32	32592	1398	39867	1.40	Above	0
Sep-78	1637	33000	43.7	80.2	64.16	42947	42946.52	1.37	32711	2099	40848	1.40	Above	0
Oct-78	845	33000	50.1	130.8	104.64	43346	43345.61	1.38	32739	3426	39920	1.40	Above	0
Nov-78	4004	33000	103.8	138.6	110.88	47350	47349.60	1.51	33022	3661	43688	1.40	Above	0
Dec-78	1637	33000	76.3	155.4	124.32	47843	47843.19	1.53	33057	4110	43734	1.40	Above	0
Jan-79	80	33000	44.6	207.8	166.24	45286	45285.70	1.44	32876	5465	39820	1.40	Above	0
Feb-79	108	33000	51.2	157	125.60	41618	41618.17	1.33	32617	4097	37521	1.40	Above	0
Mar-79	430	33000	28.1	142.4	113.92	38879	38878.92	1.24	32425	3694	35185	1.40	Above	0
Apr-79	24	33000	24.4	82	65.60	36015	36014.67	1.15	32224	2114	33901	1.10	Above	0
May-79	2216	33000	63.6	54.8	43.84	38215	38215.50	1.22	32378	1419	36796	1.40	Above	0
Jun-79	24	33000	17.8	38.8	31.04	37408	37407.64	1.19	32322	1003	36404	1.40	Above	0
Jul-79	210	33000	9.1	53	42.40	36915	36914.76	1.18	32287	1369	35546	1.40	Above	0
Aug-79	243	33000	58.2	56.6	45.28	37709	37709.42	1.20	32343	1464	36245	1.40	Above	0
Sep-79	1490	33000	81.4	84.2	67.36	40421	40421.17	1.29	32533	2191	38230	1.40	Above	0
Oct-79	2783	33000	61	106.8	85.44	43026	43025.86	1.37	32716	2795	40231	1.40	Above	0
Nov-79	68	33000	31.4	140.8	112.64	41335	41334.59	1.32	32597	3672	37663	1.40	Above	0
Dec-79	14	33000	14.3	205.8	164.64	38149	38149.02	1.22	32374	5330	32819	1.10	Above	0
Jan-80	571	33000	35.9	193	154.40	34575	34574.86	1.10	32124	4960	29615	1.00	Below	0
Feb-80	35	33000	21.9	186.2	148.96	30373	30372.72	0.97	31831	4741	25631	1.00	Below	0

Mar-80	8	33000	8.3	141.8	113.44	25913	25913.44	0.83	31521	3576	22338	0.80	Below	0
Apr-80	880	33000	56.2	106.8	85.44	25072	25071.94	0.80	31463	2688	22384	0.80	Below	0
May-80	1603	33000	36	61.8	49.44	25175	25174.92	0.80	31470	1556	23619	0.80	Below	0
Jun-80	489	33000	41.4	38.4	30.72	25474	25474.40	0.81	31491	967	24507	0.80	Below	0
Jul-80	2436	33000	24.1	44.2	35.36	27738	27738.45	0.88	31648	1119	26619	1.00	Below	0
Aug-80	292	33000	31.7	82.4	65.92	27958	27957.56	0.89	31663	2087	25870	1.00	Below	0
Sep-80	21	33000	20.9	116.8	93.44	26581	26580.95	0.85	31567	2950	23631	0.80	Below	0
Oct-80	1527	33000	92.5	120.4	96.32	28211	28210.94	0.90	31680	3051	25159	1.00	Below	0
Nov-80	194	33000	31.8	159	127.20	26403	26402.62	0.84	31555	4014	22389	0.80	Below	0
Dec-80	41	33000	41.4	210.2	168.16	23796	23796.44	0.76	31375	5276	18520	0.60	Below	0
Jan-81	166	33000	47	216.6	173.28	20238	20237.62	0.65	31129	5394	14844	0.60	Below	0
Feb-81	672	33000	28.5	172	137.60	16456	16456.42	0.52	30869	4248	12209	0.60	Below	0
Mar-81	35	33000	34.6	133.2	106.56	13385	13385.20	0.43	30659	3267	10118	0.60	Below	0
Apr-81	12	33000	11.9	99	79.20	10523	10522.77	0.34	30464	2413	8110	0.60	Below	0
May-81	840	33000	59.1	53.2	42.56	10901	10900.83	0.35	30490	1298	9603	0.60	Below	0
Jun-81	4058	33000	48	44.8	35.84	15245	15244.70	0.49	30786	1103	14141	0.60	Below	0
Jul-81	4711	33000	61.5	51.2	40.96	20882	20881.66	0.67	31173	1277	19605	0.80	Below	0
Aug-81	3346	33000	51.9	66.6	53.28	24664	24663.63	0.79	31435	1675	22989	0.80	Below	0
Sep-81	419	33000	20	93.2	74.56	24068	24067.51	0.77	31393	2341	21727	0.80	Below	0
Oct-81	1012	33000	64.9	136	108.80	24880	24880.22	0.79	31450	3422	21459	0.80	Below	0
Nov-81	104	33000	50.8	138.2	110.56	23239	23238.58	0.74	31336	3465	19774	0.80	Below	0
Dec-81	16	33000	16.2	189.8	151.84	20325	20324.86	0.65	31135	4728	15597	0.60	Below	0
Jan-82	31	33000	31.4	224.2	179.36	16665	16664.90	0.53	30884	5539	11126	0.60	Below	0
Feb-82	6	33000	5.7	182	145.60	11319	11319.41	0.36	30518	4443	6876	0.60	Below	0
Mar-82	34	33000	34.4	135.4	108.32	8046	8045.58	0.26	30295	3282	4764	0.40	Below	0
Apr-82	381	33000	31.6	96.4	77.12	6188	6187.92	0.20	30169	2327	3861	0.40	Below	0
May-82	851	33000	36.9	69.4	55.52	5930	5929.68	0.19	30152	1674	4256	0.40	Below	0
Jun-82	1370	33000	31.4	40.4	32.32	6662	6661.79	0.21	30201	976	5686	0.40	Below	0
Jul-82	251	33000	11.5	42	33.60	6316	6315.83	0.20	30178	1014	5302	0.40	Below	0
Aug-82	16	33000	15.5	82	65.60	5829	5828.86	0.19	30145	1977	3851	0.40	Below	0
Sep-82	36	33000	35.8	100	80.00	5069	5068.56	0.16	30093	2407	2661	0.40	Below	0
Oct-82	40	33000	40	137	109.60	4021	4021.09	0.13	30022	3290	731	0.40	Below	0
Nov-82	6	33000	5.9	209.2	167.36	931	931.24	0.03	29814	4990	0	0.00	Empty	0
Dec-82	1568	33000	57.3	189.2	151.36	3459	3459.30	0.11	29984	4538	0	0.00	Empty	0
Jan-83	27	33000	20.9	213.4	170.72	717	716.73	0.02	29799	5087	0	0.00	Empty	0
Feb-83	5	33000	4.6	207.2	165.76	156	156.40	0.00	29762	4933	0	0.00	Empty	0
Mar-83	1180	33000	41.4	136	108.80	2546	2546.40	0.08	29923	3256	0	0.00	Empty	0
Apr-83	365	33000	47	78.4	62.72	1916	1915.99	0.06	29880	1874	42	0.40	Below	0
May-83	1510	33000	67.7	51.2	40.96	3786	3786.15	0.12	30007	1229	2557	0.40	Below	0
Jun-83	1545	33000	29.4	35.2	28.16	5072	5072.05	0.16	30094	847	4225	0.40	Below	0
Jul-83	3793	33000	50.4	40.8	32.64	9680	9680.33	0.31	30406	992	8688	0.60	Below	0
Aug-83	1107	33000	45.4	59.2	47.36	11293	11292.62	0.36	30516	1445	9847	0.60	Below	0
Sep-83	4635	33000	72.2	77.6	62.08	16865	16864.75	0.54	30897	1918	14947	0.60	Below	0
Oct-83	5770	33000	99.2	93	74.40	23990	23989.77	0.77	31388	2335	21655	0.80	Below	0
Nov-83	1593	33000	67.6	121.4	97.12	25479	25478.51	0.81	31491	3058	22420	0.80	Below	0
Dec-83	1255	33000	13.1	177	141.60	24108	24107.52	0.77	31396	4446	19662	0.80	Below	0
Jan-84	53	33000	43.3	182	145.60	21144	21144.12	0.67	31192	4541	16603	0.60	Below	0
Feb-84	12	33000	12.3	178	142.40	17021	17020.82	0.54	30908	4401	12620	0.60	Below	0
Mar-84	550	33000	53.7	135	108.00	14942	14942.01	0.48	30766	3323	11619	0.60	Below	0
Apr-84	1542	33000	47.1	80.8	64.64	14716	14716.05	0.47	30750	1988	12728	0.60	Below	0
May-84	970	33000	12.7	62.4	49.92	14117	14117.24	0.45	30709	1533	12584	0.60	Below	0
Jun-84	22	33000	13.2	44	35.20	13042	13041.58	0.42	30636	1078	11963	0.60	Below	0
Jul-84	77	33000	33.4	39.6	31.68	13142	13142.26	0.42	30643	971	12172	0.60	Below	0
Aug-84	2195	33000	62.8	66.2	52.96	16439	16439.22	0.52	30868	1635	14804	0.60	Below	0
Sep-84	3320	33000	77	66.8	53.44	20665	20665.00	0.66	31159	1665	19000	0.80	Below	0
Oct-84	2111	33000	38.1	128.8	103.04	22369	22368.54	0.71	31276	3223	19146	0.80	Below	0
Nov-84	70	33000	37.5	145	116.00	20453	20453.48	0.65	31144	3613	16841	0.60	Below	0
Dec-84	31	33000	30.8	173.2	138.56	17888	17887.98	0.57	30968	4291	13597	0.60	Below	0
Jan-85	9	33000	9.2	198	158.40	13910	13909.91	0.44	30695	4862	9048	0.60	Below	0
Feb-85	5	33000	4.6	163	130.40	9204	9204.22	0.29	30374	3961	5243	0.40	Below	0
Mar-85	1282	33000	55.8	135	108.00	8367	8367.05	0.27	30317	3274	5093	0.40	Below	0
Apr-85	244	33000	38.1	91.2	72.96	6594	6594.06	0.21	30197	2203	4391	0.40	Below	0
May-85	35	33000	35.4	59.2	47.36	5595	5594.51	0.18	30129	1427	4168	0.40	Below	0
Jun-85	780	33000	37.3	41.6	33.28	6179	6178.65	0.20	30169	1004	5175	0.40	Below	0
Jul-85	638	33000	34.1	49.6	39.68	6938	6938.33	0.22	30220	1199	5739	0.40	Below	0
Aug-85	3821	33000	61.4	57.6	46.08	11586	11586.19	0.37	30536	1407	10179	0.60	Below	0
Sep-85	837	33000	25.8	72.2	57.76	11868	11867.55	0.38	30555	1765	10103	0.60	Below	0
Oct-85	444	33000	59.8	119.4	95.52	12520	12519.93	0.40	30600	2923	9597	0.60	Below	0
Nov-85	1532	33000	60.1	127.4	101.92	13112	13112.22	0.42	30640	3123	9989	0.60	Below	0
Dec-85	4732	33000	117.7	141	112.80	18605	18605.24	0.59	31017	3499	15107	0.60	Below	0
Jan-86	497	33000	18.2	182.6	146.08	16205	16204.55	0.52	30852	4507	11698	0.60	Below	0
Feb-86	14	33000	13.8	171.4	137.12	12167	12166.88	0.39	30576	4193	7974	0.60	Below	0
Mar-86	12	33000	12.3	156.4	125.12	8393	8392.51	0.27	30319	3793	4599	0.40	Below	0
Apr-86	365	33000	47	98.4	78.72	6515	6515.01	0.21	30191	2377	4138	0.40	Below	0
May-86	5185	33000	76	51.8	41.44	11832	11831.57	0.38	30553	1266	10565	0.60	Below	0
Jun-86	2254	33000	20	35.6	28.48	13479	13479.21	0.43	30666	873	12606	0.60	Below	0
Jul-86	3705	33000	69	40.2	32.16	18588	18587.96	0.59	31016	997	17590	0.60	Below	0
Aug-86	2790	33000	45.9	61.6	49.28	21895	21895.47	0.70	31243	1540	20356	0.80	Below	0
Sep-86	882	33000	38	71.2	56.96	22491	22491.37	0.72	31284	1782	20709	0.80	Below	0
Oct-86	792	33000	75.7	108	86.40	23999	23999.38	0.77	31389	2712	21287	0.80	Below	0
Nov-86	370	33000	23.8	151.6	121.28	22443	22442.68	0.72	31281	3794	18649	0.60	Below	0
Dec-86	57	33000	47.1	156.8	125.44	20261	20260.52	0.65	31131	3905	16355	0.60	Below	0
Jan-87	4530	33000	104.2	185	148.00	24324	24323.84	0.78	31411	4649	19675	0.80	Below	0
Feb-87	57	33000	43.9	168.2	134.56	21181	21180.74	0.68	31194	4197	16983	0.60	Below	0
Mar-87	408	33000	28.2	120.6	96.48	18321	18321.37	0.58	30997	2991	15331	0.60	Below	0
Apr-87	23	33000	22.9	93.6	74.88	16109	16109.35	0.51	30846	2310	13800	0.60	Below	0
May-87	6615	33000	99.9	57	45.60	23711	23711.16	0.76	31369	1430	22281	0.80	Below	0
Jun-87	3889	33000	38.7	39.4	31.52	27447	27447.29	0.88	31627	997	26450	1.00	Below	0
Jul-87	1873	33000	63	44.2	35.36	30402	30402.15	0.97	31833	1126	29277	1.00	Below	0
Aug-87	5326	33000	35.1	58.8	47.04	35761	35760.61	1.14	32206	1515	34246	1.10	Above	0
Sep-87	448	33000	32.1	99.6	79.68	35753	35752.51	1.14	32206	2566	33186	1.10	Above	0
Oct-87	30	33000	29.5	124.2	99.36	34189	34189.35	1.09	32097	3189	31000	1.00	Below	0
Nov-87	52	33000	51.5	161.8	129.44	32751	32751.23	1.04	31996	4142	28610	1.00	Below	0
Dec-87	4084	33000	106.8	171	136.80	36218	36217.88	1.16	32238	4410	31808	1.10	Above	0
Jan-88	1171	33000	65	194.8	155.84	35124	35124.05	1.12	32162	5012	30112	1.00	Below	0
Feb-88	8	33000	7.3	171.6	137.28	30361	30361.02	0.97	31830	4370	25991	1.00	Below	0
Mar-88	24	33000	23.7	142.4	113.92	26797	26797.23	0.85	31582	3598	23199	0.80	Below	0
Apr-88	11	33000	11.4	91	72.80	23587	23586.98	0.75	31360	2283	21304	0.80	Below	0
May-88	629	33000	58.9	51.6	41.28	23877	23876.84	0.76	31380	1295	22581	0.80	Below	0
Jun-88	1943	33000	44	42.8	34.24	25976	25976.49	0.83	31525	1079	24897	0.80	Below	0
Jul-88	1128	33000	30.3	45.4	36.32	27025	27025.37	0.86	31598	1148	25878	1.00	Below	0
Aug-88	421	33000	46.9	66.8	53.44	27847	27846.63	0.89	31655	1692	26155	1.00	Below	0
Sep-88	156	33000	37.4	100.2	80.16	27546	27545.63	0.88	31634	2536	25010	0.80	Below	0
Oct-88	19	33000	18.4	163.4	130.72	25636	25636.22	0.82	31502	4118	21518	0.80	Below	0

Nov-88	1483	33000	94.9	155.8	124.64	26133	26133.35	0.83	31536	3931	22203	0.80	Below	0
Dec-88	4265	33000	93.5	161.6	129.28	29553	29552.95	0.94	31774	4108	25445	1.00	Below	0
Jan-89	1055	33000	45.5	186	148.80	28001	28001.28	0.89	31666	4712	23289	0.80	Below	0
Feb-89	64	33000	12.3	171	136.80	23759	23758.92	0.76	31372	4292	19467	0.80	Below	0
Mar-89	1346	33000	79.5	125.6	100.48	23437	23436.93	0.75	31350	3150	20287	0.80	Below	0
Apr-89	552	33000	52.8	72.4	57.92	22582	22581.80	0.72	31291	1812	20769	0.80	Below	0
May-89	527	33000	45.7	45.6	36.48	22804	22804.44	0.73	31306	1142	21662	0.80	Below	0
Jun-89	5288	33000	64.1	35.8	28.64	29066	29065.55	0.93	31740	909	28157	1.00	Below	0
Jul-89	3407	33000	37.2	43.2	34.56	32791	32790.92	1.05	31999	1106	31685	1.10	Above	0
Aug-89	1377	33000	58.6	52.2	41.76	34996	34996.16	1.12	32153	1343	33653	1.10	Above	0
Sep-89	1478	33000	40.5	86.6	69.28	36468	36468.24	1.16	32256	2235	34234	1.10	Above	0
Oct-89	396	33000	64.9	119.6	95.68	36771	36770.81	1.17	32277	3088	33683	1.10	Above	0
Nov-89	236	33000	40	131.6	105.28	35239	35238.76	1.12	32170	3387	31852	1.10	Above	0
Dec-89	25	33000	25.1	186.6	149.28	32705	32705.31	1.04	31993	4776	27929	1.00	Below	0
Jan-90	3	33000	3.3	214.6	171.68	28042	28041.59	0.89	31669	5437	22605	0.80	Below	0
Feb-90	1471	33000	78.6	122	97.60	26669	26669.09	0.85	31573	3082	23588	0.80	Below	0
Mar-90	25	33000	23.5	141.6	113.28	24388	24388.28	0.78	31416	3559	20830	0.80	Below	0
Apr-90	1511	33000	58.7	83	66.40	24278	24277.74	0.77	31408	2085	22192	0.80	Below	0
May-90	474	33000	8.3	60.2	48.16	22940	22940.49	0.73	31315	1508	21432	0.80	Below	0
Jun-90	39	33000	38.6	43.4	34.72	22745	22744.74	0.73	31302	1087	21658	0.80	Below	0
Jul-90	3647	33000	56.2	49.8	39.84	27159	27159.34	0.87	31607	1259	25900	1.00	Below	0
Aug-90	1142	33000	31	62.2	49.76	28065	28065.50	0.90	31670	1576	26490	1.00	Below	0
Sep-90	36	33000	33.2	85.8	68.64	27621	27620.72	0.88	31639	2172	25449	1.00	Below	0
Oct-90	1279	33000	68.4	111.2	88.96	28985	28985.22	0.92	31734	2823	26162	1.00	Below	0
Nov-90	36	33000	27.6	160.2	128.16	27109	27109.32	0.86	31604	4050	23059	0.80	Below	0
Dec-90	509	33000	43.2	182.8	146.24	24994	24993.79	0.80	31457	4600	20393	0.80	Below	0
Jan-91	57	33000	55.7	181.8	145.44	22289	22289.02	0.71	31271	4548	17741	0.60	Below	0
Feb-91	2	33000	1.6	158.6	126.88	17795	17795.43	0.57	30961	3928	13867	0.60	Below	0
Mar-91	12	33000	11.5	134.4	107.52	14258	14258.07	0.45	30719	3303	10955	0.60	Below	0
Apr-91	25	33000	24.9	85	68.00	11802	11801.79	0.38	30551	2077	9724	0.60	Below	0
May-91	17	33000	16.7	44.4	35.52	10292	10292.12	0.33	30448	1082	9211	0.60	Below	0
Jun-91	6036	33000	100.7	40.6	32.48	18569	18569.30	0.59	31014	1007	17562	0.60	Below	0
Jul-91	3918	33000	40.1	40.8	32.64	22803	22803.38	0.73	31306	1022	21782	0.80	Below	0
Aug-91	535	33000	32.4	71	56.80	23385	23385.25	0.75	31346	1780	21605	0.80	Below	0
Sep-91	94	33000	60.4	73.8	59.04	23692	23691.58	0.76	31367	1852	21840	0.80	Below	0
Oct-91	537	33000	16.9	136.8	109.44	22934	22934.11	0.73	31315	3427	19507	0.80	Below	0
Nov-91	25	33000	22.7	153	122.40	20281	20281.12	0.65	31132	3811	16471	0.60	Below	0
Dec-91	2763	33000	96.8	153.8	123.04	22428	22428.29	0.72	31280	3849	18580	0.60	Below	0
Jan-92	546	33000	21	162	129.60	19819	19818.67	0.63	31100	4031	15788	0.60	Below	0
Feb-92	35	33000	13.4	150.4	120.32	16265	16265.40	0.52	30856	3713	12553	0.60	Below	0
Mar-92	34	33000	34.4	124.8	99.84	13722	13722.37	0.44	30682	3063	10659	0.60	Below	0
Apr-92	319	33000	60.2	88.8	71.04	12964	12964.29	0.41	30630	2176	10788	0.60	Below	0
May-92	4721	33000	55.1	53.8	43.04	17328	17328.09	0.55	30929	1331	15997	0.60	Below	0
Jun-92	1097	33000	31.7	39.6	31.68	18140	18139.80	0.58	30985	982	17158	0.60	Below	0
Jul-92	473	33000	19	54.8	43.84	18258	18258.00	0.58	30993	1359	16899	0.60	Below	0
Aug-92	538	33000	54.1	62.8	50.24	19223	19222.69	0.61	31059	1560	17662	0.60	Below	0
Sep-92	4577	33000	96.8	62.6	50.08	25433	25433.47	0.81	31488	1577	23857	0.80	Below	0
Oct-92	5262	33000	95.1	92.4	73.92	32257	32256.84	1.03	31962	2363	29894	1.00	Below	0
Nov-92	2667	33000	101.1	116	92.80	35898	35897.97	1.14	32216	2990	32908	1.10	Above	0
Dec-92	1768	33000	77.7	133.8	107.04	37240	37240.29	1.19	32310	3458	33782	1.10	Above	0
Jan-93	1369	33000	105.3	165.8	132.64	38626	38625.60	1.23	32407	4298	34327	1.10	Above	0
Feb-93	1436	33000	30.3	152.8	122.24	36763	36762.89	1.17	32277	3945	32817	1.10	Above	0
Mar-93	30	33000	23.1	110	88.00	33610	33609.79	1.07	32056	2821	30789	1.00	Below	0
Apr-93	11	33000	11.3	97.2	77.76	31173	31173.05	0.99	31886	2479	28694	1.00	Below	0
May-93	17	33000	17	57.6	46.08	29272	29271.57	0.93	31754	1463	27808	1.00	Below	0
Jun-93	366	33000	37.3	43.8	35.04	29405	29404.88	0.94	31763	1113	28292	1.00	Below	0
Jul-93	3137	33000	38.5	47.4	37.92	32699	32699.21	1.04	31993	1213	31486	1.10	Above	0
Aug-93	444	33000	37.2	74.6	59.68	33158	33158.08	1.06	32025	1911	31247	1.00	Below	0
Sep-93	4107	33000	97.6	75.6	60.48	38574	38574.40	1.23	32404	1960	36615	1.40	Above	0
Oct-93	1110	33000	59.5	112.6	90.08	39688	39688.15	1.27	32482	2926	36762	1.40	Above	0
Nov-93	794	33000	48.4	134.4	107.52	39153	39153.18	1.25	32444	3488	35665	1.40	Above	0
Dec-93	242	33000	88.9	154.6	123.68	38841	38840.69	1.24	32422	4010	34831	1.40	Above	0
Jan-94	889	33000	16	178.8	143.04	36248	36248.08	1.16	32241	4612	31636	1.10	Above	0
Feb-94	1948	33000	100.3	123.6	98.88	36895	36894.61	1.18	32286	3192	33702	1.10	Above	0
Mar-94	443	33000	20.3	109.8	87.84	34815	34814.98	1.11	32140	2823	31992	1.10	Above	0
Apr-94	29	33000	28.7	85.2	68.16	32968	32967.58	1.05	32011	2182	30786	1.00	Below	0
May-94	17	33000	16.8	74.4	59.52	31357	31356.88	1.00	31899	1899	29458	1.00	Below	0
Jun-94	25	33000	24.9	43	34.40	30305	30304.85	0.97	31826	1095	29210	1.00	Below	0
Jul-94	12	33000	12.3	55.8	44.64	29628	29628.24	0.94	31779	1419	28210	1.00	Below	0
Aug-94	21	33000	21.3	66	52.80	28934	28933.84	0.92	31731	1675	27258	1.00	Below	0
Sep-94	40	33000	39.9	76.2	60.96	28615	28615.07	0.91	31708	1933	26682	1.00	Below	0
Oct-94	35	33000	34.6	129.6	103.68	27859	27858.52	0.89	31656	3282	24576	0.80	Below	0
Nov-94	33	33000	33.2	145.6	116.48	25705	25705.24	0.82	31507	3670	22035	0.80	Below	0
Dec-94	18	33000	17.6	215.8	172.64	22634	22633.75	0.72	31294	5403	17231	0.60	Below	0
Jan-95	1524	33000	74.8	173.8	139.04	21223	21223.21	0.68	31197	4338	16886	0.60	Below	0
Feb-95	14	33000	11.8	159	127.20	17289	17289.40	0.55	30926	3934	13356	0.60	Below	0
Mar-95	610	33000	61.5	140	112.00	15995	15994.93	0.51	30838	3454	12541	0.60	Below	0
Apr-95	1723	33000	68.9	75	60.00	16537	16537.49	0.53	30875	1852	14685	0.60	Below	0
May-95	4444	33000	62.2	44.4	35.52	21181	21181.22	0.68	31194	1108	20073	0.80	Below	0
Jun-95	3796	33000	59.8	38.2	30.56	25843	25842.90	0.82	31516	963	24880	0.80	Below	0
Jul-95	4060	33000	48.7	38.2	30.56	30547	30546.58	0.97	31843	973	29573	1.00	Below	0
Aug-95	4229	33000	40.7	72.4	57.92	35146	35145.92	1.12	32163	1863	33283	1.10	Above	0
Sep-95	265	33000	31.3	73.6	58.88	34581	34580.89	1.10	32124	1891	32689	1.10	Above	0
Oct-95	2509	33000	99	105.6	84.48	38465	38465.19	1.23	32396	2737	35728	1.40	Above	0
Nov-95	5476	33000	76.1	129.8	103.84	43716	43715.79	1.39	32765	3402	40313	1.40	Above	0
Dec-95	252	33000	27.4	140.2	112.16	41470	41470.03	1.32	32607	3657	37813	1.40	Above	0
Jan-96	1136	33000	46.3	170.4	136.32	40477	40476.78	1.29	32537	4435	36041	1.40	Above	0
Feb-96	61	33000	60.9	137.8	110.24	38112	38111.93	1.22	32371	3569	34543	1.40	Above	0
Mar-96	344	33000	49.1	128.2	102.56	36508	36507.95	1.16	32259	3308	33200	1.10	Above	0
Apr-96	2056	33000	57.7	65.4	52.32	37159	37159.46	1.19	32304	1690	35469	1.40	Above	0
May-96	180	33000	21	47.4	37.92	36343	36342.50	1.16	32247	1223	35120	1.40	Above	0
Jun-96	335	33000	46.2	38.4	30.72	36980	36979.57	1.18	32292	992	35988	1.40	Above	0
Jul-96	5487	33000	69.5	41.2	32.96	43768	43768.49	1.40	32769	1080	42688	1.40	Above	0
Aug-96	3644	33000	47.6	58.6	46.88	47904	47903.60	1.53	33061	1550	46354	1.50	Above	0
Sep-96	1631	33000	71.5	91	72.80	50344	50344.13	1.61	33234	2419	47043	1.60	Above	882
Oct-96	753	33000	36.3	122.2	97.76	48994	48994.05	1.56	33138	3240	45754	1.50	Above	0
Nov-96	62	33000	20.1	152.6	122.08	46480	46479.77	1.48	32960	4024	42456	1.40	Above	0
Dec-96	17	33000	17.1	169	135.20	43037	43037.39	1.37	32717	4423	38614	1.40	Above	0
Jan-97	296	33000	37.1	226.8	181.44	40134	40133.84	1.28	32513	5899	34235	1.10	Above	0
Feb-97	103	33000	2.6	179	143.20	34424	34423.82	1.10	32113	4599	29825	1.00	Below	0
Mar-97	16	33000	16.3	122.2	97.76	30379	30379.45	0.97	31831	3112	27268	1.00	Below	0
Apr-97	8	33000	8.4	87.8	70.24	27553	27553.25	0.88	31635	2222	25331	1.00	Below	0
May-97	975	33000	52.3	48.4	38.72	28032	28031.85	0.89	31668	1226	26806	1.00	Below	0
Jun-97	34	33000	22.3	40.8	32.64	27575	27575.26	0.88	31636	1033	26543	1.00	Below	0

Jul-97	17	33000	13.8	43.4	34.72	27015	27015.36	0.86	31597	1097	25918	1.00	Below	0
Aug-97	28	33000	27.6	66.4	53.12	26857	26856.70	0.86	31586	1678	25179	1.00	Below	0
Sep-97	1517	33000	67.3	72	57.60	28917	28916.87	0.92	31729	1828	27089	1.00	Below	0
Oct-97	474	33000	40.9	125	100.00	28913	28912.56	0.92	31729	3173	25740	1.00	Below	0
Nov-97	2894	33000	64.7	151.4	121.12	30769	30769.04	0.98	31858	3859	26910	1.00	Below	0
Dec-97	509	33000	2.7	188.2	150.56	27508	27508.29	0.88	31632	4762	22746	0.80	Below	0
Jan-98	204	33000	39.8	192	153.60	24264	24263.72	0.77	31407	4824	19440	0.80	Below	0
Feb-98	495	33000	47.9	175.4	140.32	21515	21514.98	0.69	31217	4380	17135	0.60	Below	0
Mar-98	38	33000	7.5	143.2	114.56	17420	17420.26	0.56	30935	3544	13876	0.60	Below	0
Apr-98	45	33000	45.4	77.6	62.08	15420	15419.89	0.49	30798	1912	13508	0.60	Below	0
May-98	316	33000	28	51	40.80	14748	14748.13	0.47	30752	1255	13493	0.60	Below	0
Jun-98	1657	33000	51.7	46.6	37.28	16857	16856.95	0.54	30897	1152	15705	0.60	Below	0
Jul-98	1645	33000	39	39.8	31.84	18638	18637.59	0.59	31019	988	17650	0.60	Below	0
Aug-98	618	33000	22.8	54.4	43.52	19020	19020.14	0.61	31045	1351	17669	0.60	Below	0
Sep-98	217	33000	24.5	97	77.60	18695	18694.92	0.60	31023	2407	16288	0.60	Below	0
Oct-98	53	33000	53.4	124.4	99.52	18103	18103.13	0.58	30982	3083	15020	0.60	Below	0
Nov-98	1506	33000	62.6	138.8	111.04	18592	18591.82	0.59	31016	3444	15148	0.60	Below	0
Dec-98	432	33000	54.6	185.2	148.16	17381	17381.20	0.55	30933	4583	12798	0.60	Below	0
Jan-99	336	33000	63.1	181.8	145.44	15217	15216.91	0.49	30784	4477	10740	0.60	Below	0
Feb-99	510	33000	49.1	149.2	119.36	12870	12869.80	0.41	30624	3655	9215	0.60	Below	0
Mar-99	855	33000	58.3	127.2	101.76	11993	11993.02	0.38	30564	3110	8883	0.60	Below	0
Apr-99	12	33000	11.7	76.8	61.44	9281	9280.62	0.30	30379	1866	7414	0.60	Below	0
May-99	250	33000	41.7	71.6	57.28	9040	9040.41	0.29	30363	1739	7301	0.60	Below	0
Jun-99	831	33000	27.1	45.6	36.48	9027	9026.79	0.29	30362	1108	7919	0.60	Below	0
Jul-99	66	33000	14.8	54.2	43.36	8473	8473.20	0.27	30324	1315	7158	0.60	Below	0
Aug-99	309	33000	55.4	67.2	53.76	9295	9295.10	0.30	30380	1633	7662	0.60	Below	0
Sep-99	784	33000	23.1	98	78.40	9208	9208.28	0.29	30374	2381	6827	0.60	Below	0
Oct-99	1097	33000	44.6	123	98.40	9396	9396.19	0.30	30387	2990	6406	0.60	Below	0
Nov-99	33	33000	26.6	156.8	125.44	7317	7316.63	0.23	30246	3794	3523	0.40	Below	0
Dec-99	302	33000	70.1	186.6	149.28	6138	6138.14	0.20	30166	4503	1635	0.40	Below	0
Jan-00	2651	33000	23.4	182	145.60	5058	5057.72	0.16	30093	4381	676	0.40	Below	0
Feb-00	32	33000	31.6	197.4	157.92	1751	1750.64	0.06	29869	4717	0	0.00	Empty	0
Mar-00	9	33000	8.9	156	124.80	303	302.60	0.01	29771	3715	0	0.00	Empty	0
Apr-00	45	33000	44.7	92	73.60	1520	1519.80	0.05	29853	2197	0	0.00	Empty	0
May-00	876	33000	54.1	59.2	47.36	2661	2661.09	0.08	29930	1418	1244	0.40	Below	0
Jun-00	1214	33000	33.3	41	32.80	3557	3556.63	0.11	29991	984	2573	0.40	Below	0
Jul-00	306	33000	39.3	50.2	40.16	4175	4175.43	0.13	30033	1206	2969	0.40	Below	0
Aug-00	999	33000	26	58	46.40	4826	4826.04	0.15	30077	1396	3430	0.40	Below	0
Sep-00	129	33000	61.2	95.2	76.16	5579	5578.88	0.18	30128	2295	3284	0.40	Below	0
Oct-00	1739	33000	110.3	109.4	87.52	8663	8662.74	0.28	30337	2655	6008	0.40	Below	0
Nov-00	6043	33000	19.8	135.4	108.32	12704	12703.79	0.41	30613	3316	9388	0.60	Below	0
Dec-00	146	33000	12.9	209	167.20	9959	9959.24	0.32	30425	5087	4872	0.40	Below	0
Jan-01	12	33000	12.1	207	165.60	5284	5283.51	0.17	30108	4986	298	0.40	Below	0
Feb-01	64	33000	20.1	193.6	154.88	1025	1024.85	0.03	29820	4619	0	0.00	Empty	0
Mar-01	3045	33000	89.8	141	112.80	6009	6008.82	0.19	30157	3402	2607	0.40	Below	0
Apr-01	3557	33000	127.1	88	70.40	10358	10357.94	0.33	30453	2144	8214	0.60	Below	0
May-01	11429	33000	15.7	48.2	38.56	20161	20161.14	0.64	31124	1200	18961	0.80	Below	0
Jun-01	1581	33000	34.3	47	37.60	21674	21673.58	0.69	31228	1174	20499	0.80	Below	0
Jul-01	1132	33000	11.6	37.4	29.92	22015	22014.65	0.70	31252	935	21080	0.80	Below	0
Aug-01	266	33000	47.2	72.4	57.92	22904	22903.68	0.73	31313	1814	21090	0.80	Below	0
Sep-01	536	33000	25.4	90	72.00	22464	22464.15	0.72	31283	2252	20212	0.80	Below	0
Oct-01	62	33000	55.1	117.4	93.92	22092	22092.19	0.70	31257	2936	19157	0.80	Below	0
Nov-01	49	33000	48.6	124.2	99.36	20809	20808.93	0.66	31168	3097	17712	0.60	Below	0
Dec-01	33	33000	32.7	147.8	118.24	18824	18823.83	0.60	31032	3669	15155	0.60	Below	0
Jan-02	23	33000	23.4	176.2	140.96	15950	15950.22	0.51	30835	4346	11604	0.60	Below	0
Feb-02	290	33000	50.6	153.4	122.72	13563	13563.32	0.43	30671	3764	9799	0.60	Below	0
Mar-02	156	33000	36.1	136.4	109.12	11147	11146.75	0.36	30506	3329	7818	0.60	Below	0
Apr-02	433	33000	35.4	78.2	62.56	9419	9419.21	0.30	30389	1901	7518	0.60	Below	0
May-02	27	33000	26.3	61.4	49.12	8413	8413.17	0.27	30320	1489	6924	0.60	Below	0
Jun-02	33	33000	32.5	55.6	44.48	8029	8028.84	0.26	30294	1347	6681	0.60	Below	0
Jul-02	28	33000	27.8	67.8	54.24	7627	7626.56	0.24	30267	1642	5985	0.40	Below	0
Aug-02	28	33000	27.7	68.4	54.72	6927	6926.69	0.22	30219	1654	5273	0.40	Below	0
Sep-02	26	33000	26.4	114.8	91.84	6171	6170.69	0.20	30168	2771	3400	0.40	Below	0
Oct-02	23	33000	22.5	137.8	110.24	4165	4165.06	0.13	30032	3311	854	0.40	Below	0
Nov-02	14	33000	14.1	163.6	130.88	1334	1333.72	0.04	29841	3906	0	0.00	Empty	0
Dec-02	8	33000	7.7	189.2	151.36	262	261.80	0.01	29769	4506	0	0.00	Empty	0
Jan-03	19	33000	19.4	220.4	176.32	660	659.60	0.02	29795	5254	0	0.00	Empty	0
Feb-03	21	33000	21	152	121.60	714	714.00	0.02	29799	3624	0	0.00	Empty	0
Mar-03	18	33000	18.3	137.2	109.76	622	622.20	0.02	29793	3270	0	0.00	Empty	0
Apr-03	2412	33000	53.1	86.8	69.44	4164	4164.47	0.13	30032	2085	2079	0.40	Below	0
May-03	69	33000	10.7	56.2	44.96	2501	2500.65	0.08	29920	1345	1155	0.40	Below	0
Jun-03	21	33000	20.5	52.4	41.92	1852	1852.47	0.06	29876	1252	600	0.40	Below	0
Jul-03	882	33000	66.6	58	46.40	3680	3680.03	0.12	29999	1392	2288	0.40	Below	0
Aug-03	2891	33000	47.5	72.2	57.76	6747	6747.04	0.22	30207	1745	5002	0.40	Below	0
Sep-03	957	33000	24.4	99.8	79.84	6765	6764.67	0.22	30208	2412	4353	0.40	Below	0
Oct-03	79	33000	64.9	102.6	82.08	6573	6573.41	0.21	30195	2478	4095	0.40	Below	0
Nov-03	32	33000	31.8	161.2	128.96	5176	5176.18	0.17	30101	3882	1294	0.40	Below	0
Dec-03	335	33000	31.4	200.2	160.16	2666	2665.98	0.09	29931	4794	0	0.00	Empty	0
Jan-04	62	33000	23.8	180	144.00	848	847.74	0.03	29808	4292	0	0.00	Empty	0
Feb-04	23	33000	23.4	160.4	128.32	796	795.60	0.03	29805	3825	0	0.00	Empty	0
Mar-04	15	33000	15	144.8	115.84	510	510.00	0.02	29785	3450	0	0.00	Empty	0
Apr-04	695	33000	46.3	98.8	79.04	2222	2222.44	0.07	29901	2363	0	0.00	Empty	0
May-04	583	33000	21.2	61.6	49.28	1282	1282.32	0.04	29837	1470	0	0.00	Empty	0
Jun-04	514	33000	37.1	54.8	43.84	1738	1737.94	0.06	29868	1309	429	0.40	Below	0
Jul-04	300	33000	29.8	54.8	43.84	1712	1712.41	0.05	29866	1309	403	0.40	Below	0
Aug-04	913	33000	62.2	73.2	58.56	3369	3369.11	0.11	29978	1756	1614	0.40	Below	0
Sep-04	3003	33000	50.9	76.2	60.96	6296	6296.25	0.20	30176	1840	4457	0.40	Below	0
Oct-04	465	33000	48.2	130.8	104.64	6513	6512.65	0.21	30191	3159	3353	0.40	Below	0
Nov-04	3885	33000	86.2	142	113.60	10083	10082.59	0.32	30434	3457	6625	0.60	Below	0
Dec-04	416	33000	45.4	171.8	137.44	8540	8539.64	0.27	30329	4168	4371	0.40	Below	0
Jan-05	40	33000	40.1	195.8	156.64	5735	5734.65	0.18	30138	4721	1014	0.40	Below	0
Feb-05	8588	33000	134.2	140.4	112.32	14030	14029.87	0.45	30703	3449	10581	0.60	Below	0
Mar-05	920	33000	7.5	132.2	105.76	11749	11748.83	0.37	30547	3231	8518	0.60	Below	0
Apr-05	22	33000	20.9	117.2	93.76	9230	9230.29	0.29	30376	2848	6382	0.60	Below	0
May-05	10	33000	10.1	66.4	53.12	6726	6725.66	0.21	30206	1605	5121	0.40	Below	0
Jun-05	1478	33000	41.7	47.8	38.24	7975	7975.15	0.25	30290	1158	6817	0.60	Below	0
Jul-05	905	33000	26.8	50	40.00	8606	8606.49	0.27	30333	1213	7393	0.60	Below	0
Aug-05	45	33000	42.7	82.4	65.92	8847	8847.28	0.28	30350	2001	6847	0.60	Below	0
Sep-05	299	33000	51.8	89.4	71.52	8855	8854.86	0.28	30350	2171	6684	0.60	Below	0
Oct-05	151	33000	47.3	136.2	108.96	8396	8396.41	0.27	30319	3304	5093	0.40	Below	0
Nov-05	717	33000	49.7	173.2	138.56	7450	7450.16	0.24	30255	4192	3258	0.40	Below	0
Dec-05	49	33000	30.8	227	181.60	4324	4323.65	0.14	30043	5456	0	0.00	Empty	0
Jan-06	48	33000	48.2	209.2	167.36	1639	1638.80	0.05	29861	4998	0	0.00	Empty	0
Feb-06	39	33000	39.3	159	127.20	1336	1336.20	0.04	29841	3796	0	0.00	Empty	0

Mar-06	10	33000	10.1	158.8	127.04	343	343.40	0.01	29774	3783	0	0.00	Empty	0
Apr-06	299	33000	35.6	92.2	73.76	1474	1474.08	0.05	29850	2202	0	0.00	Empty	0
May-06	43	33000	32.7	52.4	41.92	1122	1122.31	0.04	29827	1250	0	0.00	Empty	0
Jun-06	20	33000	20	37.4	29.92	680	680.00	0.02	29797	892	0	0.00	Empty	0
Jul-06	25	33000	24.9	51.8	41.44	847	846.60	0.03	29808	1235	0	0.00	Empty	0
Aug-06	26	33000	26.3	72	57.60	894	894.20	0.03	29811	1717	0	0.00	Empty	0
Sep-06	28	33000	27.6	111.2	88.96	938	938.40	0.03	29814	2652	0	0.00	Empty	0
Oct-06	6	33000	6.3	172.8	138.24	214	214.20	0.01	29765	4115	0	0.00	Empty	0
Nov-06	17	33000	17.1	167.8	134.24	581	581.40	0.02	29790	3999	0	0.00	Empty	0
Dec-06	14	33000	14.2	219.2	175.36	483	482.80	0.02	29784	5223	0	0.00	Empty	0
Jan-07	598	33000	27.8	217.8	174.24	1515	1515.48	0.05	29853	5202	0	0.00	Empty	0
Feb-07	80	33000	21.3	183	146.40	783	782.89	0.02	29804	4363	0	0.00	Empty	0
Mar-07	25	33000	24.5	165.4	132.32	833	833.00	0.03	29807	3944	0	0.00	Empty	0
Apr-07	28	33000	28.1	97.6	78.08	955	955.40	0.03	29815	2328	0	0.00	Empty	0
May-07	32	33000	32.2	88	70.40	1095	1094.80	0.03	29825	2100	0	0.00	Empty	0
Jun-07	531	33000	41.7	41.8	33.44	1907	1907.48	0.06	29880	999	908	0.40	Below	0
Jul-07	6781	33000	65.7	51.4	41.12	9858	9857.67	0.31	30418	1251	8607	0.60	Below	0
Aug-07	904	33000	16.1	83.2	66.56	10042	10042.21	0.32	30431	2025	8017	0.60	Below	0
Sep-07	17	33000	15.9	105.2	84.16	8558	8558.10	0.27	30330	2553	6006	0.40	Below	0
Oct-07	18	33000	18.3	154.2	123.36	6628	6627.72	0.21	30199	3725	2902	0.40	Below	0
Nov-07	2734	33000	93.5	164.2	131.36	8722	8721.57	0.28	30341	3986	4736	0.40	Below	0
Dec-07	446	33000	54.1	204.2	163.36	6967	6967.25	0.22	30222	4937	2030	0.40	Below	0
Jan-08	87	33000	10.2	218.8	175.04	2454	2454.07	0.08	29916	5237	0	0.00	Empty	0
Feb-08	22	33000	21.5	154.8	123.84	731	731.00	0.02	29800	3690	0	0.00	Empty	0
Mar-08	21	33000	20.8	175.8	140.64	707	707.20	0.02	29799	4191	0	0.00	Empty	0
Apr-08	8	33000	8	91.8	73.44	272	272.00	0.01	29769	2186	0	0.00	Empty	0
May-08	726	33000	42.6	51.4	41.12	2132	2131.68	0.07	29895	1229	902	0.40	Below	0
Jun-08	204	33000	24.4	48.6	38.88	1912	1911.59	0.06	29880	1162	750	0.40	Below	0
Jul-08	411	33000	39.1	49.6	39.68	2451	2450.68	0.08	29916	1187	1264	0.40	Below	0
Aug-08	1309	33000	39.9	57.4	45.92	3889	3888.91	0.12	30013	1378	2511	0.40	Below	0
Sep-08	588	33000	15.7	117.8	94.24	3616	3616.32	0.12	29995	2827	790	0.40	Below	0
Oct-08	13	33000	10.5	155.4	124.32	1149	1148.92	0.04	29828	3708	0	0.00	Empty	0
Nov-08	25	33000	25.4	155.6	124.48	864	863.60	0.03	29809	3711	0	0.00	Empty	0
Dec-08	2707	33000	75.1	176	140.80	5186	5185.78	0.17	30101	4238	948	0.40	Below	0
Jan-09	390	33000	0.9	249.8	199.84	1367	1366.92	0.04	29843	5964	0	0.00	Empty	0
Feb-09	4	33000	2.9	189	151.20	99	99.38	0.00	29758	4499	0	0.00	Empty	0
Mar-09	43	33000	38.3	135.8	108.64	1307	1306.58	0.04	29839	3242	0	0.00	Empty	0
Apr-09	873	33000	30.3	89.8	71.84	1873	1872.91	0.06	29877	2146	0	0.00	Empty	0
May-09	778	33000	10.5	53.2	42.56	1124	1124.38	0.04	29827	1269	0	0.00	Empty	0
Jun-09	23	33000	22.8	38.4	30.72	775	775.20	0.02	29803	916	0	0.00	Empty	0
Jul-09	177	33000	32.3	57.2	45.76	1243	1243.31	0.04	29835	1365	0	0.00	Empty	0
Aug-09	41	33000	41.1	86.4	69.12	1397	1397.40	0.04	29845	2063	0	0.00	Empty	0
Sep-09	688	33000	64.7	106.4	85.12	2823	2822.64	0.09	29941	2549	274	0.40	Below	0
Oct-09	693	33000	28.3	119.2	95.36	1901	1901.26	0.06	29879	2849	0	0.00	Empty	0
Nov-09	1034	33000	77.7	184.6	147.68	3598	3597.99	0.11	29994	4429	0	0.00	Empty	0
Dec-09	1010	33000	35.1	196	156.80	2168	2168.24	0.07	29897	4688	0	0.00	Empty	0
Jan-10	21	33000	14.2	213	170.40	490	489.78	0.02	29784	5075	0	0.00	Empty	0
Feb-10	77	33000	24.7	173.2	138.56	892	892.36	0.03	29811	4131	0	0.00	Empty	0
Mar-10	1397	33000	67.4	134.4	107.52	3621	3621.37	0.12	29995	3225	396	0.40	Below	0
Apr-10	36	33000	31.2	86.4	69.12	1461	1461.45	0.05	29849	2063	0	0.00	Empty	0
May-10	27	33000	27.1	55.4	44.32	921	921.40	0.03	29813	1321	0	0.00	Empty	0
Jun-10	39	33000	38.5	40	32.00	1309	1309.00	0.04	29839	955	354	0.40	Below	0
Jul-10	699	33000	21.4	40.2	32.16	1759	1758.89	0.06	29870	961	798	0.40	Below	0
Aug-10	2534	33000	66.8	61.2	48.96	5537	5536.60	0.18	30125	1475	4062	0.40	Below	0
Sep-10	3521	33000	54.2	75.2	60.16	9372	9371.59	0.30	30385	1828	7544	0.60	Below	0
Oct-10	988	33000	101.8	123.6	98.88	11891	11890.54	0.38	30557	3021	8869	0.60	Below	0
Nov-10	4623	33000	130.3	135.8	108.64	17792	17791.97	0.57	30961	3364	14428	0.60	Below	0
Dec-10	5452	33000	39.8	160.6	128.48	21194	21194.03	0.68	31195	4008	17186	0.60	Below	0
Jan-11	4366	33000	107.4	166.6	133.28	25096	25095.91	0.80	31464	4194	20902	0.80	Below	0
Feb-11	5403	33000	110.6	121.2	96.96	29956	29955.61	0.96	31802	3083	26872	1.00	Below	0
Mar-11	822	33000	16.4	112.2	89.76	28235	28235.40	0.90	31682	2844	25392	1.00	Below	0
Apr-11	1470	33000	48.5	77.4	61.92	28462	28462.31	0.91	31698	1963	26500	1.00	Below	0
May-11	554	33000	33.4	45.6	36.48	28155	28155.36	0.90	31676	1156	27000	1.00	Below	0
Jun-11	239	33000	33.2	43.4	34.72	28335	28334.78	0.90	31689	1100	27235	1.00	Below	0
Jul-11	937	33000	29	48.4	38.72	29128	29128.23	0.93	31744	1229	27899	1.00	Below	0
Aug-11	270	33000	15.2	62.4	49.92	28671	28670.82	0.91	31712	1583	27088	1.00	Below	0
Sep-11	44	33000	41.3	102.8	82.24	28495	28495.04	0.91	31700	2607	25888	1.00	Below	0
Oct-11	1525	33000	69.9	116.4	93.12	29720	29719.65	0.95	31785	2960	26760	1.00	Below	0
Nov-11	286	33000	129.2	139.8	111.84	31310	31309.85	1.00	31896	3567	27743	1.00	Below	0
Dec-11	4790	33000	56.5	179.4	143.52	34398	34397.52	1.10	32111	4609	29789	1.00	Below	0
Jan-12	72	33000	15.5	220.2	176.16	30373	30372.68	0.97	31831	5607	24765	0.80	Below	0
Feb-12	46	33000	46	159.4	127.52	26329	26329.40	0.84	31550	4023	22306	0.80	Below	0
Mar-12	1947	33000	35.3	126.6	101.28	25418	25417.80	0.81	31487	3189	22229	0.80	Below	0
Apr-12	44	33000	35.5	91.6	73.28	23445	23444.58	0.75	31350	2297	21147	0.80	Below	0
May-12	2106	33000	77.8	60.6	48.48	25820	25820.46	0.82	31515	1528	24293	0.80	Below	0
Jun-12	11342	33000	79.7	41.6	33.28	38264	38264.34	1.22	32382	1078	37187	1.40	Above	0
Jul-12	4675	33000	45.1	41.8	33.44	43350	43349.67	1.38	32739	1095	42255	1.40	Above	0
Aug-12	3106	33000	52.7	71	56.80	47100	47099.97	1.50	33004	1875	45225	1.50	Above	0
Sep-12	825	33000	42.4	97	77.60	47450	47449.95	1.51	33029	2563	44887	1.50	Above	0
Oct-12	20	33000	19	122.8	98.24	45534	45533.69	1.45	32893	3231	42302	1.40	Above	0
Nov-12	34	33000	34.3	157.8	126.24	43468	43468.45	1.39	32748	4134	39334	1.40	Above	0
Dec-12	28	33000	27.9	200.8	160.64	40283	40282.99	1.28	32523	5225	35058	1.40	Above	0
Jan-13	5	33000	5.1	231	184.80	35232	35231.83	1.12	32169	5945	29287	1.00	Below	0
Feb-13	53	33000	53.3	184	147.20	31099	31099.11	0.99	31881	4693	26406	1.00	Below	0
Mar-13	27	33000	26.8	173.4	138.72	27317	27317.41	0.87	31618	4386	22931	0.80	Below	0
Apr-13	11	33000	10.6	89.2	71.36	23292	23291.72	0.74	31340	2236	21055	0.80	Below	0
May-13	30	33000	30.4	65.8	52.64	22089	22088.92	0.70	31257	1645	20444	0.80	Below	0
Jun-13	5697	33000	74	37.6	30.08	28582	28582.30	0.91	31706	954	27629	1.00	Below	0
Jul-13	3091	33000	47.9	57.2	45.76	32300	32299.86	1.03	31965	1463	30837	1.00	Below	0
Aug-13	2448	33000	39.2	77.6	62.08	34578	34578.30	1.10	32124	1994	32584	1.10	Above	0
Sep-13	756	33000	60.8	101	80.80	35347	35346.56	1.13	32177	2600	32747	1.10	Above	0
Oct-13	1144	33000	42.1	130.2	104.16	35280	35280.35	1.13	32173	3351	31929	1.10	Above	0
Nov-13	446	33000	50	138.6	110.88	34025	34025.36	1.09	32085	3558	30468	1.00	Below	0
Dec-13	205	33000	28.7	184.4	147.52	31620	31619.64	1.01	31917	4708	26911	1.00	Below	0

Scenario 3

	Pond Dimensions		**BPEM Pond Surface (m2)**	
Top Length	L	250	41218	*50 yr*
Top Width	W	170	43685	*5 yr*
max depth	h	1.50		
Area	m2	42500	**Vol Reqd (m3)**	
			60956	*50yr volume*

	Total Inflow m3	Leachate Pond Catchment Area (m2)	Rainfall (mm/month)	Pan Evaporation (mm/month)	Pond Evaporation (mm/month)	Start Month + Rainfall (m3)	Calc start month + rainfall	Calc Pond Depth (m)	Calc Evaporation area (m^2)	Evaporation (m3)	End Month (m3)	Max Depth at End Month (m)	Above or Below Freeboard (0.5 m)	Spillage (m3)
Start														
Jan-64	1027	42500	1.5	197.8	158.24	64	63.75	0.00	38805	6140	0	0.00	Empty	0
Feb-64	2533	42500	84.2	167.2	133.76	6112	6111.60	0.15	39165	5239	873	0.40	Below	0
Mar-64	1063	42500	30.9	134.8	107.84	3250	3249.51	0.08	38994	4205	0	0.00	Empty	0
Apr-64	4818	42500	89.5	85.6	68.48	8622	8621.87	0.21	39314	2692	5930	0.40	Below	0
May-64	3032	42500	43.2	58	46.40	10797	10797.19	0.27	39444	1830	8967	0.60	Below	0
Jun-64	2146	42500	18.4	40	32.00	11895	11894.71	0.29	39510	1264	10630	0.60	Below	0
Jul-64	4307	42500	65.5	47.2	37.76	17721	17721.03	0.44	39860	1505	16216	0.60	Below	0
Aug-64	1408	42500	37	63.8	51.04	19197	19196.85	0.47	39949	2039	17158	0.60	Below	0
Sep-64	79	42500	66.7	83	66.40	20072	20071.87	0.49	40001	2656	17416	0.60	Below	0
Oct-64	5580	42500	94.4	119.6	95.68	27008	27008.13	0.66	40420	3867	23141	0.60	Below	0
Nov-64	1570	42500	54.2	147.8	118.24	27014	27013.87	0.66	40421	4779	22235	0.60	Below	0
Dec-64	2474	42500	67.5	181.6	145.28	27578	27577.75	0.68	40455	5877	21700	0.60	Below	0
Jan-65	1035	42500	9.8	197.8	158.24	23152	23152.02	0.57	40187	6359	16793	0.60	Below	0
Feb-65	1001	42500	0.9	162	129.60	17832	17831.97	0.44	39866	5167	12665	0.60	Below	0
Mar-65	1002	42500	2.4	134.8	107.84	13770	13769.67	0.34	39623	4273	9497	0.60	Below	0
Apr-65	3159	42500	77.6	85.6	68.48	15954	15953.75	0.39	39754	2722	13231	0.60	Below	0
May-65	3103	42500	48.3	58	46.40	18387	18387.32	0.45	39900	1851	16536	0.60	Below	0
Jun-65	1552	42500	28.1	40	32.00	19282	19281.88	0.47	39954	1279	18003	0.60	Below	0
Jul-65	3600	42500	66.3	47.2	37.76	24421	24420.89	0.60	40264	1520	22901	0.60	Below	0
Aug-65	8125	42500	63	63.8	51.04	33703	33703.37	0.83	40827	2084	31620	0.80	Below	0
Sep-65	592	42500	21.9	83	66.40	33142	33142.06	0.82	40792	2709	30433	0.80	Below	0
Oct-65	1012	42500	12.1	119.6	95.68	31960	31959.79	0.79	40721	3896	28064	0.80	Below	0
Nov-65	1059	42500	58.8	147.8	118.24	31621	31621.45	0.78	40700	4812	26809	0.80	Below	0
Dec-65	1431	42500	55.1	181.6	145.28	30582	30581.74	0.75	40637	5904	24678	0.80	Below	0
Jan-66	1028	42500	28.3	197.8	158.24	26909	26909.06	0.66	40414	6395	20514	0.60	Below	0
Feb-66	3348	42500	56	162	129.60	26242	26242.41	0.65	40374	5232	21010	0.60	Below	0
Mar-66	2456	42500	66.7	134.8	107.84	26301	26300.74	0.65	40377	4354	21946	0.60	Below	0
Apr-66	1756	42500	50.2	85.6	68.48	25836	25835.85	0.64	40349	2763	23073	0.60	Below	0
May-66	3571	42500	27	58	46.40	27792	27791.63	0.68	40468	1878	25914	0.80	Below	0
Jun-66	1170	42500	18.3	40	32.00	27862	27861.50	0.69	40472	1295	26566	0.80	Below	0
Jul-66	1573	42500	38.5	47.2	37.76	29776	29775.78	0.73	40588	1533	28243	0.80	Below	0
Aug-66	3527	42500	62.9	63.8	51.04	34443	34442.94	0.85	40872	2086	32357	0.80	Below	0
Sep-66	3767	42500	80.5	83	66.40	39545	39545.41	0.97	41183	2735	36811	1.00	Below	0
Oct-66	2974	42500	71	119.6	95.68	42802	42802.05	1.05	41382	3959	38843	1.00	Below	0
Nov-66	1437	42500	25.4	147.8	118.24	41359	41359.23	1.02	41294	4883	36477	1.00	Below	0
Dec-66	1872	42500	73.8	181.6	145.28	41485	41484.72	1.02	41301	6000	35484	1.00	Below	0
Jan-67	1024	42500	23.5	197.8	158.24	37508	37507.61	0.92	41058	6497	31011	0.80	Below	0
Feb-67	1003	42500	3.2	162	129.60	32150	32149.75	0.79	40732	5279	26871	0.80	Below	0
Mar-67	1011	42500	11.4	134.8	107.84	28367	28366.77	0.70	40503	4368	23999	0.60	Below	0
Apr-67	1009	42500	9.1	85.6	68.48	25395	25394.82	0.63	40323	2761	22634	0.60	Below	0
May-67	1379	42500	34.4	58	46.40	25474	25474.20	0.63	40327	1871	23603	0.60	Below	0
Jun-67	2556	42500	27.5	40	32.00	27328	27327.88	0.67	40440	1294	26034	0.80	Below	0
Jul-67	1202	42500	20.9	47.2	37.76	28124	28123.84	0.69	40488	1529	26595	0.80	Below	0
Aug-67	1301	42500	55.4	63.8	51.04	30250	30250.10	0.74	40617	2073	28177	0.80	Below	0
Sep-67	1577	42500	44.5	83	66.40	31645	31645.22	0.78	40701	2703	28943	0.80	Below	0
Oct-67	1482	42500	14.2	119.6	95.68	31028	31028.44	0.76	40664	3891	27138	0.80	Below	0
Nov-67	1004	42500	3.7	147.8	118.24	28299	28299.43	0.70	40498	4789	23511	0.60	Below	0
Dec-67	1020	42500	19.6	181.6	145.28	25363	25363.50	0.62	40321	5858	19506	0.60	Below	0
Jan-68	2620	42500	55	197.8	158.24	24464	24463.61	0.60	40266	6372	18092	0.60	Below	0
Feb-68	1419	42500	6.3	167.2	133.76	19778	19778.33	0.49	39984	5348	14430	0.60	Below	0
Mar-68	1035	42500	15	134.8	107.84	16103	16102.79	0.40	39763	4288	11815	0.60	Below	0
Apr-68	1106	42500	97.4	85.6	68.48	17060	17060.46	0.42	39820	2727	14334	0.60	Below	0
May-68	12847	42500	59.8	58	46.40	29722	29721.89	0.73	40585	1883	27839	0.80	Below	0
Jun-68	5449	42500	38.9	40	32.00	34941	34941.06	0.86	40902	1309	33632	1.00	Below	0
Jul-68	1574	42500	30.2	47.2	37.76	36489	36489.40	0.90	40996	1548	34941	1.00	Below	0
Aug-68	746	42500	36.4	63.8	51.04	37234	37234.15	0.92	41042	2095	35139	1.00	Below	0
Sep-68	1010	42500	8	83	66.40	36489	36488.94	0.90	40996	2722	33767	1.00	Below	0
Oct-68	1031	42500	31.3	119.6	95.68	36128	36128.35	0.89	40974	3920	32208	0.80	Below	0
Nov-68	1039	42500	38.5	147.8	118.24	34883	34882.69	0.86	40898	4836	30047	0.80	Below	0
Dec-68	1792	42500	53.3	181.6	145.28	34104	34103.89	0.84	40851	5935	28169	0.80	Below	0
Jan-69	1035	42500	8	197.8	158.24	29544	29544.22	0.73	40574	6420	23124	0.60	Below	0
Feb-69	2012	42500	92.7	162	129.60	29075	29075.18	0.72	40545	5255	23820	0.60	Below	0
Mar-69	1221	42500	17.8	134.8	107.84	25798	25798.02	0.63	40347	4351	21447	0.60	Below	0
Apr-69	1022	42500	21.5	85.6	68.48	23382	23382.25	0.58	40201	2753	20629	0.60	Below	0
May-69	2457	42500	71.5	58	46.40	26125	26125.36	0.64	40367	1873	24252	0.60	Below	0
Jun-69	4421	42500	4.1	40	32.00	28848	28847.75	0.71	40532	1297	27551	0.80	Below	0
Jul-69	1185	42500	47.5	47.2	37.76	30754	30754.43	0.76	40647	1535	29220	0.80	Below	0
Aug-69	470	42500	41.1	63.8	51.04	31436	31436.43	0.77	40689	2077	29360	0.80	Below	0
Sep-69	457	42500	40.3	83	66.40	31530	31529.63	0.78	40694	2702	28828	0.80	Below	0
Oct-69	150	42500	21.2	119.6	95.68	29878	29878.41	0.74	40594	3884	25994	0.80	Below	0
Nov-69	1653	42500	40.6	147.8	118.24	29373	29372.78	0.72	40564	4796	24577	0.80	Below	0
Dec-69	1032	42500	31.4	180.8	144.64	26943	26943.33	0.66	40416	5846	21098	0.60	Below	0
Jan-70	3700	42500	86.1	214.6	171.68	28456	28456.28	0.70	40508	6954	21502	0.60	Below	0
Feb-70	1193	42500	5.5	210.8	168.64	22928	22928.44	0.56	40174	6775	16154	0.60	Below	0
Mar-70	2647	42500	79.6	157.6	126.08	22183	22183.33	0.55	40129	5059	17124	0.60	Below	0
Apr-70	3093	42500	62.5	98.4	78.72	22873	22873.28	0.56	40170	3162	19711	0.60	Below	0
May-70	6436	42500	52.8	50.4	40.32	28391	28390.65	0.70	40504	1633	26758	0.80	Below	0
Jun-70	1127	42500	33.7	35.6	28.48	29317	29317.05	0.72	40560	1155	28162	0.80	Below	0
Jul-70	1016	42500	21.3	53	42.40	30083	30083.22	0.74	40607	1722	28362	0.80	Below	0
Aug-70	873	42500	59.3	63.6	50.88	31755	31754.69	0.78	40708	2071	29683	0.80	Below	0
Sep-70	617	42500	42.4	80.4	64.32	32103	32102.71	0.79	40729	2620	29483	0.80	Below	0
Oct-70	1028	42500	24.1	134.2	107.36	31535	31535.23	0.78	40695	4369	27166	0.80	Below	0
Nov-70	4551	42500	89.6	166.8	133.44	35526	35525.62	0.87	40937	5463	30063	0.80	Below	0
Dec-70	3914	42500	86.2	214	171.20	37640	37640.40	0.93	41066	7031	30610	0.80	Below	0
Jan-71	1491	42500	54.2	236.8	189.44	34405	34404.57	0.85	40869	7742	26662	0.80	Below	0
Feb-71	4047	42500	85.7	177.8	142.24	34352	34351.56	0.85	40866	5813	28539	0.80	Below	0
Mar-71	1261	42500	26.3	159	127.20	30918	30917.88	0.76	40657	5172	25746	0.80	Below	0
Apr-71	1039	42500	38.7	102.4	81.92	28430	28429.72	0.70	40506	3318	25111	0.80	Below	0
May-71	1044	42500	43.7	53.8	43.04	28012	28012.39	0.69	40481	1742	26270	0.80	Below	0
Jun-71	2849	42500	46.8	40.4	32.32	31108	31108.10	0.77	40669	1314	29794	0.80	Below	0

Jul-71	1847	42500	25.6	39.4	31.52	32729	32729.11	0.81	40767	1285	31444	0.80	Below	0
Aug-71	1111	42500	23.7	62	49.60	33562	33561.98	0.83	40818	2025	31537	0.80	Below	0
Sep-71	1035	42500	30	82.2	65.76	33847	33847.07	0.83	40835	2685	31162	0.80	Below	0
Oct-71	1767	42500	57.4	130	104.00	35368	35368.20	0.87	40928	4257	31112	0.80	Below	0
Nov-71	6057	42500	94	139.2	111.36	41163	41163.24	1.01	41282	4597	36566	1.00	Below	0
Dec-71	2600	42500	64.8	211	168.80	41920	41919.63	1.03	41328	6976	34943	1.00	Below	0
Jan-72	1537	42500	28.8	192.6	154.08	37705	37704.97	0.93	41070	6328	31377	0.80	Below	0
Feb-72	5752	42500	126.9	194.4	155.52	42522	42522.09	1.05	41365	6433	36089	1.00	Below	0
Mar-72	4762	42500	30.1	146.8	117.44	42131	42130.60	1.04	41341	4855	37276	1.00	Below	0
Apr-72	1102	42500	36.9	89.6	71.68	39946	39945.88	0.98	41207	2954	36992	1.00	Below	0
May-72	1103	42500	27.2	53.4	42.72	39252	39251.57	0.97	41165	1759	37493	1.00	Below	0
Jun-72	1215	42500	11.2	43	34.40	39184	39183.82	0.96	41161	1416	37768	1.00	Below	0
Jul-72	1019	42500	18.2	55.2	44.16	39560	39560.38	0.97	41184	1819	37742	1.00	Below	0
Aug-72	1040	42500	30.6	70.6	56.48	40082	40082.45	0.99	41215	2328	37755	1.00	Below	0
Sep-72	1011	42500	10.9	116.6	93.28	39229	39228.75	0.97	41163	3840	35389	1.00	Below	0
Oct-72	1241	42500	37.4	133.2	106.56	38219	38219.16	0.94	41102	4380	33839	1.00	Below	0
Nov-72	1173	42500	35.7	150.8	120.64	36530	36529.85	0.90	40999	4946	31584	0.80	Below	0
Dec-72	1018	42500	1.4	239.8	191.84	32661	32661.31	0.80	40763	7820	24841	0.80	Below	0
Jan-73	1052	42500	51.7	222.8	178.24	28090	28090.25	0.69	40486	7216	20874	0.60	Below	0
Feb-73	11009	42500	232.1	155	124.00	41748	41747.81	1.03	41317	5123	36624	1.00	Below	0
Mar-73	5006	42500	47.6	107.6	86.08	43654	43653.87	1.07	41434	3567	40087	1.00	Below	0
Apr-73	529	42500	17.8	91.6	73.28	41372	41372.33	1.02	41294	3026	38346	1.00	Below	0
May-73	1041	42500	41.4	58.2	46.56	41147	41147.18	1.01	41281	1922	39225	1.00	Below	0
Jun-73	3366	42500	59.2	39.8	31.84	45107	45107.13	1.11	41523	1322	43785	1.10	Above	0
Jul-73	2590	42500	33	40.6	32.48	47778	47777.54	1.18	41687	1354	46424	1.40	Above	0
Aug-73	1157	42500	46.6	52.2	41.76	49561	49560.78	1.22	41797	1745	47815	1.40	Above	0
Sep-73	1149	42500	33.7	94	75.20	50396	50396.35	1.24	41848	3147	47249	1.40	Above	0
Oct-73	1138	42500	79	111.6	89.28	51745	51745.26	1.27	41931	3744	48002	1.40	Above	0
Nov-73	1164	42500	50.6	138.6	110.88	51316	51315.77	1.26	41905	4646	46669	1.40	Above	0
Dec-73	1456	42500	50.9	198.2	158.56	50288	50288.25	1.24	41841	6634	43654	1.10	Above	0
Jan-74	2888	42500	61.8	221.8	177.44	49169	49168.66	1.21	41772	7412	41757	1.10	Above	0
Feb-74	1055	42500	19	162	129.60	43619	43618.98	1.07	41432	5370	38249	1.00	Below	0
Mar-74	1049	42500	48.8	141.8	113.44	41372	41372.22	1.02	41294	4684	36688	1.00	Below	0
Apr-74	2059	42500	93.1	59.8	47.84	42704	42703.87	1.05	41376	1979	40724	1.10	Above	0
May-74	9433	42500	88.7	43.4	34.72	53927	53926.88	1.33	42065	1461	52466	1.40	Above	0
Jun-74	4096	42500	14.6	36.4	29.12	57183	57182.74	1.41	42266	1231	55952	1.40	Above	0
Jul-74	3977	42500	68.5	50.8	40.64	62840	62839.84	1.55	42617	1732	60956	1.60	Above	152
Aug-74	2796	42500	70.7	58.4	46.72	66756	66755.92	1.64	42860	2002	60956	1.60	Above	3798
Sep-74	2868	42500	40.5	73	58.40	65545	65544.87	1.61	42785	2499	60956	1.60	Above	2091
Oct-74	450	42500	56.1	99.2	79.36	63789	63789.42	1.57	42676	3387	60403	1.50	Above	0
Nov-74	1042	42500	39.6	137.4	109.92	63128	63127.60	1.55	42635	4686	58441	1.50	Above	0
Dec-74	1028	42500	27.8	171.8	137.44	60650	60650.50	1.49	42481	5839	54812	1.40	Above	0
Jan-75	1023	42500	23.2	187	149.60	56821	56821.09	1.40	42244	6320	50501	1.40	Above	0
Feb-75	1009	42500	8.8	176.2	140.96	51884	51884.17	1.28	41940	5912	45972	1.40	Above	0
Mar-75	1653	42500	36.8	141.8	113.44	49189	49189.00	1.21	41774	4739	44450	1.10	Above	0
Apr-75	1057	42500	16.3	83.4	66.72	46200	46199.54	1.14	41590	2775	43425	1.10	Above	0
May-75	1072	42500	36.1	69.2	55.36	46031	46030.92	1.13	41580	2302	43729	1.10	Above	0
Jun-75	1566	42500	31.3	39.2	31.36	46625	46624.98	1.15	41616	1305	45320	1.40	Above	0
Jul-75	1094	42500	32.1	68.4	54.72	47778	47778.44	1.18	41687	2281	45497	1.40	Above	0
Aug-75	4164	42500	79.5	54.6	43.68	53040	53040.43	1.31	42011	1835	51205	1.40	Above	0
Sep-75	4932	42500	85.5	81.6	65.28	59771	59771.03	1.47	42427	2770	57001	1.50	Above	0
Oct-75	5083	42500	146	99.4	79.52	68289	68289.28	1.68	42956	3416	60956	1.60	Above	3918
Nov-75	2612	42500	46.7	145.2	116.16	65552	65552.04	1.61	42785	4970	60582	1.50	Above	0
Dec-75	1075	42500	41.2	186.4	149.12	63408	63407.67	1.56	42652	6360	57047	1.50	Above	0
Jan-76	1006	42500	6.2	214.6	171.68	58317	58317.09	1.44	42337	7268	51049	1.40	Above	0
Feb-76	1013	42500	13.4	180.8	144.64	52632	52631.64	1.30	41986	6073	46559	1.40	Above	0
Mar-76	1374	42500	36.1	144.8	115.84	49467	49467.33	1.22	41791	4841	44626	1.10	Above	0
Apr-76	1006	42500	6.3	104	83.20	45900	45900.33	1.13	41572	3459	42442	1.10	Above	0
May-76	1016	42500	15.9	71.8	57.44	44133	44133.22	1.09	41463	2382	41752	1.10	Above	0
Jun-76	1417	42500	30.2	42.8	34.24	44452	44451.58	1.09	41483	1420	43031	1.10	Above	0
Jul-76	1082	42500	11.9	49.4	39.52	44619	44618.94	1.10	41493	1640	42979	1.10	Above	0
Aug-76	2437	42500	56.3	67	53.60	47809	47808.76	1.18	41689	2235	45574	1.40	Above	0
Sep-76	3196	42500	97.5	85.6	68.48	52914	52913.51	1.30	42003	2876	50037	1.40	Above	0
Oct-76	6207	42500	82.4	106	84.80	59746	59746.05	1.47	42425	3598	56148	1.40	Above	0
Nov-76	763	42500	47.9	135.6	108.48	58948	58947.54	1.45	42376	4597	54351	1.40	Above	0
Dec-76	1040	42500	39.4	205.6	164.48	57065	57065.31	1.40	42259	6951	50115	1.40	Above	0
Jan-77	1585	42500	45.1	200	160.00	53616	53615.97	1.32	42046	6727	46889	1.40	Above	0
Feb-77	1024	42500	9.8	169.4	135.52	48329	48328.89	1.19	41721	5654	42675	1.10	Above	0
Mar-77	1013	42500	12.7	141.6	113.28	44227	44227.34	1.09	41469	4698	39530	1.00	Below	0
Apr-77	4655	42500	72.8	73	58.40	47279	47279.16	1.16	41656	2433	44846	1.40	Above	0
May-77	1664	42500	42.6	59.2	47.36	48321	48321.22	1.19	41720	1976	46345	1.40	Above	0
Jun-77	4770	42500	75.2	37	29.60	54312	54311.82	1.34	42089	1246	53066	1.40	Above	0
Jul-77	4342	42500	32.9	43.4	34.72	58806	58805.91	1.45	42367	1471	57335	1.50	Above	0
Aug-77	642	42500	17.6	86.6	69.28	58725	58725.13	1.45	42362	2935	55790	1.40	Above	0
Sep-77	3327	42500	67.1	78.4	62.72	61969	61968.63	1.52	42563	2670	59299	1.50	Above	0
Oct-77	504	42500	22.3	141.4	113.12	60750	60750.42	1.49	42487	4806	55944	1.40	Above	0
Nov-77	1069	42500	41.4	159.8	127.84	58772	58772.31	1.45	42365	5416	53356	1.40	Above	0
Dec-77	1447	42500	14.7	192.4	153.92	55429	55428.59	1.36	42158	6489	48940	1.40	Above	0
Jan-78	1046	42500	45.5	183.8	147.04	51919	51918.86	1.28	41942	6167	45752	1.40	Above	0
Feb-78	1809	42500	18.2	157.4	125.92	48334	48334.49	1.19	41721	5254	43081	1.10	Above	0
Mar-78	1043	42500	41.4	114.2	91.36	45884	45883.62	1.13	41571	3798	42086	1.10	Above	0
Apr-78	3432	42500	53.8	72.4	57.92	47804	47804.36	1.18	41689	2415	45390	1.40	Above	0
May-78	2720	42500	53.7	65.8	52.64	50392	50391.86	1.24	41848	2203	48189	1.40	Above	0
Jun-78	1145	42500	32	34	27.20	50694	50693.99	1.25	41866	1139	49555	1.40	Above	0
Jul-78	4714	42500	64.5	49	39.20	57011	57010.88	1.40	42256	1656	55354	1.40	Above	0
Aug-78	8083	42500	85.9	53.6	42.88	67088	67087.83	1.65	42881	1839	60956	1.60	Above	4294
Sep-78	1637	42500	43.7	80.2	64.16	64450	64449.90	1.59	42717	2741	60956	1.60	Above	754
Oct-78	845	42500	50.1	130.8	104.64	63929	63929.27	1.57	42684	4467	59463	1.50	Above	0
Nov-78	5004	42500	103.8	138.6	110.88	68879	68878.66	1.69	42992	4767	60956	1.60	Above	3156
Dec-78	2637	42500	76.3	155.4	124.32	66835	66835.39	1.64	42865	5329	60956	1.60	Above	551
Jan-79	1080	42500	44.6	207.8	166.24	63931	63931.32	1.57	42685	7096	56835	1.40	Above	0
Feb-79	1108	42500	51.2	157	125.60	60120	60119.57	1.48	42448	5331	54788	1.40	Above	0
Mar-79	1430	42500	28.1	142.4	113.92	57413	57412.51	1.41	42281	4817	52596	1.40	Above	0
Apr-79	1024	42500	24.4	82	65.60	54657	54657.29	1.35	42111	2762	51895	1.40	Above	0
May-79	3216	42500	63.6	54.8	43.84	57814	57813.77	1.42	42306	1855	55959	1.40	Above	0
Jun-79	1024	42500	17.8	38.8	31.04	57740	57739.81	1.42	42301	1313	56427	1.40	Above	0
Jul-79	1210	42500	9.1	53	42.40	58024	58023.62	1.43	42318	1794	56229	1.40	Above	0
Aug-79	1243	42500	58.2	56.6	45.28	59946	59945.85	1.48	42437	1922	58024	1.50	Above	0
Sep-79	1490	42500	81.4	84.2	67.36	62974	62973.82	1.55	42625	2871	60103	1.50	Above	0
Oct-79	2783	42500	61	106.8	85.44	65478	65478.22	1.61	42781	3655	60956	1.60	Above	868
Nov-79	68	42500	31.4	140.8	112.64	62358	62357.82	1.53	42587	4797	57561	1.50	Above	0
Dec-79	1014	42500	14.3	205.8	164.64	59183	59182.88	1.46	42390	6979	52204	1.40	Above	0
Jan-80	1571	42500	35.9	193	154.40	55301	55300.64	1.36	42150	6508	48793	1.40	Above	0
Feb-80	1035	42500	21.9	186.2	148.96	50758	50758.44	1.25	41870	6237	44521	1.10	Above	0

Mar-80	1008	42500	8.3	141.8	113.44	45883	45882.50	1.13	41571	4716	41167	1.10	Above	0
Apr-80	1880	42500	56.2	106.8	85.44	45435	45434.87	1.12	41543	3549	41885	1.10	Above	0
May-80	2603	42500	36	61.8	49.44	46019	46018.59	1.13	41579	2056	43963	1.10	Above	0
Jun-80	489	42500	41.4	38.4	30.72	46212	46211.58	1.14	41591	1278	44934	1.40	Above	0
Jul-80	2436	42500	24.1	44.2	35.36	48394	48394.31	1.19	41725	1475	46919	1.40	Above	0
Aug-80	292	42500	31.7	82.4	65.92	48558	48558.23	1.20	41735	2751	45807	1.40	Above	0
Sep-80	1021	42500	20.9	116.8	93.44	47716	47716.22	1.17	41683	3895	43821	1.10	Above	0
Oct-80	2527	42500	92.5	120.4	96.32	50280	50279.73	1.24	41841	4030	46250	1.40	Above	0
Nov-80	1194	42500	31.8	159	127.20	48795	48794.87	1.20	41749	5311	43484	1.10	Above	0
Dec-80	1041	42500	41.4	210.2	168.16	46285	46285.24	1.14	41595	6995	39291	1.00	Below	0
Jan-81	1166	42500	47	216.6	173.28	42454	42454.21	1.04	41361	7167	35287	1.00	Below	0
Feb-81	1672	42500	28.5	172	137.60	38171	38170.87	0.94	41099	5655	32516	1.00	Below	0
Mar-81	1035	42500	34.6	133.2	106.56	35021	35020.78	0.86	40907	4359	30662	0.80	Below	0
Apr-81	1012	42500	11.9	99	79.20	32179	32179.41	0.79	40734	3226	28953	0.80	Below	0
May-81	1840	42500	59.1	53.2	42.56	33306	33305.53	0.82	40802	1737	31569	0.80	Below	0
Jun-81	5058	42500	48	44.8	35.84	38666	38666.48	0.95	41129	1474	37192	1.00	Below	0
Jul-81	4711	42500	61.5	51.2	40.96	44517	44517.01	1.10	41487	1699	42818	1.10	Above	0
Aug-81	3346	42500	51.9	66.6	53.28	48370	48369.60	1.19	41723	2223	46147	1.40	Above	0
Sep-81	419	42500	20	93.2	74.56	47415	47415.30	1.17	41665	3107	44309	1.10	Above	0
Oct-81	2012	42500	64.9	136	108.80	49079	49078.72	1.21	41767	4544	44534	1.10	Above	0
Nov-81	1104	42500	50.8	138.2	110.56	47797	47797.15	1.18	41688	4609	43188	1.10	Above	0
Dec-81	1016	42500	16.2	189.8	151.84	44893	44892.82	1.10	41510	6303	38590	1.00	Below	0
Jan-82	1031	42500	31.4	224.2	179.36	40956	40955.85	1.01	41269	7402	33554	1.00	Below	0
Feb-82	1006	42500	5.7	182	145.60	34802	34801.82	0.86	40893	5954	28848	0.80	Below	0
Mar-82	1034	42500	34.4	135.4	108.32	31344	31344.14	0.77	40683	4407	26937	0.80	Below	0
Apr-82	1381	42500	31.6	96.4	77.12	29661	29661.47	0.73	40581	3130	26532	0.80	Below	0
May-82	1851	42500	36.9	69.4	55.52	29951	29950.81	0.74	40599	2254	27697	0.80	Below	0
Jun-82	2370	42500	31.4	40.4	32.32	31401	31401.21	0.77	40687	1315	30086	0.80	Below	0
Jul-82	1251	42500	11.5	42	33.60	31826	31825.61	0.78	40712	1368	30458	0.80	Below	0
Aug-82	1016	42500	15.5	82	65.60	32132	32131.93	0.79	40731	2672	29460	0.80	Below	0
Sep-82	1036	42500	35.8	100	80.00	32017	32017.27	0.79	40724	3258	28759	0.80	Below	0
Oct-82	1040	42500	40	137	109.60	31499	31499.35	0.78	40693	4460	27039	0.80	Below	0
Nov-82	1006	42500	5.9	209.2	167.36	28296	28296.09	0.70	40498	6778	21518	0.60	Below	0
Dec-82	2568	42500	57.3	189.2	151.36	26522	26521.95	0.65	40391	6114	20408	0.60	Below	0
Jan-83	1027	42500	20.9	213.4	170.72	22324	22323.68	0.55	40137	6852	15471	0.60	Below	0
Feb-83	1005	42500	4.6	207.2	165.76	16672	16671.58	0.41	39797	6597	10075	0.60	Below	0
Mar-83	2180	42500	41.4	136	108.80	14015	14014.57	0.34	39637	4313	9702	0.60	Below	0
Apr-83	1365	42500	47	78.4	62.72	13065	13064.53	0.32	39580	2482	10582	0.60	Below	0
May-83	2510	42500	67.7	51.2	40.96	15969	15969.46	0.39	39755	1628	14341	0.60	Below	0
Jun-83	2545	42500	29.4	35.2	28.16	18135	18135.38	0.45	39885	1123	17012	0.60	Below	0
Jul-83	3793	42500	50.4	40.8	32.64	22947	22946.74	0.56	40175	1311	21635	0.60	Below	0
Aug-83	1107	42500	45.4	59.2	47.36	24671	24671.49	0.61	40279	1908	22764	0.60	Below	0
Sep-83	4635	42500	72.2	77.6	62.08	30467	30467.16	0.75	40630	2522	27945	0.80	Below	0
Oct-83	5770	42500	99.2	93	74.40	37930	37930.38	0.93	41084	3057	34874	1.00	Below	0
Nov-83	1593	42500	67.6	121.4	97.12	39340	39339.93	0.97	41170	3998	35341	1.00	Below	0
Dec-83	2255	42500	13.1	177	141.60	38153	38153.35	0.94	41098	5819	32334	0.80	Below	0
Jan-84	1053	42500	43.3	182	145.60	35228	35227.55	0.87	40919	5958	29270	0.80	Below	0
Feb-84	1012	42500	12.3	178	142.40	30805	30804.75	0.76	40650	5789	25016	0.80	Below	0
Mar-84	1550	42500	53.7	135	108.00	28849	28848.77	0.71	40532	4377	24471	0.80	Below	0
Apr-84	2542	42500	47.1	80.8	64.64	29016	29015.53	0.71	40542	2621	26395	0.80	Below	0
May-84	1970	42500	12.7	62.4	49.92	28904	28904.43	0.71	40535	2024	26881	0.80	Below	0
Jun-84	1022	42500	13.2	44	35.20	28464	28463.65	0.70	40508	1426	27038	0.80	Below	0
Jul-84	1077	42500	33.4	39.6	31.68	29534	29534.11	0.73	40573	1285	28249	0.80	Below	0
Aug-84	3195	42500	62.8	66.2	52.96	34113	34113.06	0.84	40851	2163	31950	0.80	Below	0
Sep-84	4320	42500	77	66.8	53.44	39542	39541.63	0.97	41182	2201	37341	1.00	Below	0
Oct-84	2111	42500	38.1	128.8	103.04	41071	41071.44	1.01	41276	4253	36818	1.00	Below	0
Nov-84	70	42500	37.5	145	116.00	38482	38482.24	0.95	41118	4770	33713	1.00	Below	0
Dec-84	1031	42500	30.8	173.2	138.56	36052	36052.38	0.89	40970	5677	30376	0.80	Below	0
Jan-85	1009	42500	9.2	198	158.40	31776	31775.84	0.78	40709	6448	25327	0.80	Below	0
Feb-85	1005	42500	4.6	163	130.40	26528	26527.57	0.65	40391	5267	21261	0.60	Below	0
Mar-85	2282	42500	55.8	135	108.00	25914	25914.27	0.64	40354	4358	21556	0.60	Below	0
Apr-85	1244	42500	38.1	91.2	72.96	24419	24419.24	0.60	40264	2938	21482	0.60	Below	0
May-85	1035	42500	35.4	59.2	47.36	24022	24021.51	0.59	40240	1906	22116	0.60	Below	0
Jun-85	1780	42500	37.3	41.6	33.28	25481	25481.16	0.63	40328	1342	24139	0.60	Below	0
Jul-85	1638	42500	34.1	49.6	39.68	27227	27226.68	0.67	40433	1604	25622	0.80	Below	0
Aug-85	3821	42500	61.4	57.6	46.08	32053	32052.57	0.79	40726	1877	30176	0.80	Below	0
Sep-85	837	42500	25.8	72.2	57.76	32109	32109.48	0.79	40730	2353	29757	0.80	Below	0
Oct-85	1444	42500	59.8	119.4	95.52	33742	33742.30	0.83	40829	3900	29842	0.80	Below	0
Nov-85	2532	42500	60.1	127.4	101.92	34928	34928.47	0.86	40901	4169	30760	0.80	Below	0
Dec-85	5732	42500	117.7	141	112.80	41494	41493.88	1.02	41302	4659	36835	1.00	Below	0
Jan-86	497	42500	18.2	182.6	146.08	38106	38105.96	0.94	41095	6003	32103	0.80	Below	0
Feb-86	1014	42500	13.8	171.4	137.12	33703	33703.13	0.83	40827	5598	28105	0.80	Below	0
Mar-86	1012	42500	12.3	156.4	125.12	29640	29640.04	0.73	40580	5077	24563	0.80	Below	0
Apr-86	1365	42500	47	98.4	78.72	27925	27925.20	0.69	40476	3186	24739	0.80	Below	0
May-86	6185	42500	76	51.8	41.44	34154	34154.17	0.84	40854	1693	32461	0.80	Below	0
Jun-86	2254	42500	20	35.6	28.48	35565	35564.93	0.88	40940	1166	34399	1.00	Below	0
Jul-86	3705	42500	69	40.2	32.16	41037	41036.57	1.01	41274	1327	39709	1.00	Below	0
Aug-86	2790	42500	45.9	61.6	49.28	44450	44450.23	1.09	41483	2044	42406	1.10	Above	0
Sep-86	882	42500	38	71.2	56.96	44903	44902.53	1.11	41510	2364	42538	1.10	Above	0
Oct-86	792	42500	75.7	108	86.40	46547	46547.22	1.15	41611	3595	42952	1.10	Above	0
Nov-86	1370	42500	23.8	151.6	121.28	45333	45333.38	1.12	41537	5038	40296	1.00	Below	0
Dec-86	1057	42500	47.1	156.8	125.44	43355	43354.84	1.07	41416	5195	38160	1.00	Below	0
Jan-87	5530	42500	104.2	185	148.00	48118	48117.92	1.18	41708	6173	41945	1.10	Above	0
Feb-87	1057	42500	43.9	168.2	134.56	44868	44867.95	1.10	41508	5585	39283	1.00	Below	0
Mar-87	1408	42500	28.2	120.6	96.48	41889	41888.59	1.03	41326	3987	37901	1.00	Below	0
Apr-87	1023	42500	22.9	93.6	74.88	39898	39897.62	0.98	41204	3085	36812	1.00	Below	0
May-87	7615	42500	99.9	57	45.60	48673	48672.82	1.20	41742	1903	46769	1.40	Above	0
Jun-87	3889	42500	38.7	39.4	31.52	52304	52303.59	1.29	41965	1323	50981	1.40	Above	0
Jul-87	1873	42500	63	44.2	35.36	55531	55531.10	1.37	42164	1491	54040	1.40	Above	0
Aug-87	5326	42500	35.1	58.8	47.04	60858	60857.67	1.50	42494	1999	58859	1.50	Above	0
Sep-87	448	42500	32.1	99.6	79.68	60671	60670.59	1.49	42482	3385	57286	1.50	Above	0
Oct-87	1030	42500	29.5	124.2	99.36	59569	59568.85	1.47	42414	4214	55355	1.40	Above	0
Nov-87	1052	42500	51.5	161.8	129.44	58595	58594.83	1.44	42354	5482	53113	1.40	Above	0
Dec-87	5084	42500	106.8	171	136.80	62735	62735.39	1.54	42610	5829	56906	1.50	Above	0
Jan-88	2171	42500	65	194.8	155.84	61840	61840.18	1.52	42555	6632	55208	1.40	Above	0
Feb-88	1008	42500	7.3	171.6	137.28	56527	56526.86	1.39	42226	5797	50730	1.40	Above	0
Mar-88	1024	42500	23.7	142.4	113.92	52761	52761.03	1.30	41994	4784	47977	1.40	Above	0
Apr-88	1011	42500	11.4	91	72.80	49473	49473.03	1.22	41791	3042	46431	1.40	Above	0
May-88	1629	42500	58.9	51.6	41.28	50563	50563.06	1.24	41858	1728	48835	1.40	Above	0
Jun-88	2943	42500	44	42.8	34.24	53648	53648.18	1.32	42048	1440	52208	1.40	Above	0
Jul-88	1128	42500	30.3	45.4	36.32	54625	54624.60	1.34	42108	1529	53095	1.40	Above	0
Aug-88	421	42500	46.9	66.8	53.44	55510	55509.68	1.37	42163	2253	53256	1.40	Above	0
Sep-88	1156	42500	37.4	100.2	80.16	56002	56002.43	1.38	42194	3382	52620	1.40	Above	0
Oct-88	1019	42500	18.4	163.4	130.72	54421	54421.37	1.34	42096	5503	48919	1.40	Above	0

Nov-88	2483	42500	94.9	155.8	124.64	55435	55435.20	1.36	42159	5255	50181	1.40	Above	0
Dec-88	5265	42500	93.5	161.6	129.28	59419	59419.09	1.46	42405	5482	53937	1.40	Above	0
Jan-89	2055	42500	45.5	186	148.80	57925	57925.25	1.43	42312	6296	51629	1.40	Above	0
Feb-89	1064	42500	12.3	171	136.80	53216	53215.54	1.31	42022	5749	47467	1.40	Above	0
Mar-89	2346	42500	79.5	125.6	100.48	53192	53191.93	1.31	42020	4222	48970	1.40	Above	0
Apr-89	1552	42500	52.8	72.4	57.92	52766	52766.24	1.30	41994	2432	50334	1.40	Above	0
May-89	1527	42500	45.7	45.6	36.48	53803	53803.10	1.32	42058	1534	52269	1.40	Above	0
Jun-89	5288	42500	64.1	35.8	28.64	60281	60280.94	1.48	42458	1216	59065	1.50	Above	0
Jul-89	3407	42500	37.2	43.2	34.56	64053	64052.74	1.58	42692	1475	60956	1.60	Above	1622
Aug-89	1377	42500	58.6	52.2	41.76	64823	64823.32	1.60	42740	1785	60956	1.60	Above	2083
Sep-89	1478	42500	40.5	86.6	69.28	64155	64155.04	1.58	42698	2958	60956	1.60	Above	241
Oct-89	1396	42500	64.9	119.6	95.68	65109	65109.31	1.60	42758	4091	60956	1.60	Above	63
Nov-89	1236	42500	40	131.6	105.28	63892	63891.72	1.57	42682	4494	59398	1.50	Above	0
Dec-89	1025	42500	25.1	186.6	149.28	61490	61490.00	1.51	42533	6349	55141	1.40	Above	0
Jan-90	1003	42500	3.3	214.6	171.68	56284	56284.20	1.39	42211	7247	49037	1.40	Above	0
Feb-90	2471	42500	78.6	122	97.60	54848	54848.49	1.35	42122	4111	50737	1.40	Above	0
Mar-90	1025	42500	23.5	141.6	113.28	52761	52761.35	1.30	41994	4757	48004	1.40	Above	0
Apr-90	2511	42500	58.7	83	66.40	53010	53010.18	1.30	42009	2789	50221	1.40	Above	0
May-90	1474	42500	8.3	60.2	48.16	52048	52047.87	1.28	41950	2020	50028	1.40	Above	0
Jun-90	1039	42500	38.6	43.4	34.72	52707	52706.68	1.30	41990	1458	51249	1.40	Above	0
Jul-90	4647	42500	56.2	49.8	39.84	58284	58284.08	1.43	42335	1687	56597	1.40	Above	0
Aug-90	1142	42500	31	62.2	49.76	59057	59057.37	1.45	42382	2109	56948	1.50	Above	0
Sep-90	1036	42500	33.2	85.8	68.64	59395	59394.95	1.46	42403	2911	56484	1.40	Above	0
Oct-90	2279	42500	68.4	111.2	88.96	61670	61670.41	1.52	42544	3785	57886	1.50	Above	0
Nov-90	1036	42500	27.6	160.2	128.16	60095	60095.03	1.48	42447	5440	54655	1.40	Above	0
Dec-90	1509	42500	43.2	182.8	146.24	58000	58000.30	1.43	42317	6188	51812	1.40	Above	0
Jan-91	1057	42500	55.7	181.8	145.44	55237	55236.55	1.36	42146	6130	49107	1.40	Above	0
Feb-91	1002	42500	1.6	158.6	126.88	50176	50176.40	1.23	41834	5308	44868	1.40	Above	0
Mar-91	1012	42500	11.5	134.4	107.52	46369	46368.70	1.14	41600	4473	41896	1.10	Above	0
Apr-91	1025	42500	24.9	85	68.00	43979	43978.98	1.08	41454	2819	41160	1.10	Above	0
May-91	1017	42500	16.7	44.4	35.52	42887	42886.56	1.06	41387	1470	41416	1.10	Above	0
Jun-91	7036	42500	100.7	40.6	32.48	52732	52731.85	1.30	41992	1364	51368	1.40	Above	0
Jul-91	3918	42500	40.1	40.8	32.64	56990	56990.33	1.40	42255	1379	55611	1.40	Above	0
Aug-91	535	42500	32.4	71	56.80	57523	57522.64	1.42	42288	2402	55121	1.40	Above	0
Sep-91	1094	42500	60.4	73.8	59.04	58781	58781.30	1.45	42365	2501	56280	1.40	Above	0
Oct-91	1537	42500	16.9	136.8	109.44	58535	58535.06	1.44	42350	4635	53900	1.40	Above	0
Nov-91	1025	42500	22.7	153	122.40	55890	55890.04	1.38	42187	5164	50726	1.40	Above	0
Dec-91	3763	42500	96.8	153.8	123.04	58604	58603.74	1.44	42354	5211	53392	1.40	Above	0
Jan-92	1546	42500	21	162	129.60	55831	55831.05	1.37	42183	5467	50364	1.40	Above	0
Feb-92	1035	42500	13.4	150.4	120.32	51969	51968.76	1.28	41945	5047	46922	1.40	Above	0
Mar-92	1034	42500	34.4	124.8	99.84	49418	49418.37	1.22	41788	4172	45246	1.40	Above	0
Apr-92	1319	42500	60.2	88.8	71.04	49123	49123.40	1.21	41770	2967	46156	1.40	Above	0
May-92	5721	42500	55.1	53.8	43.04	54219	54219.32	1.33	42083	1811	52408	1.40	Above	0
Jun-92	1097	42500	31.7	39.6	31.68	54852	54852.09	1.35	42123	1334	53518	1.40	Above	0
Jul-92	473	42500	19	54.8	43.84	54798	54797.95	1.35	42119	1847	52951	1.40	Above	0
Aug-92	1538	42500	54.1	62.8	50.24	56789	56788.83	1.40	42242	2122	54667	1.40	Above	0
Sep-92	4577	42500	96.8	62.6	50.08	63357	63357.38	1.56	42649	2136	60956	1.60	Above	266
Oct-92	5262	42500	95.1	92.4	73.92	70259	70259.23	1.73	43078	3184	60956	1.60	Above	6119
Nov-92	2667	42500	101.1	116	92.80	67920	67919.69	1.67	42933	3984	60956	1.60	Above	2980
Dec-92	2768	42500	77.7	133.8	107.04	67026	67025.62	1.65	42877	4590	60956	1.60	Above	1481
Jan-93	2369	42500	105.3	165.8	132.64	67800	67799.62	1.67	42925	5694	60956	1.60	Above	1151
Feb-93	2436	42500	30.3	152.8	122.24	64679	64679.11	1.59	42731	5223	59456	1.50	Above	0
Mar-93	1030	42500	23.1	110	88.00	61468	61467.51	1.51	42532	3743	57725	1.50	Above	0
Apr-93	1011	42500	11.3	97.2	77.76	59216	59216.26	1.46	42392	3296	55920	1.40	Above	0
May-93	1017	42500	17	57.6	46.08	57659	57659.34	1.42	42296	1949	55710	1.40	Above	0
Jun-93	1366	42500	37.3	43.8	35.04	58661	58661.22	1.44	42358	1484	57177	1.50	Above	0
Jul-93	4137	42500	38.5	47.4	37.92	62950	62950.07	1.55	42624	1616	60956	1.60	Above	378
Aug-93	1444	42500	37.2	74.6	59.68	63981	63980.92	1.57	42688	2548	60956	1.60	Above	478
Sep-93	4107	42500	97.6	75.6	60.48	69210	69210.26	1.70	43013	2601	60956	1.60	Above	5653
Oct-93	1110	42500	59.5	112.6	90.08	64594	64594.26	1.59	42726	3849	60746	1.50	Above	0
Nov-93	1794	42500	48.4	134.4	107.52	64596	64596.30	1.59	42726	4594	60002	1.50	Above	0
Dec-93	1242	42500	88.9	154.6	123.68	65023	65022.86	1.60	42752	5288	59735	1.50	Above	0
Jan-94	1889	42500	16	178.8	143.04	62305	62304.62	1.53	42584	6091	56213	1.40	Above	0
Feb-94	2948	42500	100.3	123.6	98.88	63425	63424.51	1.56	42653	4218	59207	1.50	Above	0
Mar-94	1443	42500	20.3	109.8	87.84	61513	61512.61	1.51	42535	3736	57776	1.50	Above	0
Apr-94	1029	42500	28.7	85.2	68.16	60025	60024.83	1.48	42442	2893	57132	1.50	Above	0
May-94	1017	42500	16.8	74.4	59.52	58863	58862.76	1.45	42370	2522	56341	1.40	Above	0
Jun-94	1025	42500	24.9	43	34.40	58424	58424.02	1.44	42343	1457	56967	1.50	Above	0
Jul-94	1012	42500	12.3	55.8	44.64	58502	58502.46	1.44	42348	1890	56612	1.40	Above	0
Aug-94	1021	42500	21.3	66	52.80	58539	58538.59	1.44	42350	2236	56302	1.40	Above	0
Sep-94	1040	42500	39.9	76.2	60.96	59038	59038.15	1.45	42381	2584	56455	1.40	Above	0
Oct-94	1035	42500	34.6	129.6	103.68	58960	58959.68	1.45	42376	4394	54566	1.40	Above	0
Nov-94	1033	42500	33.2	145.6	116.48	57010	57010.30	1.40	42256	4922	52088	1.40	Above	0
Dec-94	1018	42500	17.6	215.8	172.64	53854	53853.94	1.33	42061	7261	46593	1.40	Above	0
Jan-95	2524	42500	74.8	173.8	139.04	52295	52295.24	1.29	41965	5835	46460	1.40	Above	0
Feb-95	1014	42500	11.8	159	127.20	47976	47976.38	1.18	41699	5304	42672	1.10	Above	0
Mar-95	1610	42500	61.5	140	112.00	46896	46895.87	1.15	41633	4663	42233	1.10	Above	0
Apr-95	2723	42500	68.9	75	60.00	47884	47883.94	1.18	41693	2502	45382	1.40	Above	0
May-95	4444	42500	62.2	44.4	35.52	52469	52469.46	1.29	41976	1491	50978	1.40	Above	0
Jun-95	3796	42500	59.8	38.2	30.56	57316	57316.28	1.41	42275	1292	56024	1.40	Above	0
Jul-95	4060	42500	48.7	38.2	30.56	62154	62153.83	1.53	42574	1301	60853	1.50	Above	0
Aug-95	4229	42500	40.7	72.4	57.92	66812	66811.86	1.64	42864	2483	60956	1.60	Above	3374
Sep-95	265	42500	31.3	73.6	58.88	62551	62550.73	1.54	42599	2508	60043	1.50	Above	0
Oct-95	3509	42500	99	105.6	84.48	67759	67758.76	1.67	42923	3626	60956	1.60	Above	3177
Nov-95	6476	42500	76.1	129.8	103.84	70666	70665.85	1.74	43104	4476	60956	1.60	Above	5234
Dec-95	1252	42500	27.4	140.2	112.16	63372	63372.36	1.56	42650	4784	58589	1.50	Above	0
Jan-96	2136	42500	46.3	170.4	136.32	62693	62692.55	1.54	42608	5808	56884	1.40	Above	0
Feb-96	1061	42500	60.9	137.8	110.24	60533	60533.41	1.49	42474	4682	55851	1.40	Above	0
Mar-96	1344	42500	49.1	128.2	102.56	59282	59282.16	1.46	42396	4348	54934	1.40	Above	0
Apr-96	3056	42500	57.7	65.4	52.32	60442	60442.09	1.49	42468	2222	58220	1.50	Above	0
May-96	1180	42500	21	47.4	37.92	60293	60292.87	1.48	42459	1610	58683	1.50	Above	0
Jun-96	1335	42500	46.2	38.4	30.72	61982	61981.60	1.53	42564	1308	60674	1.50	Above	0
Jul-96	5487	42500	69.5	41.2	32.96	69115	69115.22	1.70	43007	1418	60956	1.60	Above	6742
Aug-96	3644	42500	47.6	58.6	46.88	66623	66622.87	1.64	42852	2009	60956	1.60	Above	3658
Sep-96	1631	42500	71.5	91	72.80	65625	65625.18	1.61	42790	3115	60956	1.60	Above	1555
Oct-96	753	42500	36.3	122.2	97.76	63251	63251.40	1.56	42642	4169	59083	1.50	Above	0
Nov-96	1062	42500	20.1	152.6	122.08	60999	60998.93	1.50	42503	5189	55810	1.40	Above	0
Dec-96	1017	42500	17.1	169	135.20	57554	57554.05	1.42	42289	5718	51837	1.40	Above	0
Jan-97	1296	42500	37.1	226.8	181.44	54709	54708.79	1.35	42114	7641	47068	1.40	Above	0
Feb-97	1103	42500	2.6	179	143.20	48282	48281.52	1.19	41718	5974	42308	1.10	Above	0
Mar-97	1016	42500	16.3	122.2	97.76	44017	44016.57	1.08	41456	4053	39964	1.00	Below	0
Apr-97	1008	42500	8.4	87.8	70.24	41329	41329.22	1.02	41292	2900	38429	1.00	Below	0
May-97	1975	42500	52.3	48.4	38.72	42626	42626.37	1.05	41371	1602	41024	1.10	Above	0
Jun-97	1034	42500	22.3	40.8	32.64	43006	43005.92	1.06	41394	1351	41655	1.10	Above	0

Jul-97	1017	42500	13.8	43.4	34.72	43259	43258.61	1.06	41410	1438	41821	1.10	Above	0
Aug-97	1028	42500	27.6	66.4	53.12	44021	44021.46	1.08	41456	2202	41819	1.10	Above	0
Sep-97	2517	42500	67.3	72	57.60	47197	47196.69	1.16	41651	2399	44798	1.40	Above	0
Oct-97	1474	42500	40.9	125	100.00	48009	48009.43	1.18	41701	4170	43839	1.10	Above	0
Nov-97	3894	42500	64.7	151.4	121.12	50483	50483.35	1.24	41853	5069	45414	1.40	Above	0
Dec-97	1509	42500	2.7	188.2	150.56	47038	47037.63	1.16	41641	6270	40768	1.10	Above	0
Jan-98	1204	42500	39.8	192	153.60	43664	43664.08	1.07	41435	6364	37300	1.00	Below	0
Feb-98	1495	42500	47.9	175.4	140.32	40830	40830.13	1.00	41261	5790	35040	1.00	Below	0
Mar-98	1038	42500	7.5	143.2	114.56	36397	36397.28	0.90	40991	4696	31701	0.80	Below	0
Apr-98	1045	42500	45.4	77.6	62.08	34676	34676.29	0.85	40886	2538	32138	0.80	Below	0
May-98	1316	42500	28	51	40.80	34644	34644.31	0.85	40884	1668	32976	1.00	Below	0
Jun-98	2657	42500	51.7	46.6	37.28	37831	37830.91	0.93	41078	1531	36300	1.00	Below	0
Jul-98	1645	42500	39	39.8	31.84	39603	39602.50	0.97	41186	1311	38291	1.00	Below	0
Aug-98	618	42500	22.8	54.4	43.52	39878	39877.93	0.98	41203	1793	38085	1.00	Below	0
Sep-98	1217	42500	24.5	97	77.60	40343	40343.40	0.99	41231	3200	37144	1.00	Below	0
Oct-98	1053	42500	53.4	124.4	99.52	40467	40466.74	1.00	41239	4104	36363	1.00	Below	0
Nov-98	2506	42500	62.6	138.8	111.04	41529	41529.39	1.02	41304	4586	36943	1.00	Below	0
Dec-98	1432	42500	54.6	185.2	148.16	40695	40695.09	1.00	41253	6112	34583	1.00	Below	0
Jan-99	1336	42500	63.1	181.8	145.44	38601	38601.22	0.95	41125	5981	32620	1.00	Below	0
Feb-99	1510	42500	49.1	149.2	119.36	36217	36216.63	0.89	40980	4891	31325	0.80	Below	0
Mar-99	1855	42500	58.3	127.2	101.76	35658	35657.64	0.88	40946	4167	31491	0.80	Below	0
Apr-99	1012	42500	11.7	76.8	61.44	33000	32999.97	0.81	40784	2506	30494	0.80	Below	0
May-99	1250	42500	41.7	71.6	57.28	33517	33516.66	0.82	40815	2338	31179	0.80	Below	0
Jun-99	1831	42500	27.1	45.6	36.48	34162	34161.78	0.84	40854	1490	32671	1.00	Below	0
Jul-99	1066	42500	14.8	54.2	43.36	34366	34366.02	0.85	40867	1772	32594	1.00	Below	0
Aug-99	1309	42500	55.4	67.2	53.76	36257	36257.09	0.89	40982	2203	34054	1.00	Below	0
Sep-99	1784	42500	23.1	98	78.40	36820	36819.77	0.91	41016	3216	33604	1.00	Below	0
Oct-99	2097	42500	44.6	123	98.40	37597	37597.04	0.93	41064	4041	33556	1.00	Below	0
Nov-99	1033	42500	26.6	156.8	125.44	35720	35719.60	0.88	40949	5137	30583	0.80	Below	0
Dec-99	1302	42500	70.1	186.6	149.28	34864	34864.41	0.86	40897	6105	28759	0.80	Below	0
Jan-00	3651	42500	23.4	182	145.60	33404	33404.30	0.82	40808	5942	27463	0.80	Below	0
Feb-00	1032	42500	31.6	197.4	157.92	29837	29837.20	0.73	40592	6410	23427	0.60	Below	0
Mar-00	1009	42500	8.9	156	124.80	24814	24814.11	0.61	40287	5028	19786	0.60	Below	0
Apr-00	1045	42500	44.7	92	73.60	22731	22730.68	0.56	40162	2956	19775	0.60	Below	0
May-00	1876	42500	54.1	59.2	47.36	23950	23949.82	0.59	40235	1906	22044	0.60	Below	0
Jun-00	2214	42500	33.3	41	32.80	25674	25673.68	0.63	40339	1323	24351	0.60	Below	0
Jul-00	1306	42500	39.3	50.2	40.16	27326	27326.40	0.67	40440	1624	25702	0.80	Below	0
Aug-00	1999	42500	26	58	46.40	28806	28806.07	0.71	40529	1881	26926	0.80	Below	0
Sep-00	1129	42500	61.2	95.2	76.16	30655	30655.33	0.75	40641	3095	27560	0.80	Below	0
Oct-00	2739	42500	110.3	109.4	87.52	34986	34986.34	0.86	40905	3580	31406	0.80	Below	0
Nov-00	7043	42500	19.8	135.4	108.32	39291	39290.63	0.97	41167	4459	34831	1.00	Below	0
Dec-00	1146	42500	12.9	209	167.20	36525	36525.35	0.90	40998	6855	29670	0.80	Below	0
Jan-01	1012	42500	12.1	207	165.60	31197	31196.77	0.77	40674	6736	24461	0.80	Below	0
Feb-01	1064	42500	20.1	193.6	154.88	26379	26379.27	0.65	40382	6254	20125	0.60	Below	0
Mar-01	4045	42500	89.8	141	112.80	27987	27986.80	0.69	40480	4566	23421	0.60	Below	0
Apr-01	4557	42500	127.1	88	70.40	33379	33378.99	0.82	40807	2873	30506	0.80	Below	0
May-01	11429	42500	15.7	48.2	38.56	42602	42602.41	1.05	41370	1595	41007	1.10	Above	0
Jun-01	1581	42500	34.3	47	37.60	44046	44045.62	1.08	41458	1559	42487	1.10	Above	0
Jul-01	1132	42500	11.6	37.4	29.92	44112	44112.25	1.09	41462	1241	42872	1.10	Above	0
Aug-01	1266	42500	47.2	72.4	57.92	46144	46144.18	1.14	41587	2409	43735	1.10	Above	0
Sep-01	1536	42500	25.4	90	72.00	46351	46350.89	1.14	41599	2995	43356	1.10	Above	0
Oct-01	1062	42500	55.1	117.4	93.92	46760	46759.57	1.15	41624	3909	42850	1.10	Above	0
Nov-01	1049	42500	48.6	124.2	99.36	45964	45964.31	1.13	41576	4131	41833	1.10	Above	0
Dec-01	1033	42500	32.7	147.8	118.24	44256	44255.81	1.09	41471	4904	39352	1.00	Below	0
Jan-02	1023	42500	23.4	176.2	140.96	41370	41370.19	1.02	41294	5821	35549	1.00	Below	0
Feb-02	1290	42500	50.6	153.4	122.72	38990	38989.61	0.96	41149	5050	33940	1.00	Below	0
Mar-02	1156	42500	36.1	136.4	109.12	36630	36630.20	0.90	41005	4474	32156	0.80	Below	0
Apr-02	1433	42500	35.4	78.2	62.56	35093	35093.37	0.86	40911	2559	32534	1.00	Below	0
May-02	1027	42500	26.3	61.4	49.12	34679	34678.89	0.85	40886	2008	32671	1.00	Below	0
Jun-02	1033	42500	32.5	55.6	44.48	35084	35084.32	0.86	40911	1820	33265	1.00	Below	0
Jul-02	1028	42500	27.8	67.8	54.24	35474	35473.92	0.87	40934	2220	33254	1.00	Below	0
Aug-02	1028	42500	27.7	68.4	54.72	35459	35458.59	0.87	40933	2240	33219	1.00	Below	0
Sep-02	1026	42500	26.4	114.8	91.84	35367	35367.12	0.87	40928	3759	31608	0.80	Below	0
Oct-02	1023	42500	22.5	137.8	110.24	33587	33587.05	0.83	40819	4500	29087	0.80	Below	0
Nov-02	1014	42500	14.1	163.6	130.88	30700	30700.47	0.76	40644	5319	25381	0.80	Below	0
Dec-02	1008	42500	7.7	189.2	151.36	26716	26715.92	0.66	40403	6115	20601	0.60	Below	0
Jan-03	1019	42500	19.4	220.4	176.32	22444	22444.49	0.55	40144	7078	15366	0.60	Below	0
Feb-03	1021	42500	21	152	121.60	17280	17279.73	0.43	39833	4844	12436	0.60	Below	0
Mar-03	1018	42500	18.3	137.2	109.76	14232	14232.06	0.35	39650	4352	9880	0.60	Below	0
Apr-03	3412	42500	53.1	86.8	69.44	15549	15548.96	0.38	39729	2759	12790	0.60	Below	0
May-03	1069	42500	10.7	56.2	44.96	14313	14313.43	0.35	39655	1783	12531	0.60	Below	0
Jun-03	1021	42500	20.5	52.4	41.92	14422	14422.28	0.35	39662	1663	12760	0.60	Below	0
Jul-03	1882	42500	66.6	58	46.40	17472	17472.32	0.43	39845	1849	15624	0.60	Below	0
Aug-03	2891	42500	47.5	72.2	57.76	20534	20533.75	0.51	40029	2312	18222	0.60	Below	0
Sep-03	957	42500	24.4	99.8	79.84	20216	20215.86	0.50	40010	3194	17021	0.60	Below	0
Oct-03	1079	42500	64.9	102.6	82.08	20859	20858.58	0.51	40049	3287	17571	0.60	Below	0
Nov-03	1032	42500	31.8	161.2	128.96	19955	19954.68	0.49	39994	5158	14797	0.60	Below	0
Dec-03	1335	42500	31.4	200.2	160.16	17467	17466.89	0.43	39845	6382	11085	0.60	Below	0
Jan-04	1062	42500	23.8	180	144.00	13159	13159.24	0.32	39586	5700	7459	0.40	Below	0
Feb-04	1023	42500	23.4	160.4	128.32	9477	9476.76	0.23	39365	5051	4425	0.40	Below	0
Mar-04	1015	42500	15	144.8	115.84	6078	6077.88	0.15	39163	4537	1541	0.40	Below	0
Apr-04	1695	42500	46.3	98.8	79.04	5204	5203.58	0.13	39110	3091	2112	0.40	Below	0
May-04	1583	42500	21.2	61.6	49.28	4596	4596.00	0.11	39074	1926	2670	0.40	Below	0
Jun-04	1514	42500	37.1	54.8	43.84	5761	5760.82	0.14	39144	1716	4045	0.40	Below	0
Jul-04	1300	42500	29.8	54.8	43.84	6612	6611.74	0.16	39194	1718	4893	0.40	Below	0
Aug-04	1913	42500	62.2	73.2	58.56	9450	9450.41	0.23	39364	2305	7145	0.40	Below	0
Sep-04	3003	42500	50.9	76.2	60.96	12311	12311.48	0.30	39535	2410	9901	0.60	Below	0
Oct-04	465	42500	48.2	130.8	104.64	12415	12415.27	0.31	39541	4138	8278	0.60	Below	0
Nov-04	3885	42500	86.2	142	113.60	15826	15825.71	0.39	39746	4515	11311	0.60	Below	0
Dec-04	416	42500	45.4	171.8	137.44	13656	13656.20	0.34	39616	5445	8211	0.60	Below	0
Jan-05	1040	42500	40.1	195.8	156.64	10956	10955.77	0.27	39454	6180	4776	0.40	Below	0
Feb-05	9588	42500	134.2	140.4	112.32	20067	20066.71	0.49	40001	4493	15574	0.60	Below	0
Mar-05	1920	42500	7.5	132.2	105.76	17813	17812.59	0.44	39865	4216	13596	0.60	Below	0
Apr-05	1022	42500	20.9	117.2	93.76	15507	15507.14	0.38	39727	3725	11782	0.60	Below	0
May-05	1010	42500	10.1	66.4	53.12	13222	13221.70	0.33	39590	2103	11119	0.60	Below	0
Jun-05	2478	42500	41.7	47.8	38.24	15369	15368.86	0.38	39718	1519	13850	0.60	Below	0
Jul-05	1905	42500	26.8	50	40.00	16894	16894.27	0.42	39810	1592	15302	0.60	Below	0
Aug-05	1045	42500	42.7	82.4	65.92	18162	18161.64	0.45	39886	2629	15532	0.60	Below	0
Sep-05	1299	42500	51.8	89.4	71.52	19033	19032.67	0.47	39939	2856	16176	0.60	Below	0
Oct-05	1151	42500	47.3	136.2	108.96	19338	19337.81	0.48	39957	4354	14984	0.60	Below	0
Nov-05	1717	42500	49.7	173.2	138.56	18814	18813.54	0.46	39926	5532	13281	0.60	Below	0
Dec-05	1049	42500	30.8	227	181.60	15640	15639.66	0.38	39735	7216	8424	0.60	Below	0
Jan-06	1048	42500	48.2	209.2	167.36	11521	11520.53	0.28	39488	6609	4912	0.40	Below	0
Feb-06	1039	42500	39.3	159	127.20	7621	7621.41	0.19	39255	4993	2628	0.40	Below	0

Mar-06	1010	42500	10.1	158.8	127.04	4068	4067.56	0.10	39043	4960	0	0.00	Empty	0
Apr-06	1299	42500	35.6	92.2	73.76	2812	2812.28	0.07	38968	2874	0	0.00	Empty	0
May-06	1043	42500	32.7	52.4	41.92	2433	2432.96	0.06	38946	1633	800	0.40	Below	0
Jun-06	1020	42500	20	37.4	29.92	2670	2670.36	0.07	38960	1166	1505	0.40	Below	0
Jul-06	1025	42500	24.9	51.8	41.44	3588	3587.84	0.09	39014	1617	1971	0.40	Below	0
Aug-06	1026	42500	26.3	72	57.60	4115	4115.14	0.10	39046	2249	1866	0.40	Below	0
Sep-06	1028	42500	27.6	111.2	88.96	4067	4066.71	0.10	39043	3473	593	0.40	Below	0
Oct-06	1006	42500	6.3	172.8	138.24	1868	1867.52	0.05	38912	5379	0	0.00	Empty	0
Nov-06	1017	42500	17.1	167.8	134.24	1744	1743.85	0.04	38905	5223	0	0.00	Empty	0
Dec-06	1014	42500	14.2	219.2	175.36	1618	1617.70	0.04	38897	6821	0	0.00	Empty	0
Jan-07	1598	42500	27.8	217.8	174.24	2780	2779.58	0.07	38966	6789	0	0.00	Empty	0
Feb-07	1080	42500	21.3	183	146.40	1985	1985.24	0.05	38919	5698	0	0.00	Empty	0
Mar-07	1025	42500	24.5	165.4	132.32	2066	2065.75	0.05	38924	5150	0	0.00	Empty	0
Apr-07	1028	42500	28.1	97.6	78.08	2222	2222.35	0.05	38933	3040	0	0.00	Empty	0
May-07	1032	42500	32.2	88	70.40	2401	2400.70	0.06	38944	2742	0	0.00	Empty	0
Jun-07	1531	42500	41.7	41.8	33.44	3304	3303.63	0.08	38997	1304	2000	0.40	Below	0
Jul-07	6781	42500	65.7	51.4	41.12	11573	11573.07	0.28	39491	1624	9949	0.60	Below	0
Aug-07	904	42500	16.1	83.2	66.56	11538	11537.51	0.28	39489	2628	8909	0.60	Below	0
Sep-07	1017	42500	15.9	105.2	84.16	10602	10601.56	0.26	39433	3319	7283	0.40	Below	0
Oct-07	1018	42500	18.3	154.2	123.36	9079	9078.95	0.22	39342	4853	4226	0.40	Below	0
Nov-07	3734	42500	93.5	164.2	131.36	11933	11933.21	0.29	39512	5190	6743	0.40	Below	0
Dec-07	1446	42500	54.1	204.2	163.36	10488	10488.09	0.26	39426	6441	4047	0.40	Below	0
Jan-08	1087	42500	10.2	218.8	175.04	5568	5568.25	0.14	39132	6850	0	0.00	Empty	0
Feb-08	1022	42500	21.5	154.8	123.84	1935	1935.25	0.05	38916	4819	0	0.00	Empty	0
Mar-08	1021	42500	20.8	175.8	140.64	1905	1904.80	0.05	38914	5473	0	0.00	Empty	0
Apr-08	1008	42500	8	91.8	73.44	1348	1348.00	0.03	38881	2855	0	0.00	Empty	0
May-08	1726	42500	42.6	51.4	41.12	3536	3536.38	0.09	39011	1604	1932	0.40	Below	0
Jun-08	1204	42500	24.4	48.6	38.88	4173	4173.22	0.10	39049	1518	2655	0.40	Below	0
Jul-08	1411	42500	39.1	49.6	39.68	5727	5727.27	0.14	39142	1553	4174	0.40	Below	0
Aug-08	2309	42500	39.9	57.4	45.92	8178	8178.48	0.20	39288	1804	6374	0.40	Below	0
Sep-08	1588	42500	15.7	117.8	94.24	8629	8629.15	0.21	39315	3705	4924	0.40	Below	0
Oct-08	1013	42500	10.5	155.4	124.32	6383	6383.20	0.16	39181	4871	1512	0.40	Below	0
Nov-08	1025	42500	25.4	155.6	124.48	3617	3617.15	0.09	39016	4857	0	0.00	Empty	0
Dec-08	3707	42500	75.1	176	140.80	6899	6899.23	0.17	39212	5521	1378	0.40	Below	0
Jan-09	1390	42500	0.9	249.8	199.84	2806	2806.18	0.07	38968	7787	0	0.00	Empty	0
Feb-09	1004	42500	2.9	189	151.20	1127	1126.93	0.03	38868	5877	0	0.00	Empty	0
Mar-09	1043	42500	38.3	135.8	108.64	2670	2670.43	0.07	38960	4233	0	0.00	Empty	0
Apr-09	1873	42500	30.3	89.8	71.84	3161	3160.76	0.08	38989	2801	360	0.40	Below	0
May-09	1778	42500	10.5	53.2	42.56	2584	2583.93	0.06	38955	1658	926	0.40	Below	0
Jun-09	1023	42500	22.8	38.4	30.72	2918	2917.83	0.07	38974	1197	1721	0.40	Below	0
Jul-09	1177	42500	32.3	57.2	45.76	4271	4270.70	0.11	39055	1787	2484	0.40	Below	0
Aug-09	1041	42500	41.1	86.4	69.12	5271	5271.39	0.13	39115	2704	2568	0.40	Below	0
Sep-09	1688	42500	64.7	106.4	85.12	7005	7005.08	0.17	39218	3338	3667	0.40	Below	0
Oct-09	1693	42500	28.3	119.2	95.36	6563	6562.94	0.16	39192	3737	2826	0.40	Below	0
Nov-09	2034	42500	77.7	184.6	147.68	8162	8161.78	0.20	39287	5802	2360	0.40	Below	0
Dec-09	2010	42500	35.1	196	156.80	5862	5861.57	0.14	39150	6139	0	0.00	Empty	0
Jan-10	1021	42500	14.2	213	170.40	1625	1624.68	0.04	38897	6628	0	0.00	Empty	0
Feb-10	1077	42500	24.7	173.2	138.56	2127	2127.01	0.05	38927	5394	0	0.00	Empty	0
Mar-10	2397	42500	67.4	134.4	107.52	5262	5261.67	0.13	39114	4206	1056	0.40	Below	0
Apr-10	1036	42500	31.2	86.4	69.12	3418	3417.72	0.08	39004	2696	722	0.40	Below	0
May-10	1027	42500	27.1	55.4	44.32	2901	2900.60	0.07	38973	1727	1173	0.40	Below	0
Jun-10	1039	42500	38.5	40	32.00	3848	3848.05	0.09	39030	1249	2599	0.40	Below	0
Jul-10	1699	42500	21.4	40.2	32.16	5207	5207.15	0.13	39111	1258	3949	0.40	Below	0
Aug-10	3534	42500	66.8	61.2	48.96	10322	10322.26	0.25	39416	1930	8392	0.60	Below	0
Sep-10	3521	42500	54.2	75.2	60.16	14217	14217.27	0.35	39649	2385	11832	0.60	Below	0
Oct-10	988	42500	101.8	123.6	98.88	17146	17145.99	0.42	39825	3938	13208	0.60	Below	0
Nov-10	5623	42500	130.3	135.8	108.64	24369	24368.83	0.60	40261	4374	19995	0.60	Below	0
Dec-10	5452	42500	39.8	160.6	128.48	27139	27138.69	0.67	40428	5194	21944	0.60	Below	0
Jan-11	4366	42500	107.4	166.6	133.28	30875	30874.60	0.76	40655	5418	25456	0.80	Below	0
Feb-11	6403	42500	110.6	121.2	96.96	36560	36560.12	0.90	41001	3975	32585	1.00	Below	0
Mar-11	822	42500	16.4	112.2	89.76	34104	34103.78	0.84	40851	3667	30437	0.80	Below	0
Apr-11	2470	42500	48.5	77.4	61.92	34968	34968.45	0.86	40904	2533	32436	0.80	Below	0
May-11	554	42500	33.4	45.6	36.48	34409	34408.77	0.85	40869	1491	32918	1.00	Below	0
Jun-11	239	42500	33.2	43.4	34.72	34568	34568.23	0.85	40879	1419	33149	1.00	Below	0
Jul-11	937	42500	29	48.4	38.72	35318	35318.10	0.87	40925	1585	33733	1.00	Below	0
Aug-11	270	42500	15.2	62.4	49.92	34650	34649.60	0.85	40884	2041	32609	1.00	Below	0
Sep-11	1044	42500	41.3	102.8	82.24	35408	35408.32	0.87	40930	3366	32042	0.80	Below	0
Oct-11	2525	42500	69.9	116.4	93.12	37538	37537.88	0.92	41060	3824	33714	1.00	Below	0
Nov-11	1286	42500	129.2	139.8	111.84	40492	40491.79	1.00	41240	4612	35879	1.00	Below	0
Dec-11	5790	42500	56.5	179.4	143.52	44071	44071.10	1.08	41460	5950	38121	1.00	Below	0
Jan-12	1072	42500	15.5	220.2	176.16	39852	39851.82	0.98	41201	7258	32594	1.00	Below	0
Feb-12	1046	42500	46	159.4	127.52	35595	35594.79	0.88	40942	5221	30374	0.80	Below	0
Mar-12	2947	42500	35.3	126.6	101.28	34821	34820.89	0.86	40895	4142	30679	0.80	Below	0
Apr-12	1044	42500	35.5	91.6	73.28	33232	33232.09	0.82	40798	2990	30242	0.80	Below	0
May-12	3106	42500	77.8	60.6	48.48	36655	36654.75	0.90	41006	1988	34667	1.00	Below	0
Jun-12	11342	42500	79.7	41.6	33.28	49396	49395.63	1.22	41786	1391	48005	1.40	Above	0
Jul-12	4675	42500	45.1	41.8	33.44	54596	54596.42	1.34	42107	1408	53188	1.40	Above	0
Aug-12	3106	42500	52.7	71	56.80	58534	58534.12	1.44	42350	2405	56129	1.40	Above	0
Sep-12	825	42500	42.4	97	77.60	58756	58756.05	1.45	42364	3287	55469	1.40	Above	0
Oct-12	1020	42500	19	122.8	98.24	57296	57295.89	1.41	42273	4153	53143	1.40	Above	0
Nov-12	1034	42500	34.3	157.8	126.24	55635	55635.00	1.37	42171	5324	50311	1.40	Above	0
Dec-12	1028	42500	27.9	200.8	160.64	52525	52525.00	1.29	41979	6744	45781	1.40	Above	0
Jan-13	1005	42500	5.1	231	184.80	47003	47003.34	1.16	41639	7695	39308	1.00	Below	0
Feb-13	1053	42500	53.3	184	147.20	42627	42626.93	1.05	41371	6090	36537	1.00	Below	0
Mar-13	1027	42500	26.8	173.4	138.72	38703	38702.91	0.95	41131	5706	32997	1.00	Below	0
Apr-13	1011	42500	10.6	89.2	71.36	34458	34458.28	0.85	40872	2917	31542	0.80	Below	0
May-13	1030	42500	30.4	65.8	52.64	33864	33864.02	0.83	40836	2150	31714	0.80	Below	0
Jun-13	6697	42500	74	37.6	30.08	41556	41556.14	1.02	41306	1242	40314	1.00	Below	0
Jul-13	3091	42500	47.9	57.2	45.76	45440	45439.99	1.12	41543	1901	43539	1.10	Above	0
Aug-13	2448	42500	39.2	77.6	62.08	47653	47652.52	1.17	41679	2587	45065	1.40	Above	0
Sep-13	756	42500	60.8	101	80.80	48405	48405.17	1.19	41725	3371	45034	1.40	Above	0
Oct-13	1144	42500	42.1	130.2	104.16	47967	47967.43	1.18	41699	4343	43624	1.10	Above	0
Nov-13	1446	42500	50	138.6	110.88	47195	47195.24	1.16	41651	4618	42577	1.10	Above	0
Dec-13	205	42500	28.7	184.4	147.52	44001	44001.49	1.08	41455	6115	37886	1.00	Below	0

Appendix G – Surface Water Management Plan

Wests Road Refuse Disposal Facility

Stormwater Management Plan

Wyndham City Council

March 2015

Ref No. 20131288RA2

Tonkin
CONSULTING
a better approach

Document History and Status

Rev	Description	Author	Reviewed	Approved	Date
0	Draft for Client and Auditor Comment	DME			19/09/14
A	Final	DME	MRS	MRS	5/03/15

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Appendices

1 Introduction

1.1 Background

Wyndham City Council operates the Wests Rd Refuse Disposal Facility (RDF) located approximately 8 km south-west of Werribee. The Wests Rd RDF has been operating since 1976. A location plan for the site is presented in Figure 1.1. The site lies within the Cherry Creek Catchment and is set in a rural area comprising of quarrying, grazing land and isolated residential dwellings. The overall site is approximately 213 Ha in area with approximately 72 Ha is used for the RDF and the remainder is currently leased to Holcim Australia for quarrying or not yet developed. The land generally falls in elevation to the south.

Figure 1.1 Location of Wests Road Refuse Disposal Landfill (Vic Land Services, 2014)

Landfilling at the site has occurred in voids created by basalt quarry operations which are still on-going at the site. This stormwater management plan relates only to the past and current Council operated landfill Cell areas (Cell 1A to Cell 4B) and not to the quarry operations or processing areas in the north east and south west corners of the site operated by Holcim.

The majority of runoff from the site is understood to remain within the site boundary ponding in low lying areas. The remainder is discharged to the roadside stormwater system on Wests Rd via the eastern boundary swale. Outside of the site the catchment drains to Cherry Creek located south west of the site and to an unnamed tributary of Cherry Creek located south east of the site. These surface water features in the Cherry Creek catchment are known to be ephemeral.

A railway embankment along the northern boundary of the site acts as a barrier to drainage flows into site, however an offsite culvert under the railway line may contribute surface water to the northern edge of the site where surface water ponding is known to occur.

The site geology is dominated by basalt overlain by residual clays and groundwater flows generally from the north to the south. Groundwater interacts with the surface water downstream of the site where the watercourses merge.

This report updates the ERM Surface Water Regime, dated 1 August 2013 and the Douglas Partners Surface Water Report on Drainage Management, dated 14 August 2007 and addressed the current surface water drainage requirements of the site. This report does not include future surface water management requirements as the site undergoes further cell development and capping.

1.2 Objective

The objective of this report was to review existing stormwater management and to provide concept design details, including calculations of catchment areas and sizing of drains and ponds. Wyndham City Council requested this Stormwater Management Plan be limited to current conditions.

Wyndham City Council will be responsible for gaining any approvals necessary. It should be noted that detailed design of any new ponds will be required prior to Auditor verification and EPA approval.

1.3 Assumptions

The following points should be noted as a basis for this plan:

- Catchment areas were based on topographic maps, not accurate survey data;
- Rainfall data, Intensity Frequency Duration (IFD) curves and tabulated data obtained from the Bureau of Meteorology were used in calculations (refer to Appendix A); and
- Run-off coefficients were estimated based on previous experience assuming short grass over the interim cover soil – site specific values were not obtained by field methods.
- Prior to construction, detailed design of storage ponds will be undertaken
- Wyndham City Council will gain all necessary approvals.

1.4 Legislation

The site is licensed to Wyndham City Council under EPA licence: ES492, issued 6 January 1992 and last amended on 30 January 2013. Relevant Licence Conditions include:

- L1 - You must implement a monitoring program, verified by an environmental auditor appointed pursuant to the Act, which enables both you and EPA to determine compliance with this licence.
- L4 - Waters contaminated by leachate must not be discharged beyond the boundaries of the premises.
- DW1 - Stormwater discharged from the premises must not be contaminated with waste.
- DL1 - You must not contaminate land or groundwater.

1.5 Environmental Monitoring

Monitoring of surface water shall be undertaken quarterly to coincide with the groundwater sampling.

Monitoring is to be conducted in accordance with the latest Monitoring Program[1] and the following documents:

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[1] Compass Environmental. 2014. *Environmental Monitoring Plan Wests Road Refuse Disposal Facility, Werribee.* Ref: 1192-MP01-F.May 2014

- Australian / New Zealand Standard: Water Quality – Sampling, Part 4: *Guidance on sampling from lakes, natural and man-made*, AS/NZS 5667.4:1998 (Standards Australia and Standards New Zealand 1998); and
- *Sampling and analysis of waters, wastewaters, soils and wastes*, Publication IWERG701 (EPA 2009).

The aims of the monitoring program to ensure that there are no adverse impacts to surface water quality or siltation of water courses, and to ensure compliance with the EPA Licence.

2 Design Philosophy

2.1 Philosophy

The surface water management plan has been designed for the current site operations. It does not include design details for future cell development or for the final proposed landform; however some recommendations are made for the medium to long term surface management of the site in Section 4.4.

The following points have been adopted in the design of the surface water management system:

- The rational method has been used to calculate the stormwater runoff flows;
- All leachate/polluted surface water to be directed to leachate ponds (refer to Section 4.3 for additional information on ponds);
- Potentially polluted surface water to be directed through a retention system, with a ponds sized to contain a 1 in 20 year storm event, however a 1 in 100 storm event was considered to assess the risk of flooding or pond failure;
- All drains/swales/underground drainage to be designed to a 1 in 20 year event;
- Runoff to either remain on-site or enter the Wests Road stormwater drainage system.
- No external runoff was assumed to flow into site.

2.2 Runoff Estimates

Runoff flows and volumes were estimated using The Rational Method described in Australian Rainfall and Runoff[2], Book 8, Section 1.2. Runoff Calculations are presented in Appendix B.

The Rational Formula is given by:

$$Q = \frac{CiA}{360}$$

Where:

Q = the resultant flow rate (m^3/s)

C = Runoff coefficient

i = rainfall intensity (m/s)

A = the catchment area (m^2)

2.3 Time of Concentration

A time of concentration was calculated for each of the internal catchment areas using the Kinematic Wave Equation, formula 14.2, AR & R 1987, which is shown below, with calculations in Appendix B.

$$t_c = \frac{6.94(Ln^*)^{0.6}}{i^{0.4}S^{0.3}}$$

Where,

t_c = time of concentration (minutes)

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[2] Pilgrim D. H (1997), *Australian Rainfall and Runoff: Flood Analysis and Design.* Published by Institution of Engineers Australia, 1997,

L = overland flow path length (m)

n* = surface roughness coefficient

i = rainfall intensity (m/s)

S = slope (m/m)

The time of concentration is then estimated by iterations comparing rainfall intensity and the time of concentration on the IFD curve.

Surface water runoff was assumed to flow overland for a distance based on the slope of the surface. Surface water runoff was then assumed to be within channels (natural and/or formed) for the remainder of the flow distance. The time of concentration in natural channels was estimated using charts prepared by Argue (1986), which are included in Appendix A. Manning’s Equation was used to calculate the required channel sizing.

2.4 Runoff Coefficients

Runoff coefficients were estimated based on catchment information and land surface, as detailed in Sections 1.2. Exact values were not obtained as field trials were not undertaken.

3 Internal Catchments

3.1 General

A topographic map produced in July 2014 was used to divide the site into 18 internal catchments. These 18 catchment areas are shown in Figure 3.1. Division of the site into internal catchment areas enabled sizing of the drains and ponds. It was assumed that surface runoff from all closed landfill cells is not contaminated. The internal catchments are discussed in the following sections.

The peak flow rates for each catchment for a 1 in 20 year Average Recurrence Interval (ARI) are shown in Table 3.1 below.

Table 3.1 Peak Flow Rates for Existing Catchments

Catchment Area	Area (m^2)	Runoff Coefficient	Intensity (mm/hr)	Flow rate (m^3/s)
1	15625	0.3	66	0.086
2	56938	0.3	40	0.190
3	34188	0.3	37	0.105
4	114250	0.3	41	0.390
5	35938	0.3	50	0.150
6	57563	0.3	48	0.230
7	6438	0.3	58	0.031
8	40250	0.3	49	0.164
9	27813	0.3	75	0.174
10	33313	0.3	75	0.208
11	27250	0.3	760	1.726
12	33625	0.3	56	0.157
13	92750	0.3	55	0.425
14	29250	0.3	80	0.195
15	14896	0.3	27	0.034
16	52250	0.3	40	0.174
17	38813	0.3	64	0.207
18	12187	0.3	51	0.052

3.2 Area 1

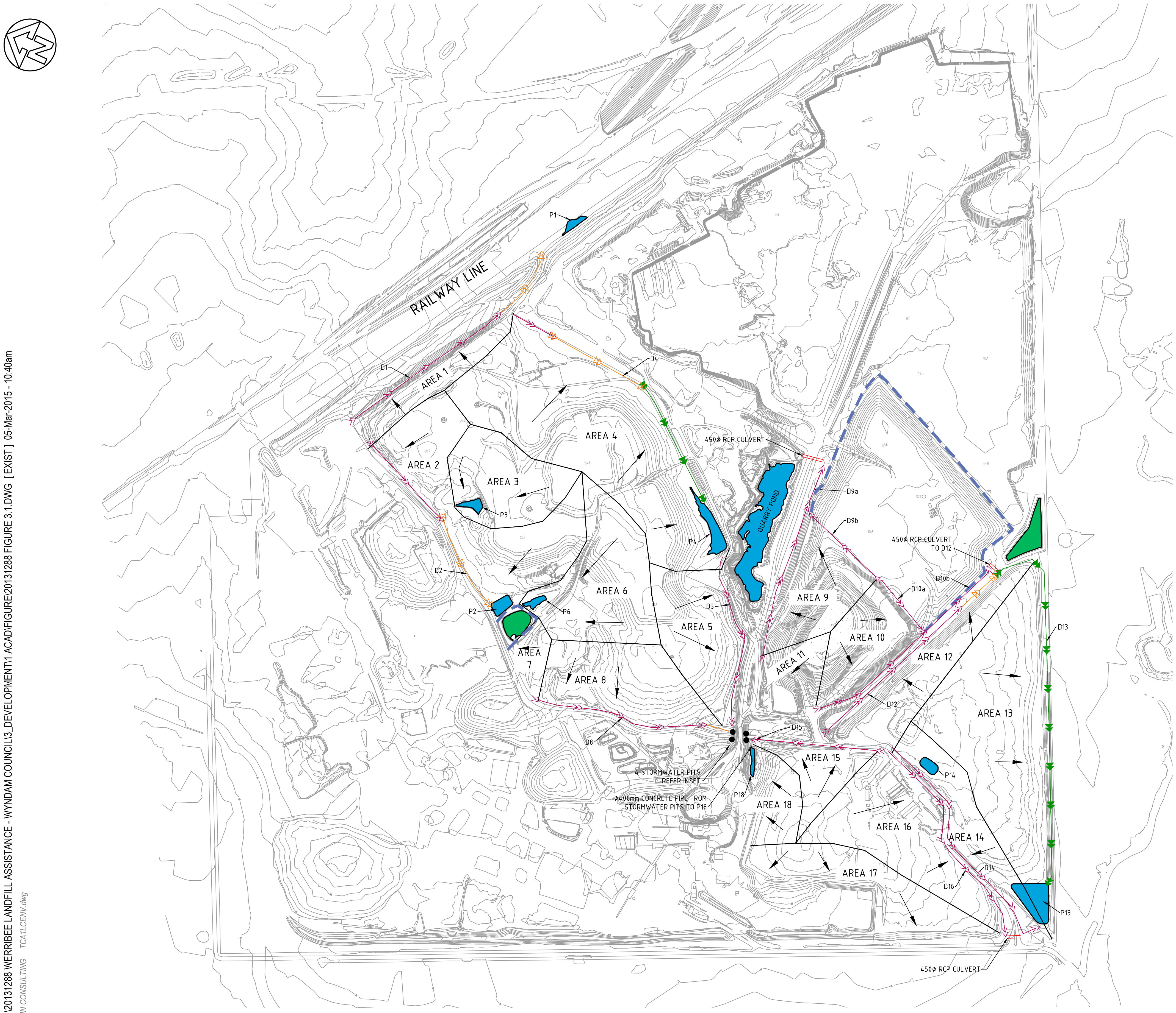
Area 1 covers the northern edge of Cell 2B which has had interim cover applied. Surface water from this area is considered to be clean surface water. The majority of the surface water from Area 1 will be directed toward an existing swale (Drain 1) on the northern boundary of this cell which drains to a depression on the northern boundary (Pond 1).

3.3 Area 2

Area 2 covers the western edge of Cell 2A and Cell 2B which has had interim cover applied. Surface water from this area is considered to be clean surface water. The majority of the surface water from Area 2 will be directed toward an existing access track that divides the quarry processing area and landfilling operations. A new swale (Drain 2) along this track is proposed which drains to Pond 2 located north of the existing leachate evaporation pond in Cell 2A.

T:\2013\20131288 WERRIBEE LANDFILL ASSISTANCE - WYNDAM COUNCIL\3_DEVELOPMENT\1 ACAD\FIGURE\20131288 FIGURE 3.1.DWG [EXIST] 05-Mar-2015 - 10:40am

© TONKIN CONSULTING TCA1LCENV.dwg



LEGEND

→→→	DRAIN TYPE A
→→→	DRAIN TYPE B
→→→	DRAIN TYPE C
—	APPROXIMATE CATCHMENT AREA
- - -	PROPOSED CUTOFF BUND
→	FLOW PATH
🟩	LEACHATE POND
🟦	SURFACE WATER POND

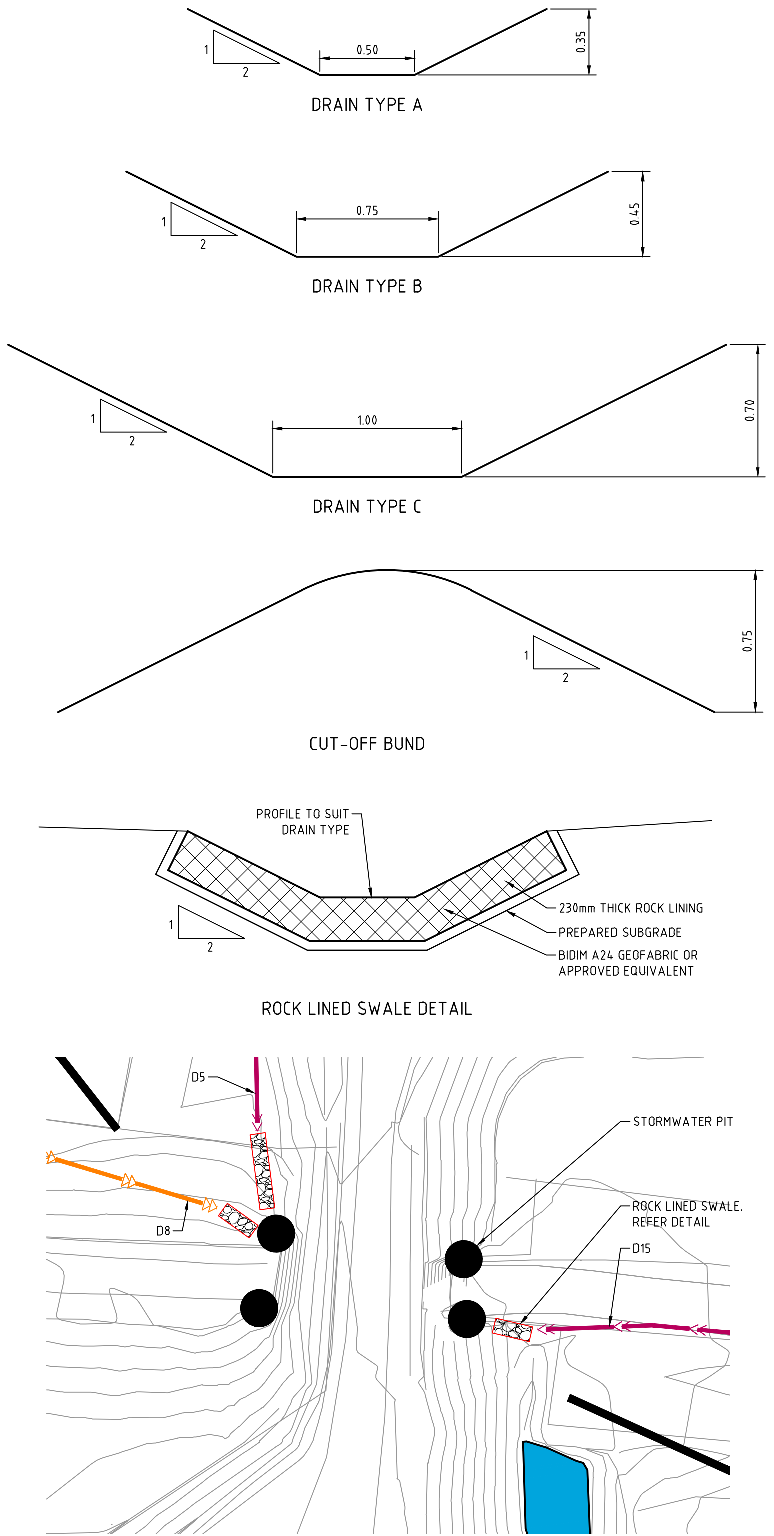


Figure 3.1

Coords to MGA 53

ALL LEVELS TO A.H.D.

REV	AMENDMENT / REASON FOR ISSUE	DATE	DES.	DWN.	DWGCHK.	VERIFIED	APPROVED
A	FINAL STORMWATER MANAGEMENT PLAN	5.3.15	DE	BK	AM	DE	MS

www.tonkin.com.au

Tonkin CONSULTING

a better approach

Job No: 2013.1288
Filename: 20131288 FIGURE 3.1.DWG
Survey By:
Survey Date:
Scale: 1 : 4000 @ A1
Sheet Size: A1

0 40 80 160 240
1:4000 (A1); 1:8000 (A3)

Wyndham City Council

Wests Road RDF Stormwater Drainage Plan

3.4 Area 3

The Area 3 catchment collects surface water within Cell 2A and Cell 2B which drains into the permanent surface water (Pond 3) at the interface of these cells. Any overflow from the permanent surface water pond would enter Area 2. Given that interim cover has been applied to these Cells, surface water from this area is considered to be clean surface water.

3.5 Area 4

Area 4 covers the eastern edge of Cell 2B and the northern portion of Cell 3 which has had interim cover applied. Surface water from this area is considered to be clean surface water. The majority of the surface water from Area 4 will be directed toward an existing cut-off bund (Drain 4) that divides the quarrying operations area and landfilling operations. The dimensions of the existing cut-off bund are assessed to be adequate. This cut-off bund drains south to a depression (Pond 4) at the edge of Cell 3 located west of the existing quarry pond.

3.6 Area 5

Area 5 covers the eastern edge of Cell 1B and the southern portion of Cell 3 which has had interim cover applied. Surface water from this area is considered to be clean surface water. The majority of the surface water from Area 5 will be directed toward an existing cut-off bund (Drain 5) that which will require an extension to allow drainage to the underpass. This drain will be rocklined at the downstream end for erosion protection, refer to Figure 3.1. Four stormwater pits located at the underpass discharge runoff to a depression (Pond 18) west of Cell 1A via a 400 mm diameter concrete pipe.

3.7 Area 6

The Area 6 catchment collects surface water within Cell 2A and Cell 3 which drains into the leachate overflow pond (Pond 6) in Cell 2A. Given that interim cover has been applied to these Cells, surface water from Area 6 is considered to be clean surface water. Any overflow from the leachate overflow pond would enter Area 2 and be considered to be leachate, it is proposed that bunding is used to ensure that only clean stormwater enters Pond 6.

3.8 Area 7

Area 7 is a small catchment that covers the western edge of Cell 1B which has had interim cover applied. This area is proposed to be utilised by Veolia as a composting area. Surface water from this area will be required to remain within Area 7 so no formal controls are proposed to be undertaken by Council.

3.9 Area 8

Area 8 covers the majority of Cell 1B which has had interim cover applied. Surface water from this area is considered to be clean surface water. The majority of the surface water from Area 8 will be directed south toward an existing access track that divides the quarry processing area and landfilling operations. A new swale (Drain 8) along this track is proposed which drains in an easterly direction to the underpass stormwater infrastructure for discharge into Pond 18. Drain 8 will also be rocklined at the downstream end for erosion protection, refer to Figure 3.1.

3.10 Area 9

Area 9 covers the north western portion of Cell 4A which has had interim cover applied. Surface water from this area is considered to be clean surface water but may contain sediment due to the lack of vegetation over this recently covered cell. The majority of the surface water from Area 9 will be contained within existing cut-off bunds (Drain 9a) at the edge of the Cell and be directed to a low lying area adjacent to the quarry pond. In peak rainfall events surface water is known to overflow into the quarry pond, therefore a new 450 mm diameter Reinforced Concrete Pipe

(RCP) culvert is proposed to be installed beneath the existing access track to formalise drainage into the quarry pond and restrict ponding by the access road, refer to Figure 3.1. A new cut-off bund (Drain 9b) at the north eastern edge of the cell 4A is proposed to prevent clean surface water in Area 9 from entering Cell 4B. However this drain may not be viable given that waste filling in Cell 4B is expected to progress onto the north eastern slope of Area 9 within the next 1.5 years.

3.11 Area 10

Area 10 covers the eastern portion of Cell 4A which has had interim cover applied. Surface water from this area is considered to be clean surface water but may contain sediment due to the lack of vegetation over this recently covered cell. The majority of the surface water from Area 10 will drain towards the valley between Cell 4A and Cell 1A. A new swale (Drain 10b) is proposed at the Cell 1A/4A interface to discharge through a new 450 mm diameter RCP culvert and into the downstream end of Drain 12.

3.12 Area 11

Area 11 covers the southernmost portion of Cell 4A which has had interim cover applied. Surface water from this area is considered to be clean surface water but may contain sediment due to the lack of vegetation over this recently covered cell. The majority of the surface water from Area 11 will drain towards the underpass stormwater infrastructure for discharge into Pond 18. Given the small area, no formal stormwater drains are proposed.

3.13 Area 12

Area 12 covers the north western portion of Cell 1A which has had interim cover applied. Surface water from this area is considered to be clean surface water. The majority of the surface water from Area 12 will drain towards the access road between Cell 4A and Cell 1A. A new swale is proposed at the Cell 1A/4A interface (Drain 12) to discharge to the eastern boundary open drain (Drain 13) before entering proposed Pond 13 near the site entrance.

3.14 Area 13

Area 13 covers the eastern boundary catchment of Cell 1A which has had interim cover applied. Surface water from this area is considered to be clean surface water. The majority of the surface water from Area 13 will drain towards the existing eastern boundary open drain (Drain 13) before entering proposed Pond 13 near the site entrance.

3.15 Area 14

Area 14 covers a central strip through Cell 1A east of the main site access track. This area has had interim cover applied and contains an elevated pond used to store and evaporate water from the truck washdown bay. Surface water from this area is considered to be clean surface water. The majority of the surface water from Area 14 will drain towards an existing swale (Drain 14) adjacent to the access track which will drain to proposed Pond 13 near the site entrance.

3.16 Area 15

Area 15 covers a small area of Cell 1A adjacent to the main access track which drains towards the underpass. This Cell has had interim cover applied and surface water from this area is considered to be clean surface water. The majority of the surface water from Area 15 will drain into a new swale (Drain 15) adjacent the access track which flows west towards the underpass stormwater infrastructure for discharge into Pond 18.

3.17 Area 16

Area 16 covers a central area through Cell 1A on the western side of the main site access track. This area has had interim cover applied and surface water from this area is considered to be clean surface water. The majority of the surface water from Area 16 will drain towards an existing swale (Drain 16) adjacent to the access track which will drain through a 450 mm diameter RCP culvert into Pond 13.

3.18 Area 17

Area 17 covers the southern edge of Cell 1A adjacent to Wests Road. This area has had interim cover applied and surface water from this area is considered to be clean surface water. The surface water from Area 17 will drain towards the existing unused grass areas and verges. Water is not observed to pond in these areas and hence formalised drainage is not proposed at this stage.

3.19 Area 18

Area 18 covers a small area on the western edge of Cell 1A which drains towards Pond 18. This Cell has had interim cover applied and surface water from this area is considered to be clean surface water. The majority of the surface water from Area 18 will drain naturally toward existing Pond 18.

4 Sizing of Drains and Ponds

4.1 Drains

4.1.1 General

Drainage plans of the landfill site were prepared based on current operations with consideration for future proposed drains. The drains were numbered D2 through to D18 and Ponds numbered P1 to P18 (with the number corresponding to the catchment area) which are identified on Figure 3.1. All drainage sizes are based on a 1 in 20 year event, including a 150 mm freeboard and sized using Manning's equation to promote low flow velocities and to allow suspended particles to settle out.

Each drain was assigned to one of three standard sizes (refer to Table 4.1) for a portion or full length of the drain with some drains transitioning to larger sizes as the catchment area and expected flow rates increase. The details for each drain are summarised in Table 4.2.

Table 4.1 Proposed Trapezoidal Drain Sizes

Drain Type	Base width (m)	Depth (m)	Side Slope
A	0.5	0.35	2 H: 1 V
B	0.75	0.45	2 H: 1 V
C	1.0	0.7	2 H: 1 V

Table 4.2 Summary of Drainage Design

Drain Number	Existing or Proposed	Channel Type	Drain Surface	Calculated Drain Type Required	Comments
D1	Existing	Trapezoidal	grass lined	A (70%), B (30%)	Existing swale dimensions appear suitable
D2	Proposed	Trapezoidal	grass lined	A (30%), B (70%)	New swale required
D4	Existing	Trapezoidal	grass lined	A (20%), B (40%), C (40%)	Existing 1m high silty clay bund likely to provide suitable drainage capacity
D5	Proposed	Trapezoidal	grass lined	A	New swale required
D8	Proposed	Trapezoidal	grass lined	A (90%), B (10%)	New swale required
D9a	Existing	Trapezoidal	grass lined	A	Existing swale dimensions may be suitable
D9b	Proposed	Trapezoidal	grass lined	A	New swale required
D10a	Proposed	Trapezoidal	grass lined	A	New swale required
D10b	Proposed	Trapezoidal	grass lined	A	New swale required

Drain Number	Existing or Proposed	Channel Type	Drain Surface	Calculated Drain Type Required	Comments
D12	Proposed	Trapezoidal	grass lined	A (70%), B (30%)	New swale required
D13	Existing	Trapezoidal	grass lined	C	Cell 1A Eastern drain and cap heavily vegetated. Existing drain dimensions appears suitable
D14	Existing	Trapezoidal	grass lined	A	Existing 0.5 m deep open drain likely to be suitable however may require expansion to upstream portion
D15	Proposed	Trapezoidal	grass lined	A	New swale required
D16	Proposed	Trapezoidal	grass lined	A	Existing 0.5 m deep open drain likely to be suitable however may require expansion to upstream portion
D18	Proposed	Trapezoidal	grass lined	A	New swale required

4.1.2 Drain 1

Drain 1 is an existing swale along the northern edge of Cell 2B which drains north east to a depression (Pond 1) on the northern boundary opposite the railway line. Based on the drain sizing calculations the existing swale cross sections are expected to be adequate for the diversion of Area 1 surface water runoff.

4.1.3 Drain 2

Drain 2 is a proposed drain to run along the access track on western edge of Area 2. The southern section of this drain feeds a depression opposite the Cell 2A leachate pond (Pond 2). The proposed sizing includes 70 % of the total length being Type A (upstream end) and the final 30 % as Type B.

4.1.4 Drain 4

Drain 4 is an existing cut-off bund (approximately 1 m high silty clay bund) that extends along the eastern edge of Area 4. The southern section of this bund feeds pond (P4) within Cell 3. Based on the drain sizing for a 20 year ARI standard, the typical existing bund size is expected to be adequate for the diversion of Area 4 surface water runoff.

4.1.5 Drain 5

Drain 5 runs along the eastern edge of Cell 3 and 1B. The northern portion of Drain 5 exists and is connected to Drain 4, however the southern portion is proposed which will drain to the underpass stormwater infrastructure. The proposed sizing is a Type A for the total length.

4.1.6 Drain 8

Drain 8 is proposed for the southern edge of Cell 1B along the main access track to discharge into the underpass stormwater system. The proposed sizing includes 90 % of the total length being Type A (upstream end) and the final 10 % as Type B.

4.1.7 Drain 9a

Drain 9a is an existing cut-off bund west of Cell 4A. This drain will discharge into the quarry roadway north of the Cell 4A in high rainfall events and then through a 450 mm diameter RCP culvert beneath the access road into the quarry pond. Based on the drain sizing for a 20 year ARI standard, the typical bund cross sections are expected to be adequate for the diversion of Area 9 surface water runoff.

4.1.8 Drain 9b

Drain 9b is a proposed drain or cut-off bund for the north eastern edge of Cell 4A. This drain will also discharge into Drain 9a north of the Cell 4A. The proposed sizing is a Type A drain for the total length. Although not essential, this drain is recommended to separate the runoff from Cell 4A from the leachate generated during waste placement in Cell 4B.

4.1.9 Drain 10a

Drain 10a is a proposed drain or cut-off bund for the south eastern edge of Cell 4A. This drain will flow towards the existing access road between Cell 4A and Cell 1A to join Drain 10b. As with Drain 9b, this drain is recommended to separate the runoff from Cell 4A from the leachate generated during waste placement in Cell 4B.

4.1.10 Drain 10b

Drain 10b is proposed at the Cell 1A/4A interface on the northern side of the access road to discharge through a 450 mm RCP culvert beneath the access road to join the downstream end of Drain 12.

4.1.11 Drain 12

Drain 12 is proposed at the Cell 1A/4A interface on the southern side of the access road to discharge to the eastern boundary open drain (Drain 13) before entering the Wests Road drainage system.

4.1.12 Drain 13

Drain 13 is an existing eastern boundary open drain adjacent to Cell 1A. Based on the drain sizing for a 20 year ARI standard, the typical drain cross sections are expected to be adequate for the diversion of surface water runoff from contributing Areas 10, 12 & 13.

4.1.13 Drain 14

Drain 14 is an existing open drain along the eastern side the main access track that is proposed to discharge into Pond 13. This drain may need to be extended to intercept runoff from the upper Area 14 catchment. Based on the drain sizing for a 20 year ARI standard, the typical drain cross sections are expected to be adequate for the diversion of Area 14 surface water runoff.

4.1.14 Drain 15

Drain 15 is a proposed drain adjacent to the main access track at the northern edge of Cell 1A which drains in a westerly towards the underpass stormwater pits for discharge into Pond 18.

4.1.15 Drain 16

Drain 16 is an existing open drain along the western side the main access track that will discharge through a 450 mm RCP culvert beneath the access road into Pond 13. This drain may need to be extended to intercept runoff from the upper Area 16 catchment. Based on the drain sizing for a 20 year ARI standard, the typical drain cross sections are expected to be adequate for the diversion of Area 16 surface water runoff.

4.1.16 Underpass Concrete Drain

The underpass stormwater infrastructure comprises of four stormwater pits (0.9 m length x 0.6 m width x 1 m depth) which connect to a 400 mm diameter concrete pipe. The four pits receive runoff from Areas 5, 8, 11 and 15, along with the various roadways, with a concrete pipe network discharging to Pond 18. Without knowing the gradient of this pipework the existing flow capacity is unable to be determined. However the concrete drain is unlikely to have the capacity to carry the estimated 1 in 20 year inflows assuming that the pipe gradient is less than 4.5%. Therefore during a 1 in 20 year event surface water will be expected to temporarily pond around the underpass pits while the concrete drain is at full capacity.

It is noted that the four pits contain accumulated sediment, vegetation or litter that may block the piping. It is recommended that these pits are cleaned out on a regular basis to assist in preventing potential blockages in the pipes.

4.2 Bunding

Bunding has been identified as required around Cell 4B to prevent “dirty” runoff from entering the stormwater system and around the leachate pond in Cell 2A to prevent stormwater combining with the leachate and increasing the volume of “dirty” water. Field observations and/or detailed survey in this area will be required to determine if existing controls are adequate or these bunds require construction.

As landfilling progresses within Cell 4B the risk of contaminated surface runoff from this active cell will increase. A 0.75 m high compacted clay bund is proposed around the edge of this cell to separate surrounding clean surface water and runoff from within the Cell (leachate), refer to detail on Figure 3.1. Runoff within Cell 4B will be expected to infiltrate through the waste mass to the leachate drainage and collection system.

Bunding is also recommended to divert surface water runoff around the Cell 2A leachate pond to reduce the risk off surface water entering this pond and to block the spillway for leachate flows into Pond 6.

4.3 Ponds

4.3.1 Leachate Ponds

A new lined leachate pond at the eastern edge of the site has been recently constructed to accept leachate from Cell 4A and Cell 4B and potentially from future cells for the long term closure of the site. This pond was approved by the EPA for construction on 26 October 2012.

An existing evaporation leachate pond is located south west of Cell 2A with a surface area of approximately 5,215 m^2 which receives leachate pumped from sumps in Cells 1B – 3. This pond is understood to be constructed with clay but construction details are unknown. This pond has insufficient capacity for leachate collected within these Cells with the freeboard regularly less than 0.5 m. This pond has a spillway into Pond 6 which needs to be blocked by the bunding recommended above to ensure Pond 6 only contains clean stormwater.

4.3.2 Surface Water Ponds

Quarry Pond

A large quarry pond is located between Cell 3 and Cell 4A which largely collects runoff from the quarry operations area and is understood to be used by the quarry for dust supression. This pond may also receive runoff from Cell 4A during heavy rainfall. A formalised surface water pathway with a 450 mm diameter RCP culvert beneath the access road is required at the outlet of Drain 9a into this pond.

The capacity of the quarry pond is approximately 24,300 m^3. Any overflow from this pond is likely to enter the quarry roadway west of Cell 4A.

Pond 1 – Northern Boundary

An informal ponding area is located in a depression along the northern boundary of the site adjacent to the railway line. This pond collects runoff from Area 1, the northern edge of quarry operations and the land between the railway line and edge of site. The capacity of this pond is likely to exceed the 1 in 100 year storm event volume of 824 m^3, refer to calculation in Appendix B. Any overflow from this pond would most cause surface water to backup through the railway line culvert into surrounding railway reserve land north of the site. No construction works are proposed for this pond.

Pond 2 – Area 2

A low lying area north of the Cell 2A leachate pond is expected to receive runoff from Area 2 and any overflow from Pond 3 and Pond 6. It is proposed that a formalised sedimentation pond be established in this area to detain this runoff. **This pond will require detailed design and approval prior to construction.**

During a one in 20 year storm event with duration of 24 hours, the volume of surface water to be directed to this new sedimentation pond, has been calculated as approximately 1,766 m^3. To accommodate a one in 100 year storm event this pond would require a capacity of 3,340 m^3.

Pond 3 – Area 3

A permanent surface water pond is located at the interface of Cell 2A and Cell 2B collecting runoff from Area 3.

During a one in 20 year storm event with duration of 24 hours, the volume of surface water to be directed to this new sedimentation pond, has been calculated as approximately 953 m^3 (Appendix B). Based on topographic survey the existing pond size is estimated at 1,000 – 1,500 m^3, which is greater than the required capacity.

Any overflow from the permanent surface water would enter Area 2 therefore provision could be considered for a rock lined spillway into Drain 2 to cater for extreme rainfall events.

Pond 4 – Area 4

An informal surface water pond is located in Area 4 opposite the quarry pond collecting runoff from Area 4. During a one in 20 year storm event with duration of 24 hours, the volume of surface water to be directed to this new sedimentation pond, has been calculated as approximately 3,183 m^3 (Appendix B). Based on the topographic survey it is considered likely that this ponding area can currently contain 4,800 m^3, which is greater than the required capacity. Any overflow from this pond may enter the quarry pond or drain south to the underpass stormwater system.

Pond 6 – Area 6

Pond 6 is the existing leachate overflow pond in Cell 2A which is also understood to collect surface water runoff from Area 6. Any overflow from the leachate overflow pond would be considered to be leachate and would enter catchment Area 2 and then Pond 2. As described in Section 4.3.1 it is proposed that bunding is used to prevent leachate from entering Pond 2 and Pond 6.

To assess the surface water runoff storage only, Pond 6 needs to have a capacity of approximately 1,603 m^3 to detain a one in 20 year storm event with a duration of 24 hours, refer calculations in Appendix B. Based on the topographic survey it is considered likely that this pond can currently contain a capacity in the range of 2,500 – 3,000 m^3, however this does not take into account existing leachate storage requirements. The pond capacity would need to exceed 3000 m^3 to contain a 1 in 100 year storm event. Refer to Section 4.2 for bunding recommendations around this pond.

Pond 13 – Area 13

A surface water pond is proposed near the site entrance in Area 13 to retain surface water for construction purposes. The location of this pond is over waste and hence the pond will need to be formalised and lined to accept flows from Drains 13, 14 and 16. **This pond will require detailed design and approval prior to construction.**

To assess the surface water runoff storage only, Pond 13 needs to have a capacity of approximately 6,720 m^3 to detain a one in 20 year storm event with a duration of 24 hours, refer calculations in Appendix B. To accommodate a one in 100 year storm event this pond would require a capacity of 12,712 m^3.

Any overflow from this pond would drain to the Wests Road stormwater drain.

Pond 14 – Area 14

Pond 14 is the existing elevated pond in Cell 1A used to store and evaporate water pumped from the truck washdown bay, this water may be potentially contaminated. Based on the topographic survey this pond has a capacity of approximately 390 m^3.

Any overflow from this pond would enter Area 14 and Drain 14 which drains to Pond 13.

Pond 18 – Underpass Stormwater Flows and Area 18

Pond 18 is an existing depression between Cell 1A and the quarry road overpass which receives surface water runoff from the underpass stormwater collection system and also from Cell 1A (Area 18). This ponding area is heavily vegetated.

The required storage volume of surface water to contain a one in 20 year storm event with duration of 24 hours has been calculated as approximately 3,637 m^3, however the existing pond size is estimated at 1,000 m^3 and insufficient to contain a large storm event. Overflow from this pond is likely to cause water to back up in the four underpass stormwater pits temporarily flooding the underpass road. It is recommended that this pond is enlarged to handle a greater capacity. This could be achieved by deepening and/or extending the pond further south through excavation in the area between Holcim operations and Cell 1A. Alternatively another Pond within Area 11 could be constructed and connected to the underpass stormwater system to improve storage capacity.

4.4 Future Stormwater Control Requirements

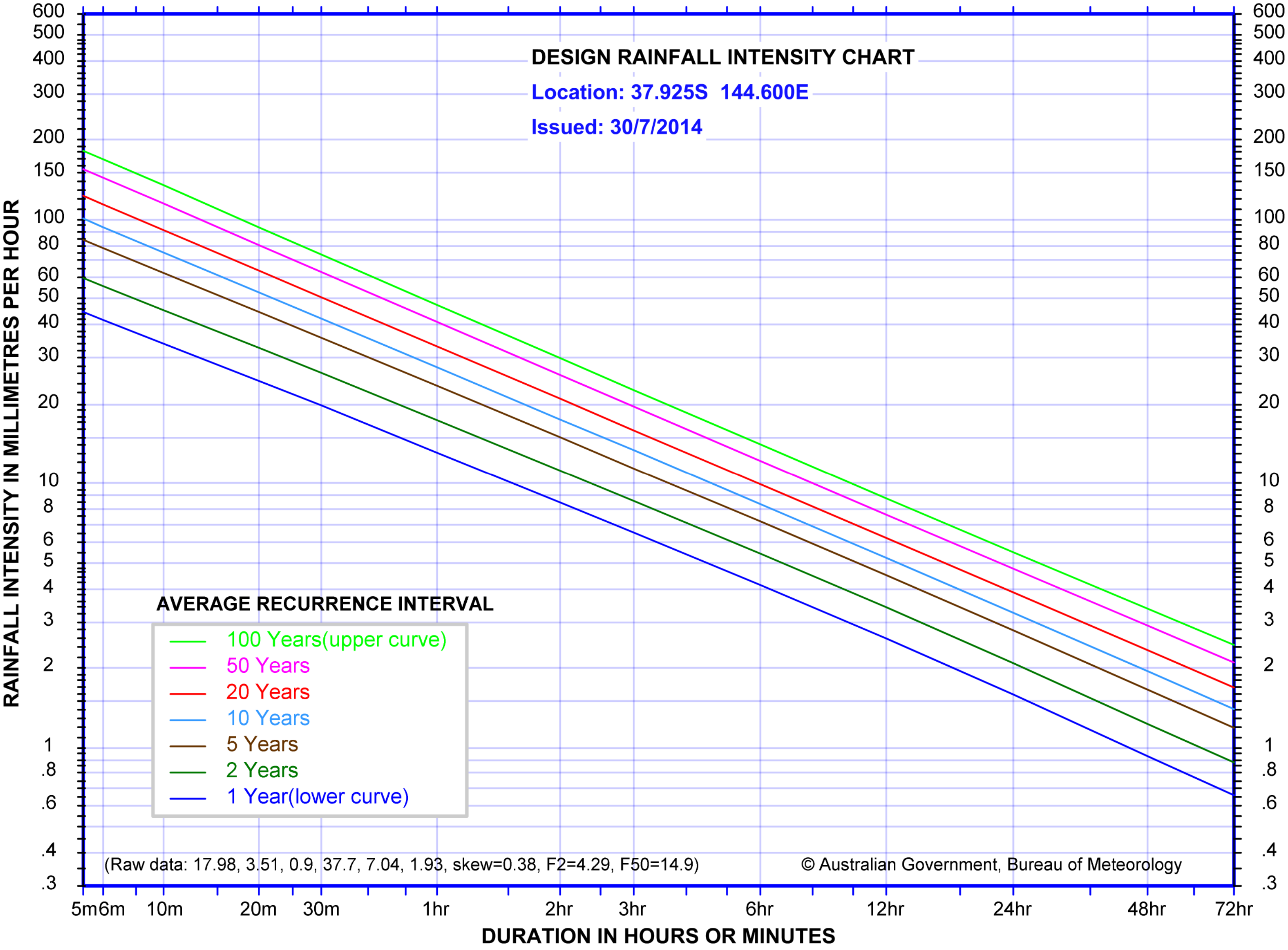
In the medium term as landfilling progresses into proposed Stages 4-6 greater reliance will be placed on the eastern boundary swale to collect runoff from capped eastern cell catchments; therefore future cell development should allow for adequate space at the eastern boundary for an open drain.

A dewatering strategy will also be required for the quarry pond prior to filling in Cell 5C with a new stormwater pond likely to be required for Stage 6. Additional demand will also be placed on underpass stormwater network once filling in Cell 5C is complete and additional runoff is diverted from Cell 4A, 5C and Cell 3 into Pond 18. However the rehabilitation of Cells 1B - 3 is expected to reduce surface water runoff in these cells as phytocap establishment is expected to improve evapotranspiration and moisture storage capacity in these catchment areas.

The majority of Stage 6 runoff from completed cells will be directed towards the northern boundary adjacent the railway line. Given the large potential area for ponding at this boundary, the existing capacity of Pond 1 is likely to be sufficient to contain future Stage 6 runoff during a large storm event.

Appendix A

IFD and Time of Concentration Charts



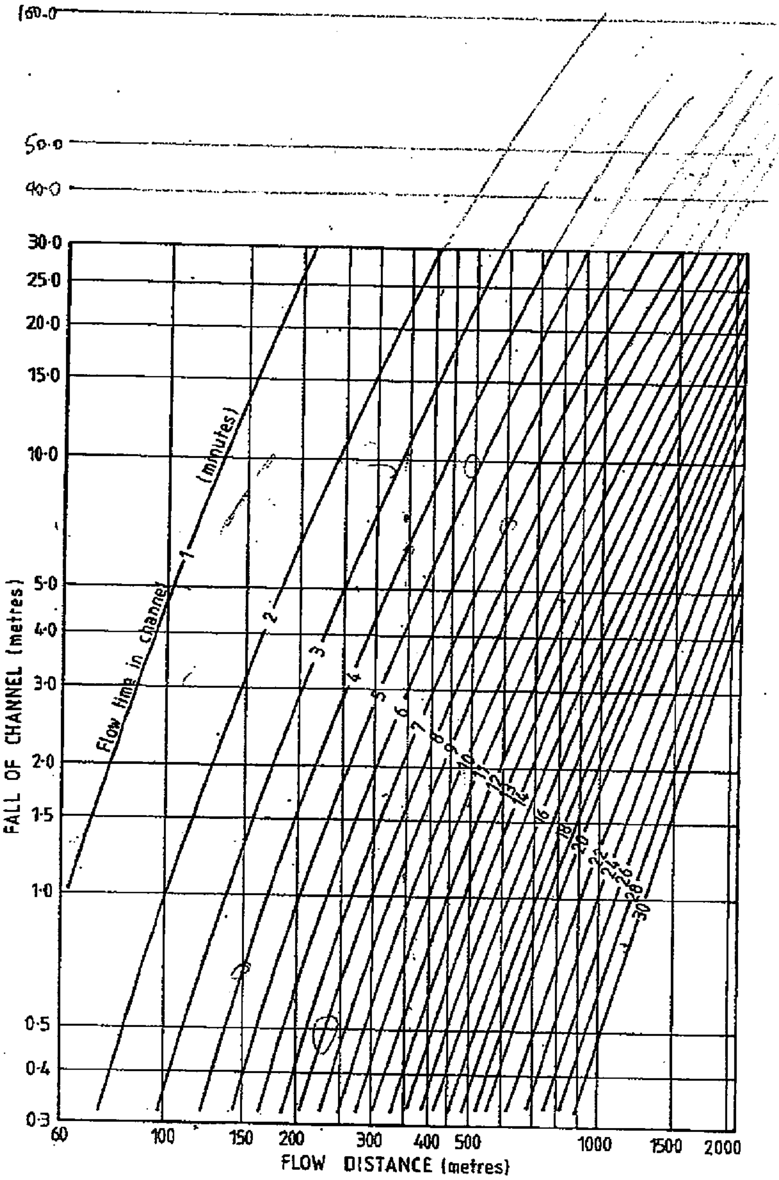
DESIGN RAINFALL INTENSITY CHART

Location: 37.925S 144.600E

Issued: 30/7/2014

(Raw data: 17.98, 3.51, 0.9, 37.7, 7.04, 1.93, skew=0.38, F2=4.29, F50=14.9)

© Australian Government, Bureau of Meteorology



NOTES:

1 Flow travel time (approximate) may be obtained directly from this chart for:

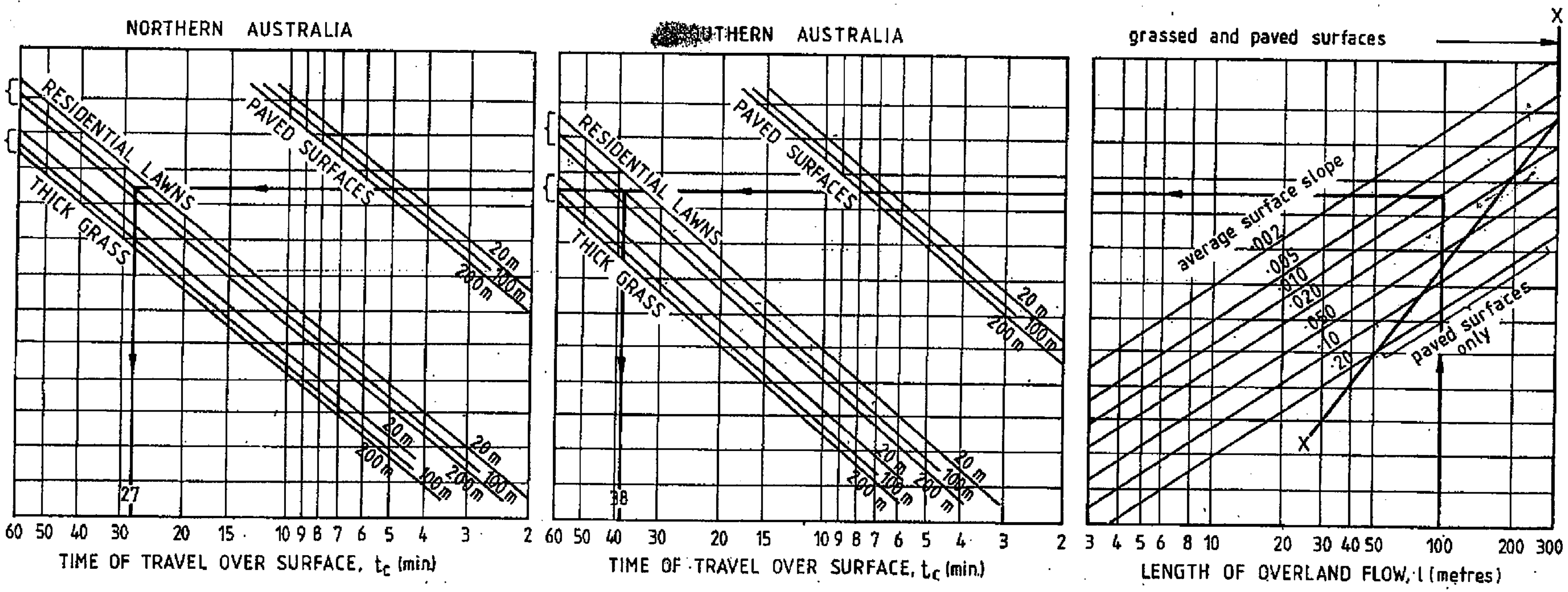
- kerb-and-gutter channels
- underground stormwater channels
- allotment channels of all types (surface and underground)
- drainage easement channels (surface and underground)

2 [illegible]ltiplier, Δ, should be applied to values obtained directly from the chart in the following cases:

- [illegible]ssed swales, well maintained and without driveway crossings $\Delta \doteq 4$
- Blade-cut earth roadside channels, well maintained and without driveway crossings $\Delta \doteq 2$
- natural channels $\Delta \doteq 3$

Ref: Country Roads Bo
Victoria, 1982.

Fig. 5.4 — Flow travel time in channels



NOMOGRAPH BASED ON:

- $t_c = 6{\cdot}94 \ \frac{(l n)^{0\cdot6}}{i^{0\cdot4} S^{0\cdot3}}$
- Equation 5.8
  Ragan and Duru (1972)
- i (Northern Aust.) = 125 mm/h
- i (Southern Aust.) = 50 mm/h

EXAMPLES:

Length of overland flow: l = 100 m
Average slope of surface: 0·010
Description: sports field, Southern Australia
(use Residential Lawn)
Hence, time of travel, t_c = 38 mins.
For same field case in Northern Australia
t_c = 27 mins.
Hence, same case in Penrith, N.S.W. (see example Section 5.3) $t_c = 38 + 0.022(44-25)(27-38) = 33$ mins.

NOTE:

The boundary XX defines the limit for sheet flow path length (l_{lim}) on grass or unpaved surfaces,
e.g. l_{lim} for 0·20 grassed slopes = 50 m
l_{lim} for 0·05 grassed slopes = 120 m
etc
Pervious surface flow travel exceeding these limits should be treated as "natural channel" flow (see Figure 5.4)

Fig. 5.3 — Overland flow travel time (shallow sheet flow only) for Australian urban catchments

Appendix B

Drainage Calculations

Internal Catchment Areas

Internal Catchment Areas	Trial 1 (m^2)	Trial 2 (m^2)	Trial 3 (m^2)	Trial 4 (m^2)	Average (m^2)
1	16250	15250	15500	15500	15625
2	60250	58500	58750	58250	56938
3	33750	34250	34500	34250	34188
4	114000	114250	114750	114000	114250
5	36000	36000	35750	36000	35938
6	57250	57500	58250	57250	57563
7	6500	6500	6000	6750	6438
8	39750	40750	40250	40250	40250
9	27250	27750	28750	27500	27813
10	32500	33250	33750	33750	33313
11	27250	27750	26750	27250	27250
12	33750	32500	34000	34250	33625
13	91750	93000	93000	93250	92750
14	30500	29000	29000	28500	29250
15	15263	14713	14713		14896
16	51250	53000	52000	52750	52250
17	37750	40000	38250	39250	38813
18	12488	12038	12038		12187

Internal Catchment Area Time of Concentration

1 in 20 ARI

Area	Area (m^2)	Surface	overland flow (m)	slope	n (surface roughness)	I mm/hr	Tc (min) calc
1	15625	overland flow short grass	70	0.043	0.250	69	**18.26**
2	56938	overland flow short grass	140	0.045	0.250	49	31.32
		natural channel	160	0.050			11.70
						Total	**43.02**
3	34188	overland flow short grass	140	0.014	0.250	38	48.91
		natural channel	60	0.100			3.00
						Total	**51.91**
4	114250	overland flow short grass	150	0.027	0.250	42	40.62
		natural channel	100	0.050			3.00
						Total	**43.62**
5	35938	overland flow short grass	140	0.059	0.250	52	**28.19**
6	57563	overland flow short grass	140	0.057	0.250	51	28.69
		natural channel	130	0.023			4.50
						Total	**33.19**
7	6438	overland flow short grass	100	0.050	0.250	56	**23.50**
8	40250	overland flow short grass	125	0.032	0.250	51	**31.89**
9	27813	overland flow short grass	75	0.133	0.250	81	12.72
		natural channel	75	0.133			3.00
						Total	**15.72**
10	33313	overland flow short grass	75	0.133	0.250	80	12.79
		natural channel	75	0.133			3.00
						Total	**15.79**
11	27250	overland flow short grass	75	0.173	0.250	82	11.69
		natural channel	125	0.096			3.00
						Total	**14.69**
12	33625	overland flow short grass	100	0.050	0.250	59	23.02
		natural channel	25	0.200			3.00
						Total	**26.02**
13	92750	overland flow short grass	100	0.050	0.250	58	23.18
		natural channel	175	0.051			4.50
						Total	**27.68**
14	29250	overland flow short grass	55	0.064	0.250	80	**13.22**
15	14896	overland flow short grass	225	0.016	0.250	22	**78.80**
16	52250	overland flow short grass	160	0.028	0.250	42	41.61
		natural channel	140	0.028			5.10
						Total	**46.71**
17	38813	overland flow short grass	70	0.043	0.250	66	**18.59**
18	12187	overland flow short grass	100	0.040	0.250	56	25.13
		natural channel	75	0.12			3
						Total	**28.13**

Estimated Flow Rates

		Runoff Coefficient		Time of Concentration	Rainfall intensity (mm/hr)		Flow rate (m3/s)		Corresponding Drain / Pond
Internal Areas	Area (m2)	20 year ARI	100 year ARI	min	20 year ARI	100 year ARI	20 year ARI	100 year ARI	
1	15625	0.3	0.4	18.26	66	96	0.086	0.167	To northern swale drain adjacent Cell 2B (P1)
2	56938	0.3	0.4	43.02	40	58	0.190	0.367	To new drain west of Cell 2B (D2)
3	34188	0.3	0.4	51.91	37	52	0.105	0.198	To permanent stormwater pond in Cell 2B (P3)
4	114250	0.3	0.4	43.62	41	59	0.390	0.749	To existing silty clay bund 1m high east of Cell 2B (D4)
5	35938	0.3	0.4	28.19	50	77	0.150	0.307	To new drain east of Cell 3 and Cell 1B (D5)
6	57563	0.3	0.4	33.19	48	69	0.230	0.441	To surface water pond in Cell 2A (P6)
7	6438	0.3	0.4	23.50	58	86	0.031	0.062	To remain within Area 7 - Veolia Composting Area
8	40250	0.3	0.4	31.89	49	70	0.164	0.313	To new drain south of Cell 1B (D8)
9	27813	0.3	0.4	15.72	75	110	0.174	0.340	To new cutoff swale west of Cell 4A (D9a) and between Cell 4A and Cell 4B (D9b)
10	33313	0.3	0.4	15.79	75	110	0.208	0.407	To cutoff swale between Cell 4A(D10a) and along access road (D10b)
11	27250	0.3	0.4	14.69	76	111	0.173	0.336	To underpass stormwater system
12	33625	0.3	0.4	26.02	56	81	0.157	0.303	To new drain north west of Cell 1A (D12)
13	92750	0.3	0.4	27.68	55	80	0.425	0.824	To existing drain along fenceline (D13)
14	29250	0.3	0.4	13.22	80	120	0.195	0.390	To new drain along access road in Cell 1A (D14)
15	14896	0.3	0.4	78.80	27	39	0.034	0.065	To new drain along access road in Cell 1A (D15)
16	52250	0.3	0.4	46.71	40	58	0.174	0.337	To new drain along access road in Cell 1A (D16)
17	38813	0.3	0.4	18.59	64	94	0.207	0.405	To drain into West Rd drainage swale
18	12187	0.3	0.4	28.13	51	77	0.052	0.104	To drain into P18

Existing Catchment 20 year ARI Design

Drain Number	Drain Surface	Cm	Mannings Roughness Coefficient	Cross sectional area of channel (m^2)	Base width (m)	Water height (m)	Wetted Perimeter (m)	Side Slope (H:V)	Hydraulic Radius (m)	Slope of channel (m/m)	Flow rate calculated from drain details (Q, m3/s)	Required flow capacity based on area calculations* (Q, m^3/s)	Proposed Drain Tyre
D1	grass lined	1	0.035	0.2457	0.75	0.21	1.689	2	0.145	0.002	0.09053	0.08594	A (70%) B (30%)
D2	grass lined	1	0.035	0.18	0.5	0.2	1.394	2	0.129	0.002	0.06027	0.18979	A (30%) B (70%)
D4	grass lined	1	0.035	0.6192	1	0.36	2.610	2	0.237	0.004	0.40885	0.39035	A (20%) B (40%) C (40%)
D5	grass lined	1	0.035	0.1672	0.5	0.19	1.350	2	0.124	0.018	0.16007	0.14974	A
D8	grass lined	1	0.035	0.1998	0.75	0.18	1.555	2	0.128	0.015	0.17803	0.16435	A (90%) B (10%)
D9a	grass lined	1	0.035	0.18	0.5	0.2	1.394	2	0.129	0.024	0.20350	0.17383	A
D9b	grass lined	1	0.035	0.0232	0.5	0.04	0.679	2	0.034	0.087	0.02055	0.01738	A
D10a	grass lined	1	0.035	0.0988	0.5	0.13	1.081	2	0.091	0.035	0.10713	0.10410	A
D10b	grass lined	1	0.035	0.22	0.5	0.2	1.765	3	0.125	0.035	0.29344	0.20820	A
D12	grass lined	1	0.035	0.18	0.5	0.2	1.394	2	0.129	0.009	0.12462	0.15692	A (70%) B (30%)
D13	grass lined	1	0.035	1.1232	1	0.54	3.415	2	0.329	0.002	0.69553	0.58202	C
D14	grass lined	1	0.035	0.18	0.5	0.2	1.394	2	0.129	0.029	0.22369	0.19500	A
D15	grass lined	1	0.035	0.0448	0.5	0.07	0.813	2	0.055	0.038	0.03613	0.03352	A
D16	grass lined	1	0.035	0.22	0.5	0.2	1.765	3	0.125	0.029	0.26711	0.17417	A

Circular Pipe Flow Calculator

Concrete Pipe to Pond 18

Manning's n	0.011	
Longitudinal slope	0.045	m/m
Pipe diameter	0.4	m
Flow area	0.125664	m^2
Wetted perimeter	1.256637	m^2
m	0.1	
Flow rate	0.522104	m^3/s
Flow velocity	4.154769	m/s

Drain 9a RCP to Quarry Pond

Manning's n	0.011	
Longitudinal slope	0.005	m/m
Pipe diameter	0.41	m
Flow area	0.132025	m^2
Wetted perimeter	1.288053	m^2
m	0.1025	
Flow rate	0.18588	m^3/s
Flow velocity	1.40791	m/s
Required Flow	0.173828	m^3/s

Therefore specify 450 mm concrete pipe at 0.5% grade

Drain 10b RCP to Drain 12

Manning's n	0.011	
Longitudinal slope	0.005	m/m
Pipe diameter	0.43	m
Flow area	0.14522	m^2
Wetted perimeter	1.350885	m^2
m	0.1075	
Flow rate	0.211053	m^3/s
Flow velocity	1.453331	m/s
Required Flow	0.208203	m^3/s

Therefore specify 450 mm concrete pipe at 0.5% grade

Drain 16 RCP to Pond 13

Manning's n	0.011	
Longitudinal slope	0.005	m/m
Pipe diameter	0.41	m
Flow area	0.132025	m^2
Wetted perimeter	1.288053	m^2
m	0.1025	
Flow rate	0.18588	m^3/s
Flow velocity	1.40791	m/s
Required Flow	0.174167	m^3/s

Therefore specify 450 mm concrete pipe at 0.5% grade

Retention Pond Sizing

Pond / Swale North of Cell 2B (Pond 1)

Contributing area	15625	m^2
Runoff Coefficient	0.3	
Duration of Storm	24	hours
Total rainfall depth (20 Yr ARI)	92.88	mm
Rainfall volume	435.375	m^3

Pond North of Cell 2A (Pond 2)

Contributing area	56938	m^2
Runoff Coefficient	0.3	
Duration of Storm	24	hours
Total rainfall depth (20 Yr ARI)	92.88	mm
Rainfall volume	1586.507	m^3

Pond within Cell 2A/2B (Pond 3)

Contributing area	34188	m^2
Runoff Coefficient	0.3	
Duration of Storm	24	hours
Total rainfall depth (20 Yr ARI)	92.88	mm
Rainfall volume	952.6005	m^3

Permanent Pond within Cell 2A (Pond 6)

Contributing area	57563	m^2
Runoff Coefficient	0.3	
Duration of Storm	24	hours
Total rainfall depth (20 Yr ARI)	92.88	mm
Rainfall volume	1603.922	m^3

Pond east of Cell 3 (Pond 4)

Contributing area	114250	m^2
Runoff Coefficient	0.3	
Duration of Storm	24	hours
Total rainfall depth (20 Yr ARI)	92.88	mm
Rainfall volume	3183.462	m^3

Pond / Swale North of Cell 2B (Pond 1)

Contributing area	15625	m^2
Runoff Coefficient	0.4	
Duration of Storm	24	hours
Total rainfall depth (100 Yr ARI)	131.76	mm
Rainfall volume	823.5	m^3

Pond North of Cell 2A (Pond 2)

Contributing area	56938	m^2
Runoff Coefficient	0.4	
Duration of Storm	24	hours
Total rainfall depth (100 Yr ARI)	131.76	mm
Rainfall volume	3000.834	m^3

Pond within Cell 2A/2B (Pond 3)

Contributing area	34188	m^2
Runoff Coefficient	0.4	
Duration of Storm	24	hours
Total rainfall depth (100 Yr ARI)	131.76	mm
Rainfall volume	1801.818	m^3

Permanent Pond within Cell 2A (Pond 6)

Contributing area	57563	m^2
Runoff Coefficient	0.4	
Duration of Storm	24	hours
Total rainfall depth (100 Yr ARI)	131.76	mm
Rainfall volume	3033.774	m^3

Pond east of Cell 3 (Pond 4)

Contributing area	114250	m^2
Runoff Coefficient	0.4	
Duration of Storm	24	hours
Total rainfall depth (100 Yr ARI)	131.76	mm
Rainfall volume	6021.432	m^3

Pond near entrance (Pond 13)

Contributing area	241188	m^2
Runoff Coefficient	0.3	
Duration of Storm	24	hours
Total rainfall depth (20 Yr ARI)	92.88	mm
Rainfall volume	6720.449	m^3

Pond near entrance (Pond 13)

Contributing area	241188	m^2
Runoff Coefficient	0.4	
Duration of Storm	24	hours
Total rainfall depth (100 Yr ARI)	131.76	mm
Rainfall volume	12711.55	m^3

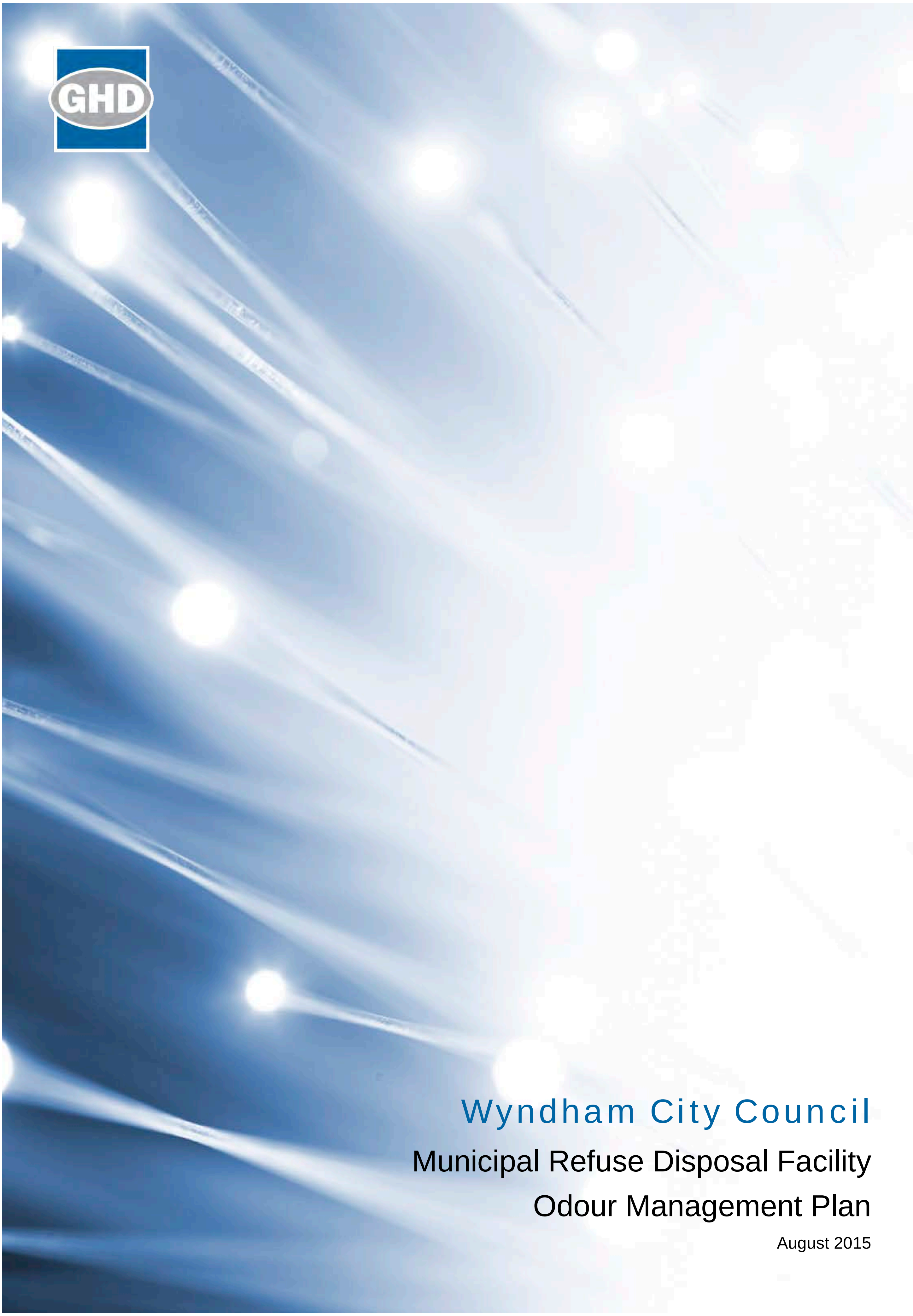
Pond from underpass pits (Pond 18)

Contributing area	130521	m^2
Runoff Coefficient	0.3	
Duration of Storm	24	hours
Total rainfall depth (20 Yr ARI)	92.88	mm
Rainfall volume	3636.823	m^3

Pond from underpass pits (Pond 18)

Contributing area	130521	m^2
Runoff Coefficient	0.4	
Duration of Storm	24	hours
Total rainfall depth (100 Yr ARI)	131.76	mm
Rainfall volume	6878.952	m^3

Appendix H – Odour Management Plan



Wyndham City Council

Municipal Refuse Disposal Facility

Odour Management Plan

August 2015

WATER | ENERGY & RESOURCES | ENVIRONMENT | PROPERTY & BUILDINGS | TRANSPORTATION

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Appendices

Plan amendments

Minor revisions to this Odour Management Plan should be carried out on an annual basis. A record of change should be documented in the following table. If significant changes or incidents occur at site, this plan should be reviewed and updated.

Revision Date:	Sections Revised:	Pages Revised:	Revised By:	Authorised By:
June 2015	New document		Prepared by GHD	

Document Approval

RDF Manager ……………………………………

Date …………/……………/……………

Glossary of terms

Abbreviation	Definition
Acetogenic Decomposition	Decomposition of organic materials by bacteria which produce acids as part of their metabolic processes.
Acidogenic Decomposition	Decomposition of organic materials by bacteria which produce acids as part of their metabolic processes.
Aerobic	Within oxygen, oxygen dependent, requires oxygen to live.
Anerobic	Without oxygen, oxygen free, living in the absence of oxygen
AWS	Automatic Weather Station
Fermentation	Decomposition of organic materials by certain yeasts, moulds and bacteria which cause the organic material to ferment as part of their metabolic processes.
GDA94	The Geocentric Datum of Australia is a system of latitudes and longitudes, or east and north coordinates used to track locations.
GLC	Ground Level Concentration
Hydrolysis	The chemical breakdown of a compound using water. *Hydro*=from water, *Lysis*=to break down or dissociate.
Methanogenesis	Decomposition of organic materials by archaebacteria which produce methane gas as part of their metabolic processes.
NA	Not applicable
Odour	An odour is a mixture of light and small molecules that are able to stimulate an anatomical response in the human olfactory system (Craven et al., 1996).
OER	Odour Emission Rate. This is the rate of odour emission from any source based on its own specific area. The unit for an OER is OU/m^3/s or simplified as OUV/s.
RDF	City of Wyndham Refuse Disposal Facility (RDF)
Sensitive Receptor	A sensitive receptor can be defined as any dwelling/residence; classroom; hospital; place of worship; passive recreation area such as outdoor grounds used for teaching; active recreation area such as parks and sports grounds; commercial premises; such as film and television studios; research facilities; entertainment spaces; temporary accommodation (such as caravan parks and camping grounds); child care centres; restaurants; office premises and retail spaces; and industrial premises.
SEPP	State environmental protection policy
SOER	Source Odour Emission Rate or Specific Odour Emission Rate. This is the rate of odour emission from any source on a per square meter basis. The unit for a SOER is OUV/m^2/s or simplified as OUm/s.
VCAT	Victorian Civil and Administrative Tribunal
<	Less than the minimum limit of detection using the specified method
~	Approximately

1. Introduction

The City of Wyndham Refuse Disposal Facility (RDF) is one of the few commercial landfills in Australia operated by a local government. A number of Councils have landfills but for the most part, these are for the exclusive use of the Council and/or its ratepayers. Around 90% of the refuse deposited at the RDF comes from other municipalities or private firms.

The RDF commenced operation in 1975 as a site for the disposal of the then Shire of Werribee refuse. Over time and due to its location and size, the RDF has developed the capacity to accept more waste.

In April 2015, the RDF was granted a planning permit (No. WYP1221/07.03) through VCAT. The permit contains a number of conditions. Condition 3 limits the height of the RDF to 44 m AHD (approximately 24 m above natural ground level). Two other conditions relate to the development of an odour management plan, which this report addresses.

1.1 Purpose of the management plan

The purpose of this report is to provide the Wyndham City Council Municipal Refuse Disposal Facility (RDF) with an Odour Management Plan (OMP) document to enable staff to understand and manage potential odour impacts from the RDF.

The OMP will also enable the RDF to demonstrate compliance with condition 10 of the RDF's Planning Permit No. WYP1221/07.03 as follows:

By 1 March 2015, the permit holder must submit to the Responsible Authority an odour management plan prepared to the satisfaction of the Responsible Authority by a suitably qualified person. The odour management plan must include:

- *the strategies to be employed to ensure compliance with the State Environment Protection Policy (Air Quality Management)*
- *the proposed monitoring of odour emissions*
- *the manner in which odour complaints will be addressed.*

Once approved, the odour management plan shall be endorsed and form part of this permit.

1.2 Scope and limitations

This report has been prepared by GHD for Wyndham City Council and may only be used and relied on by Wyndham City Council for the purpose agreed between GHD and the Wyndham City Council as set out in section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than Wyndham City Council arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer section 1.3 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Wyndham City Council and others who provided information to GHD (including Government authorities)], which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

1.3 Assumptions

The OMP is based on the following assumptions:

- Information provided by the client was truthful, accurate and up to date at the time of reporting.
- Information gathered from other sources is accurate and up to date at the time of reporting.

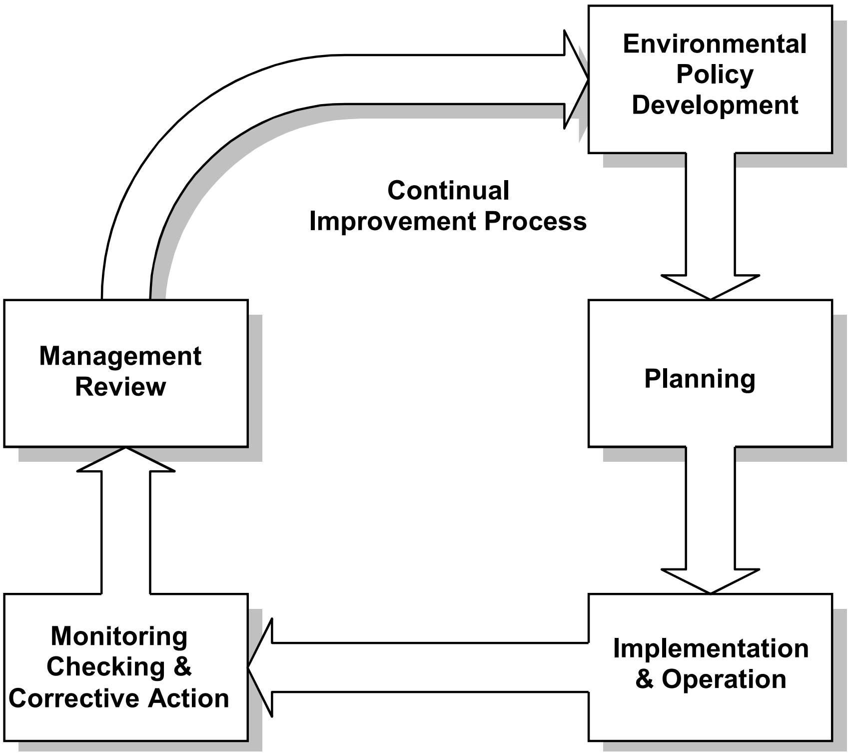
2. Document management

2.1 OMP amendments

A review of the overall system performance for the RDF in relation to odour management should be undertaken on an annual basis and as a result the OMP should be updated to reflect any changes. This review should address the need for changes to policy and objectives, changing circumstances and a commitment to continual improvement, refer to Figure 1.

Obsolete documents should be removed electronically and from the site to guard against unintended use. Obsolete documents that are retained for legal and/or knowledge preservation purposes should be suitably identified.

Figure 1 Continual improvement process



Source: (Wyndham City Council, 2014)

2.2 Copies of the OMP

The OMP is a live document and as such, the online version is the master document. Any printed copies of the master are subordinate and should be electronically stamped using a watermark with “Copy Only” or alternatively physically stamped in red ink.

OMP documentation must be legible, identifiable, traceable, stored and maintained in such a way that they are readily retrievable and protected against damage, deterioration or loss and retained for at least 12 months.

2.3 OMP document location

An electronic version of this Odour Management Plan (OMP) and its appendices (in both PDF & MSWord formats) are located on City of Wyndham Refuse Disposal Facility (RDF) Electronic Document Management System (EDMS) document folder reference qA218038.

2.4 Environmental record management

Maintenance and storage of environmental records, including training records, results of audits and reviews in relation to odour and this OMP, are to be legible, identifiable and traceable to the activity involved and stored and maintained in such a way that they are readily retrievable and protected against damage, deterioration or loss. Their retention times shall be established and recorded. Records will be maintained, as appropriate to the system and to Council, to demonstrate conformance to the requirements of this OMP.

3. Emergency contacts

The following section provides a list of the key contact people for the RDF operation.

3.1 Council personnel

A list of relevant Council personnel involved in the day to day operation of the RDF, weigh-bridge, transfer station, system maintenance, spare parts, and management are listed in Table 1.

Table 1 Council personnel

	Name of Person	Role	Day Phone Number	A/H Phone Number	Mobile Number	Email Address
1	Michael Ballock	Manager RDF	9742 0870	0437 066 233	0438 066 233	Michael.ballock@wyndham.vic.gov.au
2	Mehrdad Tezengi	Operations Manager	9742 0167	0401 712 076	0401 712 076	mehrdad.tezengi@wyndham.vic.gov.au
3	Mick Waterworth	Site Team leader	0419 558 107	0419 558 107	0419 558 107	-
4	Daryl Johnson	Site Team leader	0427 513 887	0427 513 887	0427 513 887	-
5						
6						
7						
8						
9						
10						
11						
12						

3.2 Stakeholders

A list of relevant government, emergency services, composting facility, bio-gas power generation facility, quarry operation and other useful stakeholders are listed in the Table 2.

Table 2 Stakeholders

	Name of Organisation	Name of Person	Day Phone Number	A/H Phone Number	Mobile Number	Email Address
1	Holcim	Graeme Jones	8734 6507	0419 476 077	0419 476 077	graeme.jones@ holcim.com
2	LMS Energy	Jason Dockerill	08 8291 9018	0403 518 418	0403 518 418	Jason.dockerill@ lms.com.au
3	Veolia	Max Spedding	0400 880 677	0400 880 677	0400 880 677	max.spedding@ veolia.com.au
4						
5						
6						
7						
8						
9						
10						
11						
12						

4. Site description

The following sections describe the operational hours of the RDF, the location of sensitive receivers, accepted waste types, sources of waste, activities undertaken at the RDF and a summary of the local meteorology for the local RDF area.

4.1 Hours of operation

Operating hours of the RDF are from 12 am to 4.30 pm Monday to Friday, although public access to the transfer station is limited to 8 am to 4 pm. The tipping face operates from 6 am to 4 pm on Saturday and 8.30 am to 4.30 pm on Sunday and public access is allowed between 8.30 am and 4 pm on both days.

4.2 Sensitive receivers

EPA Publication 1518 defines a sensitive land use as the following:

> A sensitive land use is defined as "*any land uses which require a particular focus on protecting the beneficial uses of the air environment relating to human health and wellbeing, local amenity and aesthetic enjoyment, for example residential premises, child care centres, pre-schools, primary schools, education centres or informal outdoor recreation sites*". In Victoria, the EPA has published recommended separation distance guidelines (EPA Victoria, March 2013).

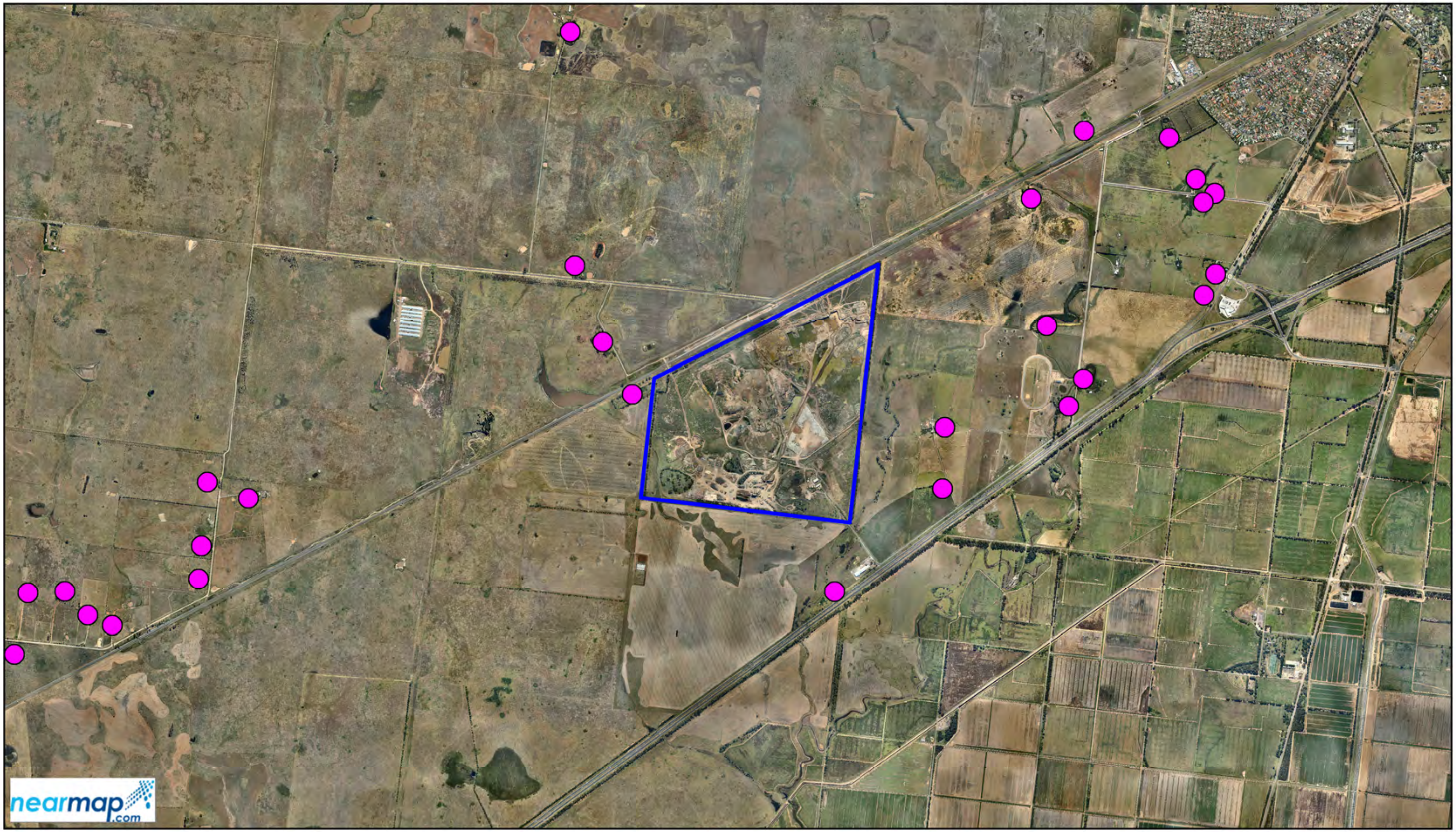
The land surrounding the RDF is predominantly farmland used for grazing, however there are a number of isolated rural residences in the vicinity of the site. The nearest identified residence is approximately 170 m to the west of the site boundary along Galvan Road. The next closest residence is located approximately 560 m to the northwest, with another further northwest of that at approximately 1,100 m. There is one rural residence approximately 540 m to the south of the site and two residences 560 m and 680 m of the eastern site boundary. The residential area of Werribee is located approximately 2.5 km northeast of the site, refer to Table 3 and Figure 2.

The Melbourne-Geelong railway line runs along the northern boundary of the site. Further north is farmland and land owned by Holcim Extractive Industry (Holcim) which is designated for quarrying purposes. Approximately 1.8 km to the west of the site is a relatively large broiler farm consisting of eight sheds.

Table 3 Closest sensitive receivers

Location X: (m)	Location Y: (m)	Distance (m)	Image
287,174.58	5,798,914.81	~170 NE	
288,743.24	288,743.24	~540 South	
286,946.28	5,799,320.41	~560 NW	

Location X: (m)	Location Y: (m)	Distance (m)	Image
286,730.53	5,799,910.75	~1,100 NW	
289,600.39	5,798,657.23	~560 East	
289,583.78	5,798,185.66	~680 East	



0 400 800 1200
Metres (at A4)

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid Of Australia, Zone 55

N
W E
S

LEGEND

🟦 Site Boundary

● Sensitive Receptor Location

Wyndham City Council
Municipal Refuse Disposal Facility

Job Number	31/32511
Revision	A
Date	22/06/15

Sensitve Receiver Locations

Figure 2

G:\31\32511\GIS\Maps\Working

8/180 Lonsdale St Melbourne VIC 3000 AustraliaT 61 3 8687 8000 F 61 3 8687 8111 E melmail@ghd.com.au W www.ghd.com.au

Imagery: Nearmaps, Extracted by Wyndham City Council 2011. Created by: Craig McVie

4.3 Accepted waste types

The following items can be deposited at the landfill and transfer station.

Landfill

- Putrescible waste
- Solid inert waste
- Shredded pneumatic automotive tyres

Transfer station

- Paper and cardboard
- Plastic containers
- Glass bottles and jars (clear and coloured – green and brown)
- Aluminium and empty paint tin cans
- Waste motor oil (up to 15 litres only)
- Old car bodies
- Car tyres
- Car batteries
- Green waste
- Steel/metal items
- Gas cylinders
- White goods
- Mattresses

4.4 Waste sources

The RDF currently receives municipal waste from the following eleven municipalities:

- Boroondara City Council
- Casey City Council (small quantities only)
- City of Greater Geelong
- Hobson Bay City Council
- Maribyrnong City Council (via Citywide)
- Melbourne City Council
- Moonee Valley City Council (via Citywide)
- Moorabool Shire Council
- Port Phillip City Council
- Stonnington City Council
- Wyndham City Council

It also accepts relatively large quantities of commercial and industrial (C&I) waste. The amount of waste presently accepted at the RDF is approximately 450,000 tonnes per annum however this is expected to increase to 600,000 tonnes per annum within five years with the closure of the Corio Landfill.

4.5 Landfill activities

The RDF includes a waste transfer station and landfill, whereby landfilling operations have progressively been developed within former quarry areas. Council operates the landfill under Licence 12483 issued by EPA and three planning permits. To date, Cells 1A, 1B, 2A, 2B, 3, and 4A, have been filled and closed, with Cell 4B currently being filled and expected to reach capacity by early 2016. In the long-term, it has been proposed that Cells 5, 6, 7 and 8 will be constructed and filled in succession. Cell 4C is currently under construction.

The following sections provide a short summary of activities undertaken within the property boundary at 420 Wests Road, encompassing Lot 1 TP855710, Lot 1 TP319902, Lot 2 TP855710, Lot 2 TP319902, Lot 1 TP138161, Lot 3 TP319902, Lot 1 TP225224, and Lot 4 TP319902.

4.5.1 Organics processing

Veolia has commenced operation of the green waste transfer station and propose to locate a green organics processing facility at the RDF site in the future for processing of approximately 35,000 tonnes per annum of green waste material using an In-vessel Organic composting method.

Potential odorous impacts associated with the green organics transfer station and the proposed processing facility may include:

- Odour emissions – The various stages of organics processing can generate odour emissions (typically fugitive emissions). For an enclosed/in-vessel composting operation with odour control equipment, key sources of odour are likely to be shredding and screening activities.
- Other gaseous air emissions – Toxic and/or odorous gases that may be generated during the composting process include hydrogen sulphide, organic sulphides and volatile fatty acids. For an enclosed/in-vessel composting operation with odour control equipment, emissions of these gases would be controlled.

Figure 3 Current organics transfer station

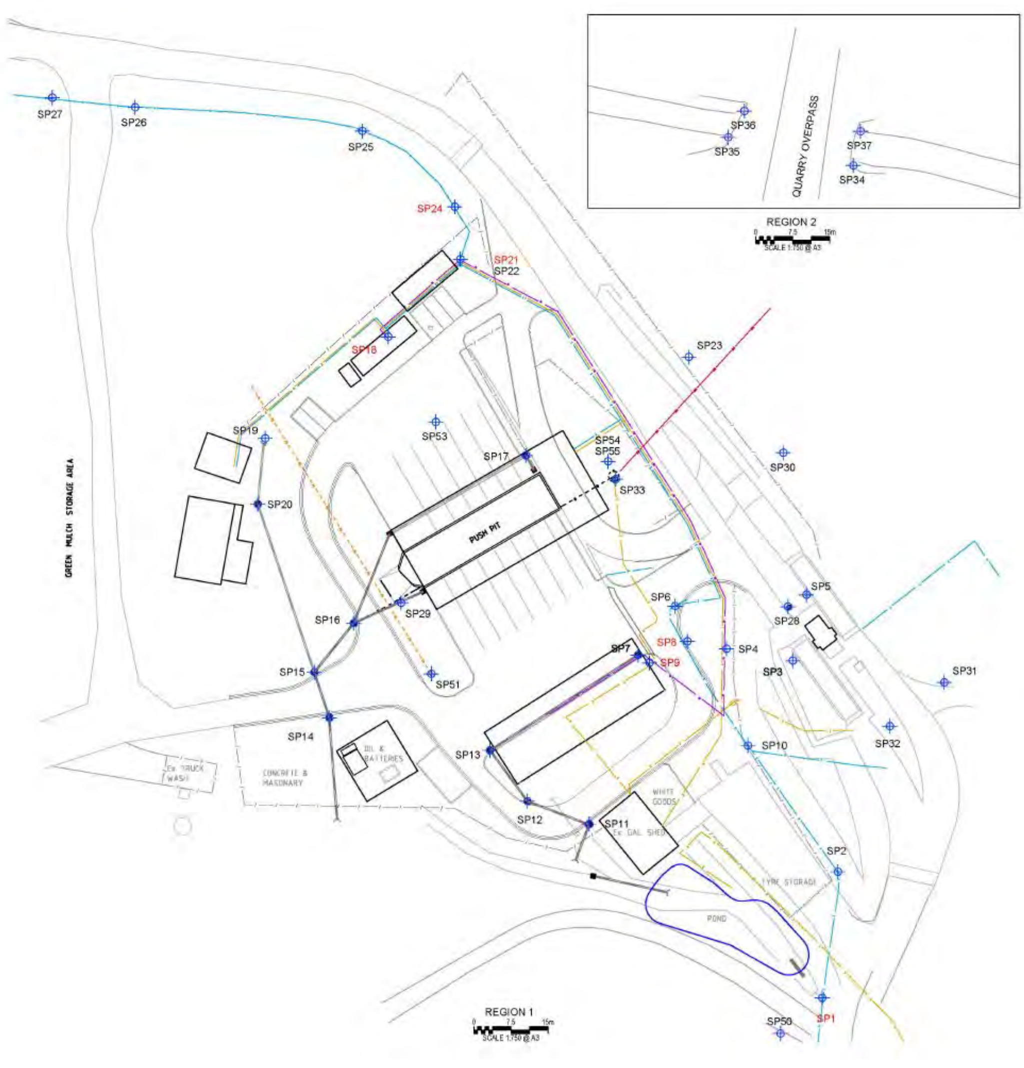
4.5.2 Transfer station and resale shed

The RDF includes a recycling facility and waste transfer station which is open to the public. The transfer station allows small vehicles to deposit waste that would not normally be collected at the kerbside. Larger vehicles, such as garbage trucks, deposit their waste directly onto the tipping face. The transfer station is located on former Cell 1A, along with the weighbridge and a large, roofed push pit where the public deposits waste. After the manual segregation of recyclables by site staff, the remaining waste is deposited at the tipping face. Green waste material is mulched at the site with a portion used for daily cover purposes and the remainder offered to the public free of charge. The public have access to the Resale Shop to either drop off unwanted items or to purchase an item. Types of waste accepted at the transfer station are provided in Section 4.3. A site layout plan and image of the transfer station are provided in Figure 4 and Figure 5.

Potential odorous impacts associated with the recycling facility and waste transfer station may include:

- Odour emissions associated with vehicle exhaust emissions from onsite site vehicles and equipment
- Putrescible/household wastes
- Green waste

Figure 4 Transfer station layout



Source: (Compass Environmental, 2014)

Figure 5 Transfer station and weighbridge

4.5.3 Biogas power generation

Biogas power generating operations, while located on the same property as the RDF, are not RDF activities. These operations are not governed by the RDF's EPA licence 12483 and Planning Permit No. WYP1221/07.03 and therefore any odour from this facility is not managed under this OMP.

The on-site power generation facility is owned and operated by LMS Energy. The landfill gas extraction system consists of a network of extraction wells, well stations and a main pipeline. Landfill gas is extracted from wells in Cell 1B (nine extraction wells), Cell 2A (14 extraction wells), Cell 2B (16 extraction wells) and Cell 3 (32 extraction wells) and cell 4A (20 extraction wells) and then piped to a main line feeding the generator. An older landfill gas extraction system is also located in Cell 1A (15 extraction wells), refer to Figure 6.

Previous landfill gas monitoring at some of the monitoring locations have shown exceedances of the relevant landfill gas action levels, as specified by the Landfill BPEM.. In response to these results, the RDF has created a Landfill Gas Remediation Action Plan (LGRAP) which outlines a proposed remediation strategy.

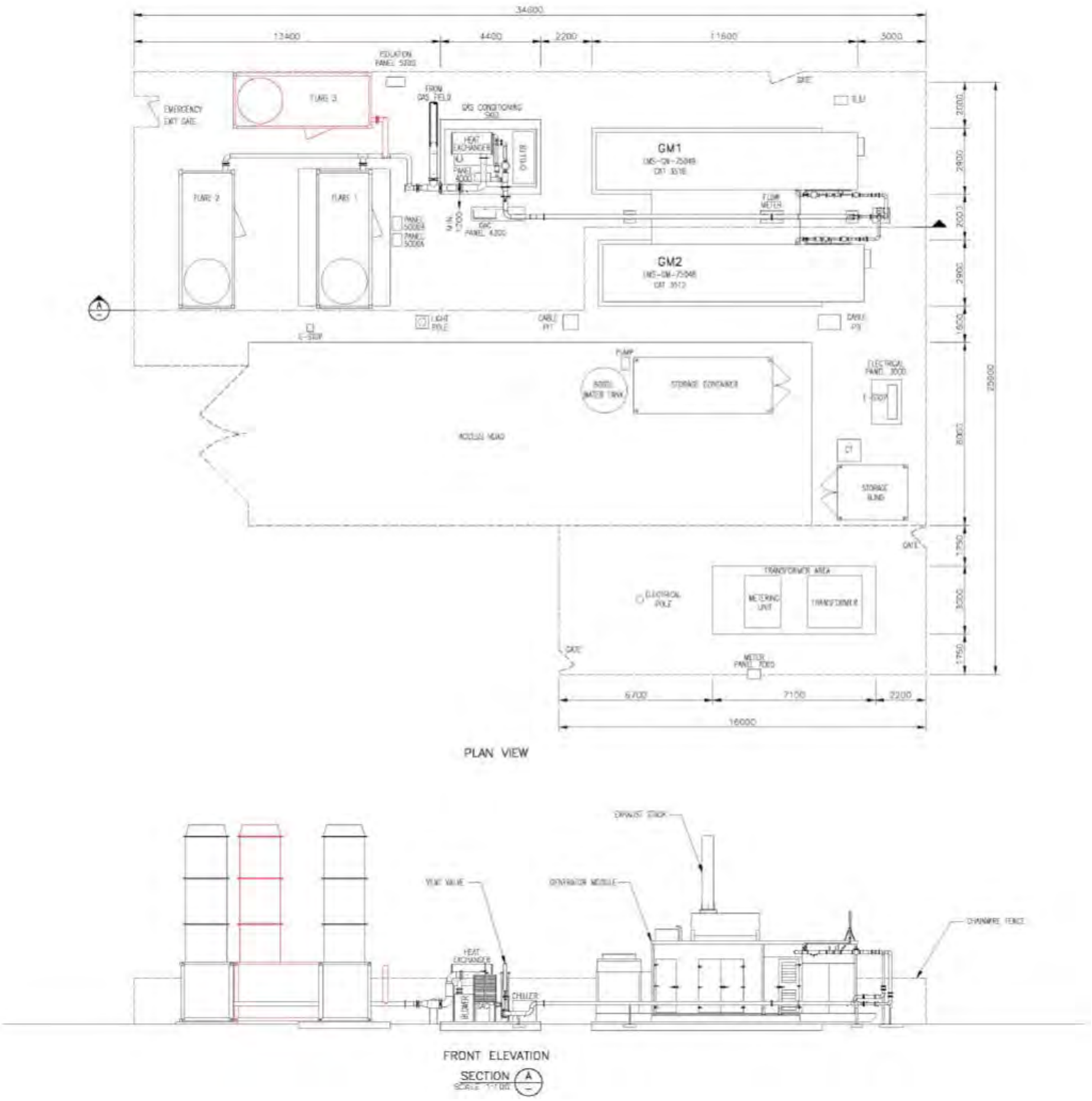
Source and management of landfill gas odours outside the operation of the power generation facility are further discussed in Sections 4.6 and 8.

Figure 6 Landfill gas piping network

Source: Wyndham City Council

Figure 7 Biogas power generation plant

Figure 8 Biogas facility layout



Source: Wyndham City Council

4.5.4 Quarry operations

Quarrying operations, while located on the same property as the RDF, are not RDF activities therefore this operation is not governed by the RDF's EPA licence 12483 and Planning Permit No. WYP1221/07.03. Any odour from this source is not managed under this OMP.

The quarrying operation is presently undertaken by Holcim Ltd (Holcim) under a lease with Council and a DEPI Work Authority (WA184) and associated Work Plan. The quarry produces around one million tonnes of rock per annum and at current extraction rates, it is anticipated that the remaining rock will allow for approximately 20 years future excavation. Void space is being created by the quarrying activities at a rate greater than landfill airspace is being consumed by waste disposal operations at the RDF, with the north east and western sections of the site still remaining to be extracted and subject to Council obtaining the necessary approvals to extend the landfill into the quarrying voids. It is apparent that landfilling operations will continue at the site for many decades.

The hours of operation for all quarry activities and product dispatch are 7 am – 5 pm Monday to Friday and 7 am – 12 pm on Saturdays.

Potential off-site odour impacts associated with quarrying may include:

- Vehicle exhaust emissions from onsite vehicles and equipment.

Figure 9 Quarry operations

4.6 Meteorology

The climate at Wyndham Vale is classified as temperate with no dry season (warm summer) under the Australian objective classification system set out by the Bureau of Meteorology (BoM) Australia[1]. Such a classification indicates four distinct seasons with regard to temperature variation and rainfall events throughout the entire year.

The local wind climate impacts the location of off-site odour for landfill activities. The general wind climate at a site is most readily displayed by means of wind rose plots, giving the incidence of winds from different directions for various wind speed ranges. The areas of particular interest are:

- The prevailing wind directions.
- The relative incidence of more stable light wind conditions.

The EPA approved meteorological dataset from Point Cook for the year 1995 is presented in Figure 10 below.

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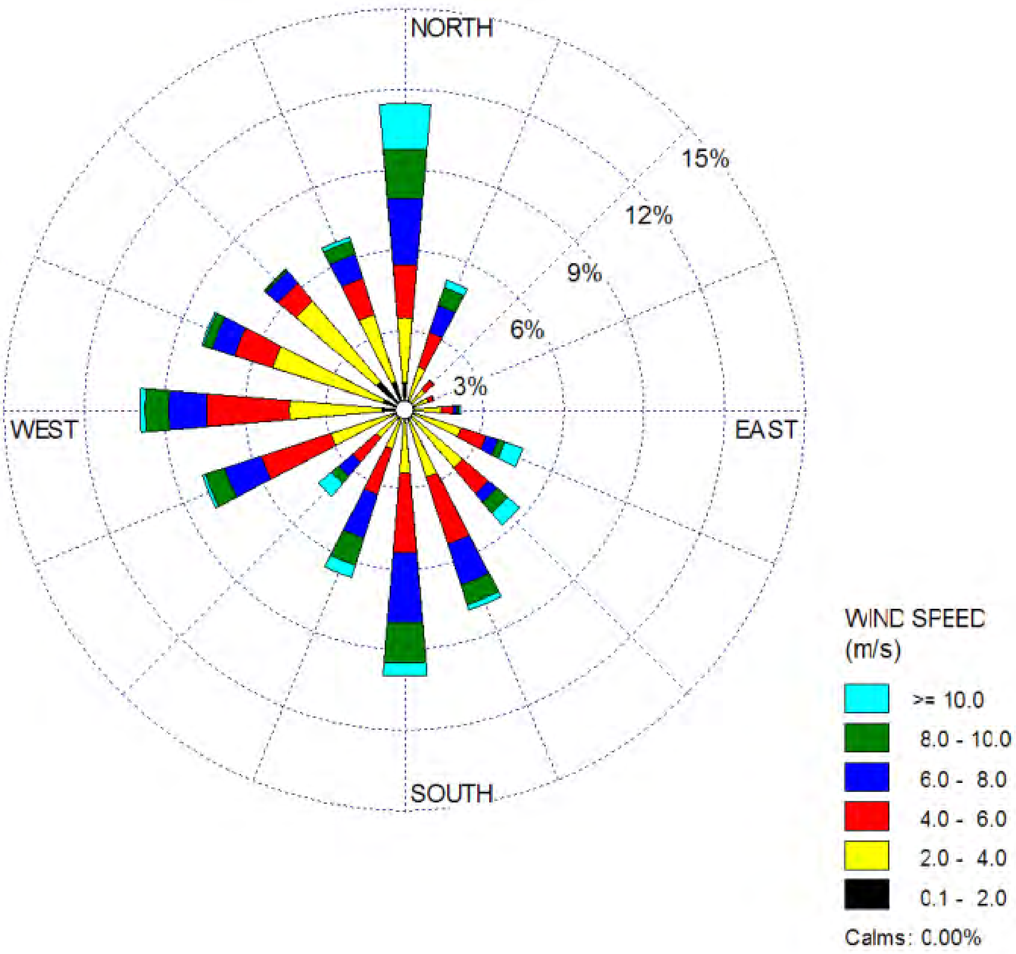
[1] http://www.bom.gov.au/climate/environ/other/koppen_explain.shtml

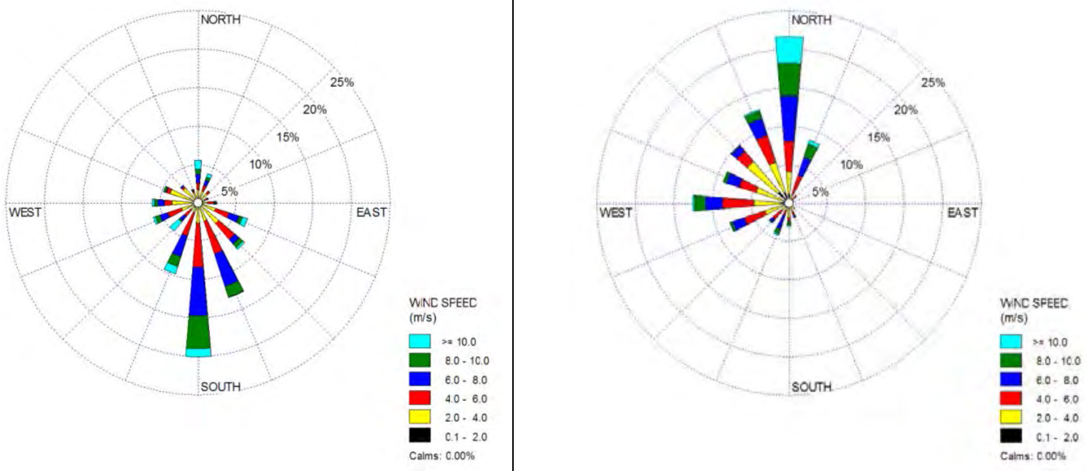
Figure 10 Wind roses for EPA Point Cook

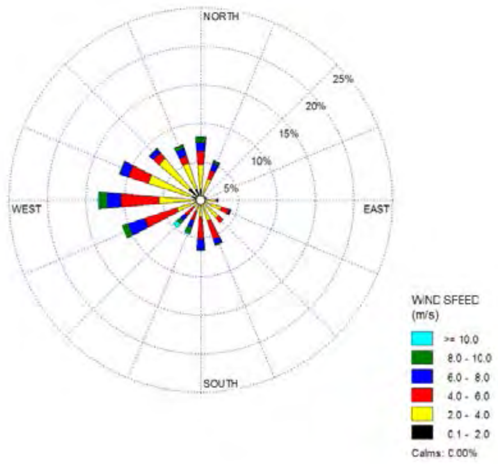
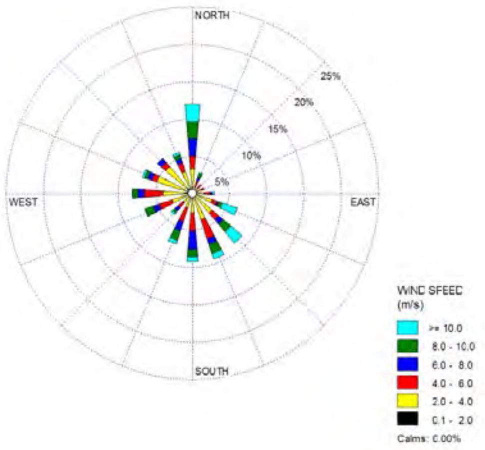
Annual (average speed 4.99 m/s)



Summer (average speed 5.47 m/s)

Winter (average speed 5.08 m/s)



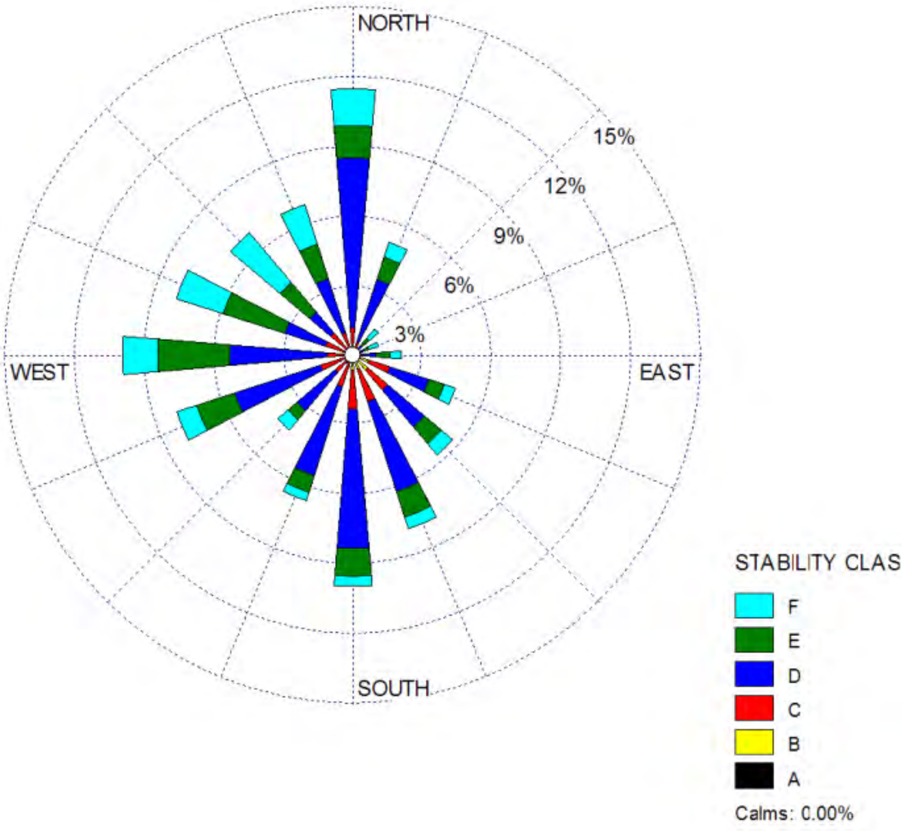
Autumn (average speed 4.20 m/s)	**Spring** (average speed 5.26 m/s)
	

The Pasquill/Gifford scale of atmospheric stability consists of six stability classes. Stability classes A, B and C represent, strongly, moderately and slightly unstable atmospheres respectively. Under such conditions dispersion near ground level is efficient due to convective and turbulent vertical mixing.

Stability category D classifies a neutral atmosphere and E and F slightly and moderately stable atmospheres respectively. Stable conditions persist at night, with clear skies and weak gradient winds. Such conditions are often coupled with ground based, radiation forced temperature inversions, sometimes with fog, mist or frost.

In a stable atmosphere (categories E and F), dispersion is poorest as vertical mixing of air is suppressed. This can result in a downwind plume, which is detectable at a greater distance compared to similar emissions under unstable conditions. It is commonly stable conditions that result in odour impact at a maximum range. Figure 11 shows the annual stability rose for Point Cook (1995). It is seen that the majority of stable winds are from the northwest quadrant.

Figure 11 Annual stability rose – Point Cook



5. Odour sources

The SEPP for Air Quality Management (AQM) requires that the beneficial uses of the atmosphere are protected. In relation to general odour, these beneficial uses include local amenity and aesthetic enjoyment. There are a number of potential odour sources which originate from landfill activities at the RDF. The following section provides some background for these sources.

5.1 Transfer station odour

Odour releases at the transfer station may originate from one or more of the following processes:

- Public vehicles and trailers in transit to and from the site
- Parked vehicles, including where applicable overnight
- Vehicle exhaust emissions from site vehicles and on site equipment
- Putrescible wastes unloaded at the transfer station
- Green waste material unloaded at the transfer station

5.2 Leachate odour

Each of the landfill cells has incorporated leachate collection systems, with the exception of Cell 1A. There are currently ten sumps across the site. Leachate is extracted from the sumps as necessary and pumped into the site's leachate ponds. Leachate ponds are shown in Figure 12 through Figure 15.

Council received six complaints in relation to odour in the vicinity of the landfill between July and November 2014 and nine odour complaints were also lodged with EPA during the same period. It is understood that Council investigated the complaints and identified that they may have been attributed to commissioning of the eastern leachate pond. Chemical treatment of leachate was implemented at the pond in October 2014. A number of complaints have continued to be received; these complaints have all originated from a single individual.

Figure 12 Newly constructed east leachate pond

Figure 13 West leachate pond adjacent organics processing facility

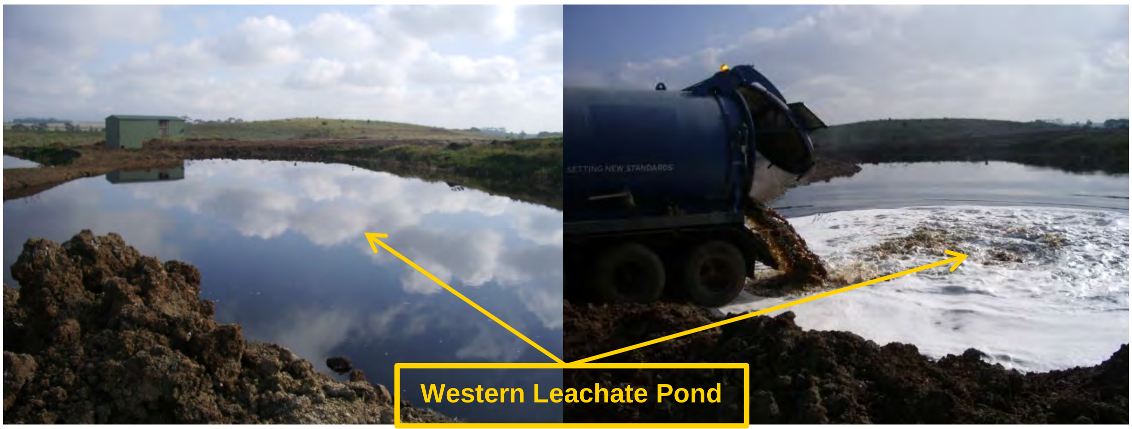


Figure 14 Secondary western leachate pond adjacent to main western pond

Figure 15 Location of leachate ponds

5.3 Landfill gas

Gas emissions from municipal landfills generally consist of 65% v/v methane (CH_4) and 35% v/v carbon dioxide (CO_2) (Allen et al., 1997) as cited (Brattoli, de Gennaro, & de Pinto, 2011). However, both methane and carbon dioxide are odourless gases. Odour emissions from landfill gas are generally attributed to the presence of low concentrations of VOCs, in particular esters, organosulphurs, alkylbenzenes, limonene, other hydrocarbons and hydrogen sulphide (Young & Parker, 1983) as cited (Brattoli, de Gennaro, & de Pinto, 2011).

The character of landfill gas odour can vary widely from relatively sweet to bitter or even acrid, depending on the concentration of the odorous substances present. The character can be affected by several elements, such as the:

- Waste composition
- Waste organic fraction
- Decomposition stage
- Rate of gas generation
- Nature of microbial populations within the waste

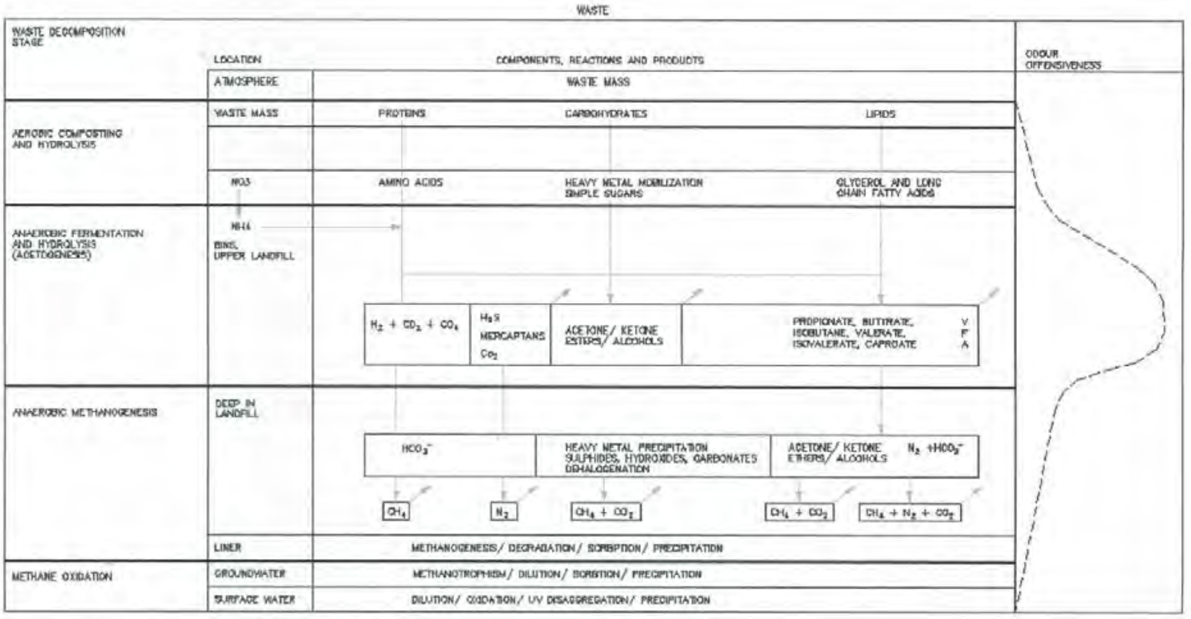
The major odour sources occur in the upper layers of the waste bed, in particular where leachate is channelled back over landfill waste mass or where gas can escape along leachate drainage lines (Hancock & Beudeker, Unknown).

Landfill gas can escape through a number of pathways but gas generally pushes out from the open landfill face, leachate drains/sumps and areas of weakened or damage cap due to raised internal temperatures reducing gas density, active flushing caused by methanogenic decomposition increasing CH_4 & CO_2 generation and lithostatic loading, compaction and consolidation pressure forcing gas out through the areas of least resistance (Hancock & Beudeker, Unknown).

5.3.1 Landfill decomposition process

Figure 16 describes the various types of microbial activity that can occur in landfills and the relative offensiveness of the odours generated during each stage of waste decomposition.

Figure 16 Waste decomposition and odour



As shown in Figure 16, the greatest odour producing process in the decomposition of landfill waste occurs in the anaerobic digestion phase by microorganisms that live in an oxygen free environment. Anaerobic decomposition occurs in four stages (Anaerobic Digestion Process, 2009):

1. Hydrolysis
2. Acidogenesis
3. Acetogenesis
4. Methanogenesis

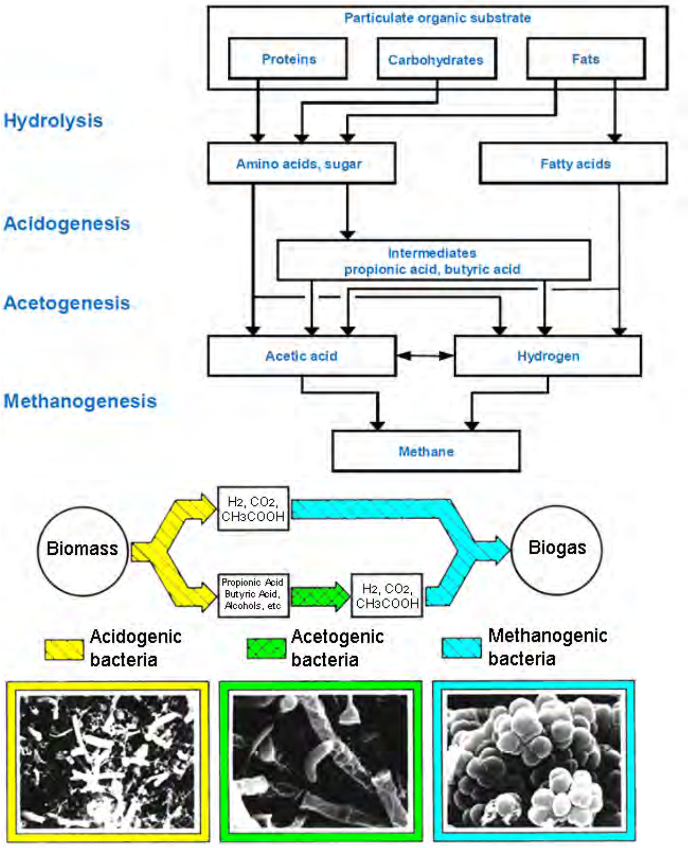
During hydrolysis the bacteria breakdown the organic proteins, carbohydrates and fats into amino acids, monosaccharides and fatty acids respectively (liquefied monomers and polymers). Acidogenic bacteria then convert the products of hydrolysis into short chain volatile acids, ketones, alcohols, hydrogen and carbon dioxide.

The main decomposition products created are propionic acid (CH_3CH_2COOH), butyric acid ($CH_3CH_2CH_2COOH$), acetic acid (CH_3COOH), formic acid ($HCOOH$), lactic acid ($C_3H_6O_3$), ethanol (C_2H_5OH) and methanol (CH_3OH) (Anaerobic Digestion Process, 2009).

Acetogenic bacteria then convert propionic and butyric acid and alcohols into hydrogen, carbon dioxide and acetic acid. The hydrogen, carbon dioxide and acetic acid products skip acetogenesis and pass directly onto methanogenisis the fourth and final stage.

Methanogenic bacteria then convert the hydrogen and acetic acid formed to methane gas and carbon dioxide. The bacteria responsible for this conversion are called methanogens and are strict anaerobes. Figure 17 provides two flow diagram on the anaerobic decomposition process.

Figure 17 Anerobic digestion of organic material



Source: http://www.wtert.eu/default.asp?Menue=13&ShowDok=12

5.4 Tipping face odour

Odour release at the active tipping face is unavoidable due to the type of materials being deposited. Trucks bring in abiotic and biologically degraded waste material, which is then released from its containerised transporter and subsequently spread out and compacted, releasing volatile odorants into the nearby environment. Figure 18 shows a typical tipping face at the RDF.

Sources of odour emissions at a tipping face may originate from one or more of the following processes:

- Waste trucks in transit to and from the site
- Parked vehicles, including where applicable overnight
- Vehicle exhaust emissions from site vehicles and on site equipment
- Putrescible/municipal wastes unloaded at the tipping face “bin odours”
- Placement and compaction of waste
- Landfill gas generated within the landfill
- Anaerobic leachate from ponds/dams
- Anaerobic leachate from drains and sumps
- Precipitated organic sludge degradation in base of leachate ponds
- Creation of landfill cover windows for dumping
- Exposed waste in moist clay cover

The creation of a landfill cover window for placement of new material on top of the existing material exposes previously buried waste material to the ambient air, creating new landfill gas pathways along pressure gradients. Odour release from these windows will be exacerbated by low winds and cooler temperatures, below 35-40 °C, where the gas release will likely be more buoyant than the surrounding air.

Odour emissions can also be exacerbated in wet conditions through exposure of waste at the clay cover interface, through chisel bladed tynes on compactors mashing wet clay and entraining waste, setting up conditions for oxygen limiting acetogenic and fermentative decomposition processes.

Figure 18 Active landfill tipping face

6. Legislative requirements

6.1 Acts

The principal legislation for pollution control in Victoria is the Environment Protection Act 1970 (the Act). The Act regulates the discharge or emission of waste to water, land or air by a system of works approvals and licences. The Act also specifically controls pollution of the atmosphere including under 'beneficial use', the protection of public benefit from the effects of waste discharges, such as odour emissions, emission of noise and the transport and disposal of waste (EPA Victoria, October 2014).

6.2 Policies

Table 4 summarises the policies relevant to the RDF operation.

Table 4 Relevant policies

Policy	Description
SEPP (Air Quality Management)	State environment protection policies (SEPPs) set out policies of the government to manage environmental pollution.
SEPP (Ambient Air Quality)	
Waste management policy (WMP) *Siting, Design and Management of Landfills*, No. S264, Gazette 14/12/2004.	In 2002 the Environment Protection Act was amended by the Environment Protection (Resource Efficiency) Act 2002 to allow EPA scope to develop waste management policies (WMPs) (EPA Victoria, October 2014). There are currently nine WMPs, however only one is relevant to odour:

The *State environment protection policy (Air Quality Management)* (SEPP (AQM)) identifies the beneficial uses of the air segment.

The beneficial uses of the air segment are defined in the SEPP (AQM) as follows:

- Life, health and wellbeing of humans
- Life, health and well-being of other forms of life, including the protection of ecosystems and biodiversity
- Local amenity and aesthetic enjoyment
- Visibility
- The useful life and aesthetic appearance of buildings, structures, property and materials
- Climate systems that are consistent with human development, the life, health and well-being of humans, and the protection of ecosystems and biodiversity

6.3 Guidelines

Table 5 summarises the EPA guidelines relevant to the RDF operation.

Table 5 Relevant guidelines

Guideline	Description
EPA Publication 1518 *Recommended separation distances for industrial residual air emissions*	Provides separation distances to minimise off-site impact from industry on nearby sensitive land uses arising from unintended, industry generated odour and dust emissions. The guideline provides separation distances for quarries such as that operating at the RDF, transfer stations and various types of landfills. The guideline also points to the composting guideline EPA Publication 1495 (2012) and the landfill guideline EPA Publication 788.1.
EPA Publication 1495 *Separation for large composting facilities*	This document provides guidance to operators of composting facilities and regulating bodies on the requirements for separation distances between large scale composting operations and local communities. Applies to facilities that receive more than 36,000 tonnes per annum (tpa) or approximately 100 tonnes per day (tpd).
EPA Publication 508 (now in draft as Publication 1577) *Composting*	Applies to facilities that receive less than 36,000 tonnes per annum (tpa) or approximately 100 tonnes per day (tpd).
EPA Publication 788.2 *Best Practice Environmental Management - Siting, Design, Operation and Rehabilitation of Landfills (BPEM)*	Publication 788.2 states that "*appropriate buffer distances must be maintained between the landfill and sensitive land uses (receptors) to protect those receptors from any impacts resulting from a failure of landfill design or management or abnormal weather conditions. These failures might constitute discharge from the site of potentially explosive landfill gas, offensive odours, noise, litter and dust*". Section 4 of the BPEM classifies landfills into waste streams where Type 2 consists of putrescible (municipal) waste, solid inert waste and fill material and Category C prescribed industrial waste. Type 3 waste consists of solid inert waste and fill material. The RDF is classified as Type 2 and has the following separation distances under the BPEM: • 100 m from surface waters • 500 m from building or structures • 1500 m from aerodrome for piston propeller-driven aircraft • 3000 m from an aerodrome for jet aircraft
EPA publication 1320.3 Annual performance statement (APS) guidelines	This document provides guidance to licence holders on how to report on their annual environmental performance.
EPA publication 1321.2 Licence assessment guidelines	This document provides guidance to licence holders to take a risk-based approach to the development of their monitoring program, as well as interpreting and using data.
EPA publication 1322.5 Licence management guidelines	This document provides guidance to licence holders to understand the content of their licence, what needs to be done to comply and how EPA expects them to perform and respond to non-compliance incidents.
EPA publication 1323.2 Landfill licensing guidelines	This document provides guidance to landfill operators and environmental auditors, to assist understanding of license requirements specific to landfills.

6.4 Licences, permits and approvals

The RDF maintains a number of licences permits and approvals as outlined in Table 6.

Table 6 Licence, permits and approvals

Licence/permit/approval	Description
EPA Licence 12483	This licence allows for solid inert waste, putrescible waste and shredded tyres to be deposited to land for cells 4A and 4B.
Planning Permit No. WYP1221/07.03	This planning permit allows the use of land and associated works for the expansion of an existing refuse disposal facility (into Cells 4, 5, 6, 7, & 8) in accordance with the endorsed plans.
EPA Works Approval 104203	This works approval allows for the extension of a putrescible waste landfill by the addition of an approved area for a new cell (Cell 4C).

7. Duties and responsibilities

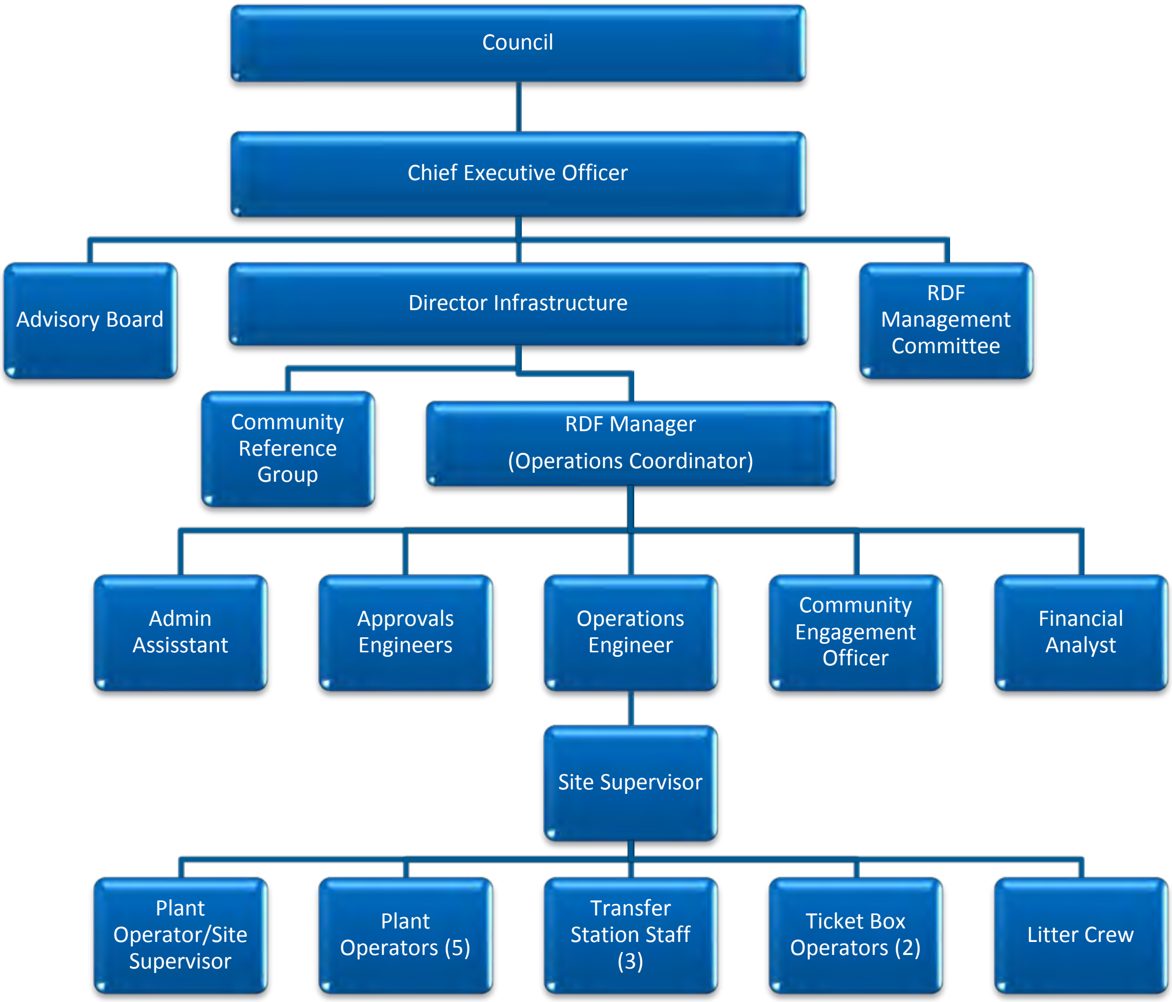
Council will provide resources needed for the implementation and control of the OMP. Resources include human resources with specialised skills, technology and financial resources.

The following section outlines the RDF organisation structure, and staff duties and responsibilities with regard to minimising odour impacts beyond the boundary of the property.

7.1 Organisation structure

The RDF is governed by the Wyndham City Council and its Chief Executive Officer. A general organisational structure is provided in Figure 19.

Figure 19 Organisation structure



7.2 Offsite roles and responsibilities

The following section provides a summary of those staff that have duties and responsibilities for the operation of the RDF but are not necessarily on site on a day to day basis.

7.2.1 Chief Executive Officer

The Chief Executive Officer is responsible to Council for the overall performance of all Council functions and operations. The CEO is broadly responsible that the RDF is operated in accordance with its legal requirements, EPA Licence, SEPPs and this OMP. This includes the undertaking of management system audits as required and that all staff are, through the responsible Director and Manager, aware of their performance, safety, quality and environmental responsibilities.

The Chief Executive is responsible for the allocation of suitably trained staff and appropriate resources, such that the operation of the site is undertaken in an efficient and effective manner.

7.2.2 Director of Infrastructure

The Director of Infrastructure is responsible for the effective management of Council infrastructure including the assets utilised at the RDF.

7.3 On-site roles and responsibilities

The following section provides a summary of those staff that have duties and responsibilities for the operation of the RDF and are on site on a day to day basis.

7.3.1 RDF Manager (Operations Coordinator)

The RDF Manager is the on-site functional manager responsible for the day-to-day management of the operations of the RDF including verification of records, checklists, procedures, inspections and reports, identification of training and awareness needs for site staff, and management of operations involved in implementation of the OMP on site.

The RDF Manager has responsibility for the monitoring and management of leachate and groundwater investigations in accordance with the EPA Licence, or where the EPA Licence is not prescriptive, in accordance with relevant Commonwealth and Victorian legislation, regulation and guidance. The RDF manager shall:

- Supervise daily works on the site and site staff
- Implement this OMP on site including regular filling out of OMP checklists and the undertaking of odour surveys and monitoring as required
- Plan operations of plant and equipment and on-site maintenance
- Record waste placement and traceability details
- Plan and manage stockpiles and covers, including top soil supply and usage
- Plan site asset maintenance, such as buildings, gates, road access and drainage channels, landscaping and plantings, fencing, and other site assets
- Manage groundwater and surface water
- Supervise the operation of leachate collection and monitoring systems and undertake and supervise odour surveys
- Investigate and report complaints and management of complaint procedures
- Maintain and provide data for records, procedures, inspections, reports, and reporting of non-compliances

7.3.2 Weighbridge attendant

The weighbridge attendant is responsible for logging the receipt of waste and verification of type of waste category being delivered. The weighbridge attendant is also responsible for the completion of operational records, checklists, procedures, recording of complaints and unauthorised and illegal waste brought to site.

7.3.3 Plant operators

The plant operators are responsible for operating vehicles used for transporting of waste from the Transfer Station to the tipping face. Plant operators are also responsible for:

- Receipt of waste deposited at tip face by large vehicles
- Spreading, compaction and covering of waste
- Plant and equipment operation and routine maintenance
- Completion of operational records, checklists, procedures, inspections and reports
- Observation and notification of unauthorised and illegal waste dumping

Examples of plant operated include; TANA E520 compacter, TANA E520 compacter, CAT 773B topsoil cartage, CAT D8T bulldozer and the CAT 730 for waste transfer to the tipping face.

7.3.4 Transfer Station Attendant

The Transfer Station Attendant is expected to supervise waste receipt at the transfer station and provide direction to members of the public and vehicles to maintain public safety and operational efficiency and screen for unauthorised and illegal waste.

As part of the OMP, the Transfer Station Attendant is expected to minimise odour as much as practical at the transfer station including, having odorous material moved to the tipping face or placed in sealed containers until such time as removal can be undertaken.

7.4 Training

Only trained and competent staff can operate at the RDF. All training related to odour sources, odour management, odour surveys and testing should be included in the site induction for new staff.

Odour survey competency testing should then be carried out one month after induction and then six monthly for the first 12 months to check that all odour surveys are carried out to the required standards (refer to Section 9).

7.4.1 Training in the OMP

Awareness training for staff should include:

- The importance of conforming with the OMP
- The significant environmental impacts, potential or actual that their work activities may create and the environmental benefits of improved personal performance
- Their roles and responsibilities in achieving conformity with the OMP
- The possible consequences of departure from specified operating procedures

7.4.2 Role specific training

- Transfer weighbridge attendees are required to undergo an induction into the requirements of the RDF’s EPA licence.
- All staff are required to undergo an induction into the requirements of the RDF’s operation.
- Plant operators are required to undergo an induction into the requirements of the RDF’s EPA licence. Leading hands should undertake training to qualify as a Licensed Plant Operator and complete an EPA approved Landfill Operator course.

8. Odour management

The key odour sources located within the RDF operation include the open tipping face, the leachate ponds, the transfer station push pit and general landfill gas emissions. The following sections outline a number of management options available for the RDF to minimise odour impacts beyond the property boundary.

8.1 Leachate odour

The management of odour from leachate ponds, drains and sumps at the RDF includes the following activities:

- Check daily for odour and implement controls if required. In the event that any offensive odours occur off site, the source of the odour should be investigated to assess if operating procedures require adjustment to reduce odour generation
- Removal and transportation of leachate during times of greatest air dispersion
- Implement a preventative maintenance programme to minimise equipment failure and unplanned downtime of sucker trucks used on-site
- Train staff about the importance of regulatory compliance and management for achieving compliance
- Identify relevant operating procedures and control parameters to minimise emissions
- Keep an inventory of mitigation equipment and materials
- Prepare emergency procedures and train staff in its use
- Installation of aerators within the new leachate pond to minimise the potential risk of leachate becoming anaerobic and odorous
- Implement a monitoring program to check on the overall performance of the landfill

8.2 Transfer station odour

The management of odour from the transfer station should contain the following activities:

- Check daily for odour and implement controls if required. In the event that any offensive odours occur off site, spray with odour suppressants and investigate the source of the odour and assess if operating procedures require adjustment to reduce odour generation
- Regular removal of waste to the landfill
- The transfer station pit should be empty at the end of each day
- The transfer truck shall be equipped with covers reduce odour
- Use of odour suppressants
- Changes to daily operations as required to minimise odour
- Implement a preventative maintenance programme to minimise equipment failure and unplanned downtime for all tipping trucks and front end loaders used on-site
- Train staff about the importance of regulatory compliance and management for achieving compliance
- Identify relevant operating procedures and control parameters to minimise emissions
- Keep an inventory of mitigation equipment and materials

- Prepare emergency procedures and train staff in its use
- Implement a monitoring program to check on the overall performance of the landfill

8.3 Landfill gas odour management

The management of odour from landfill gas at the RDF should contain the following activities:

- Check daily for odour and implement controls if required. In the event that any offensive odours occur off site, the source of the odour should be investigated to assess if operating procedures require adjustment to reduce odour generation
- Continue to install landfill gas management infrastructure consisting of a network of extraction wells, well stations and a main pipeline, across existing and future landfill cells for the collection of landfill gas
- Progressively install a combination of horizontal and vertical extraction pipes as active cells are filled
- Continue to manage landfill gas by way of flare and power generating facility selling electricity back to the grid. Maintenance and monitoring of these systems should assist with the destruction efficiency of landfill gas meeting the Landfill BPEM actions levels, i.e. 98% destruction efficiency
- Place temporary and/or final cell caps to assist with minimising site odour impacts
- Maintain a suitable layer of topsoil or organic mulch over the cell faces to supress odour and windblown litter
- Implement a preventative maintenance programme to minimise equipment failure and unplanned downtime for all tipping trucks and front end loaders used on-site
- Train staff about the importance of regulatory compliance and management for achieving compliance
- Identify relevant operating procedures and control parameters to minimise emissions
- Keep an inventory of mitigation equipment and materials
- Prepare emergency procedures and train staff in its use
- Progressive installation of a landfill gas management system to minimise air emissions, including odour
- Implement a monitoring program to check on the overall performance of the landfill

8.4 Tipping face odour management

The management of odour from the tipping face at the RDF should contain the following activities:

- Check daily for odour and implement controls if required. In the event that any offensive odours occur off site, the source of the odour should be investigated to assess if operating procedures require adjustment to reduce odour generation
- Maintain the tipping area to a maximum area 30 m x 30 m minimise the size of the tipping face area where possible
- Place low permeability caps to assist with minimising site odour impacts
- Cover the waste regularly
- Changes to daily operations as required to minimise odour

- Maintain a sufficient layer of topsoil over the tipping face to supress odour and windblown litter
- Implement a preventative maintenance programme to minimise equipment failure and unplanned downtime for all tipping trucks and front end loaders used on-site
- Train staff about the importance of regulatory compliance and management for achieving compliance
- Identify relevant operating procedures and control parameters to minimise emissions
- Keep an inventory of mitigation equipment and materials
- Prepare emergency procedures and train staff in its use
- Install aerators within the new leachate pond to minimise the potential risk of leachate becoming anaerobic and odorous
- Progressive installation of a landfill gas management system to minimise air emissions, including odour
- Implement a monitoring program to check on the overall performance of the landfill

8.5 Non-RDF odour

The management of odour from non-RDF operations should contain the following activities:

- Understand the green waste stockpile limits with regards to height, overall size and minimum life of the stockpile to minimise odour emissions from the Veolia site
- Understand the potential issues that can arise from the LMS power generation facility at the RDF and how these may impact on odour emissions beyond the boundary

9. Odour surveys and monitoring

Short daily odour surveys should be undertaken and when an odour is detected, this should be investigated to assess its source and if operating procedures require adjustment to reduce odour generation. The following sections provide guidance on the general method for undertaking an odour survey.

9.1 Monitoring locations

Figure 21 shows suggested odour survey monitoring locations for an odour survey. The odour survey should start with the locations upwind and furthest away from the RDF, finishing with the locations closer and downwind from the site.

9.2 Odour survey method

Odour surveys should be undertaken as quickly and efficiently as possible so that wind speed and direction remains relatively constant throughout the sampling period. An example odour survey form is provided in Appendix B.

Hand held wind meters are useful for odour surveys and can provide weather data on a range of parameters at each survey location such as wind speed, wind direction, temperature, barometric pressure, altitude, humidity, wind chill, wet bulb temperature, dew point, delta T (temperature) and density altitude, refer to Figure 20.

Figure 20 Typical hand-held wind meter

The odour survey should start with the locations upwind and furthest away from the RDF, finishing with the locations closer and downwind from the site to prevent staff from becoming desensitised to the odours.

Odour surveyors should be familiar with the German VDI scale for describing odour intensity during field observations. This scale is used in Europe, New Zealand and Australia for grading odour intensity. Experience using this scale has shown that observations have a good degree of consistency between observers (Ministry for the Environment, 2003).

Table 7 Odour intensity scale (derived from the German VDI scale)

Odour Intensity	Intensity Level
Extremely strong	6
Very strong	5
Strong	4
Distinct	3
Weak	2
Very Weak	1
Not perceptible	0

Odour surveyors should also be familiar with odour character descriptors and the FIDOL factors. FIDOL factors are those descriptors used during the survey to best describe the odour and include:

- F - Frequency
- I - Intensity
- D - Duration
- O - Offensiveness
- L – Location

FIDOL factors and odour characterisation should be recorded on the survey form in Appendix B.

Table 8 FIDOL factors and odour character descriptors

FIDOL Factor	Description
F - Frequency	How often the odour is noticed i.e. once for 20 seconds then went away for 30 seconds, or it was a constant odour for two minutes.
I - Intensity	The strength of the odour (refer to the German VDI odour intensity scale – Table 4.2).
D - Duration	The length or total sum of an odour event at a particular site i.e. there were two 20 second wafts in the three minutes at one location, therefore the duration was 40 seconds.
O - Offensiveness	This determines how adverse the odour is. The odour may be pleasant, neutral or unpleasant but still be offensive (refer to Table 4.4 as an example of rating adverse effects – if the odour is not offensive, then the value is 0).
L – Location	The location is the place where the observations are recorded. Location needs to include the type of land use/activities in the vicinity i.e. residential/industrial etc.
Odour Character Descriptors	**001** Fragrant, **002** Perfumy, **003** Sweet, **004** Fruity, **005** Bakery (fresh bread), **006** Coffee-like, **007** Spicy, **008** Meaty (cooked, good), **009** Sea/marine **010** Herbal, green, cut grass, **011** Bark-like, birch bark, **012** Woody, resinous, **013** Medicinal, **014** Burnt, smoky, **015** Soapy, **016** Garlic, onion, **017** Cooked vegetables, **018** Chemical, **019** Etherish, anaesthetic, **020** Sour, acrid, vinegar, **021** Like blood, raw meat, **022** Rubbish, **023** Compost **024** Silage, **025** Sickening, **026** Musty, earthy, mouldy, **027** Sharp, pungent, acid, **028** Metallic, **029** Tar-like, **030** Oily, fatty, **031** like gasoline, solvent **032** Fishy, **033** Putrid, foul, decayed, **034** Paint-like, **035** rancid, **036** Sulphidic, **037** Dead animal, **038** Faecal (like-manure), **039** Sewer odour, **040** Describe the odour yourself.

Finally odour surveyors should summarise the overall impact of the odour at the survey location. An example of the odour impact scale is shown in Table 9. This covers a range of impacts that refer to chronic through to acute effects and should be used during the survey and not at the end.

Table 9 Odour impact summary table

Perceived odour strength	Intensity level rating	Description
Extremely strong	6	In normal circumstances, this should be very rare in a field situation. For an offensive type of odour, the reaction would be to mitigate against further exposure. This remains the dominant thought and motivation until the exposure level is reduced. The odour cannot be tolerated.
Very strong	5	The odour character is clearly recognisable. For an offensive type of odour, exposure to this level is considered unpleasant/undesirable to the point that action to mitigate against further exposure is considered or taken.
Strong	4	The odour character is clearly recognisable. For an offensive type of odour, exposure to this level would be considered unpleasant/undesirable.
Distinct	3	The odour character is clearly recognisable. Note that this must still apply even if in a different context or situation – for example, not knowing or expecting what type of odour may be present. The odour is tolerable – even for an offensive odour.
Weak	2	The assessor is reasonably sure that odour is present but not 100% sure of that the odour character represents odour from the source, assuming no prior knowledge of the source.
Very Weak	1	The odour character is not recognisable. There is probably some doubt whether the odour is actually present (i.e. it simply doesn't smell like 'fresh air'). A useful strategy where the odour is borderline between 'not perceptible' and 'very weak' is to alternate such observations between 0 and 1.
No odour	0	No odour.

9.3 Empirical odour surveys

Empirical measurements of odour emanating from the various activities on the RDF site will allow management to more fully understand the relative strengths of each odour source and enable staff to undertake directed mitigation measures to address the sources of odour.

Odour emission rates should be measured using dynamic dilution olfactometry carried out in accordance with the joint Australian/New Zealand standard AS/NZS 4323.3:2001 *Stationary Source Emissions – Determination of Odour Concentration by Dynamic Olfactometry*.

Previous odour monitoring has been undertaken in 2011 and results of that monitoring are provided in Appendix C.

9.4 Meteorological station

In order to undertake odour surveys in the logical order of upwind first and downwind last, the use of a meteorological station is advised. Site specific meteorological data is more relevant than data captured online at a station such as the EPA air quality monitoring station located at Point Cook. The RDF may wish to invest in an on-site meteorological station.

0 400 800 1200

Metres (at A4)

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid Of Australia, Zone 55

N
W E
S

LEGEND

🟦	Site Boundary
●	Odour Survey Location

wyndhamcity
city.coast.country

GHD
CLIENTS | PEOPLE | PERFORMANCE

Wyndham City Council
Municipal Refuse Disposal Facility

Job Number	31/32511
Revision	A
Date	22/06/15

Odour Survey Locations

Figure 21

G:\31\32511\GIS\Maps\Working

8/180 Lonsdale St Melbourne VIC 3000 Australia **T** 61 3 8687 8000 **F** 61 3 8687 8111 **E** melmail@ghd.com.au **W** www.ghd.com.au

Imagery: Nearmaps, Extracted by Wyndham City Council 2011. Created by: Craig McVie

10. Incident response procedure

The objective of the incident response procedure is to provide a response to community concerns that relate to odour issues. The incident response procedure will be the responsibility of the RDF Manager. The RDF Manager will investigate all incidents, apply corrective and preventative measures document and record the outcomes.

10.1 Incident/complaint

An incident/complaint handling and response procedure will be established as a part of the RDF's Hazard and Incident and Reporting System (HIR). This system provides the means of reporting and recording incidents, assessing the incident including a risk assessment and identifying preventative/corrective actions for all incidents.

In the event that an incident/complaint occurs, an incident/complaint report form should be completed and relevant information entered in the RDF database. The RDF Manager will contact the complainant and discuss the corrective action(s). Details recorded will include; complainant name, time and date of complaint, nature of the complaint/incident and any actions/response undertaken, refer to Appendix A.

10.2 Incident assessment

An incident assessment will include; assessing the likely causes of the event using information regarding prevailing climatic conditions, the nature of landfilling activities taking place and the undertaking of an odour monitoring survey. In the event that a complainant considers that odour from the RDF operation is impacting on their amenity, an odour investigation will be undertaken by trained RDF or council staff as soon as practicable and the complaint register and odour survey forms in Appendix A and Appendix B will be completed.

10.3 Additional actions

After an incident or odour complaint, an assessment of any additional odour mitigation and/or management measures will be considered. Additional odour surveys may be required to clearly identify sources of odour. Once additional measures have been implemented, further odour surveys will be required to assess their effectiveness.

11. Community consultation

Community consultation is a key part of maintaining the relationship between the RDF and surrounding community. Consultation with key stakeholders should occur on a regular basis.

The RDF has already undertaken a number of initiatives with respect stakeholder consultation, such as:

RDF Advisory Committee – Consultation with this committee, consisting of three Councillors (representing the community) and five Council officers, occurs on a regular basis. The reports from these meetings are presented to the Council at regular Council Meetings and so are available via the Council website as part of the Council Meeting Reports.

Public Exhibitions - Special advertised public consultation events have been held to discuss proposed expansions of the RDF.

Community Information Sessions - Public information sessions have been held to discuss Works Approval matters and provide an opportunity for the public to raise any questions prior to lodgement.

Community Reference Group – A Community Reference Group (CRG) has been established and has met on a number of occasions. The group has an independent chairperson and consists of two City of Wyndham Councillors, three Council staff, a representative of the Metropolitan Waste Management Group (MWMG) and seven community representatives. The CRG has been established as a forum for providing advice and the exchange of information in relation to waste management and resource recovery generally, including the RDF.

Key Stakeholder consultation – Management of Holcim (Australia) Pty Ltd, the adjacent quarry operators Veolia, the green waste composting operator and LMS, the biogas power generation facility operator meet as required.

Adhoc meetings have occurred with interested residents to explain any proposed changes at the RDF site and for them to raise any concerns.

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Appendices

Appendix A – Odour complaint log sheet

Example Odour Complaint Log Sheet, (Environmental Protection Agency Office of Environmental Enforcement (OEE))

Odour Log Record Sheet

Name: ________________________________

Address: ____

Address of Suspected Odour Source: ____

Date	Start Time	Finish Time	Description of Odour (e.g. smelled like Bakery, Coffee, Paint, Mothballs, Wet Dog etc)	Other Comments (e.g. Intensity, or if odour detected at location other than your above address)

Declaration of True Record

I (Name) ______________________ confirm that the above list is a true record of events recorded

From (Date) ___________ to (Date) ___________.

Signature:__________________________________ Date:___________________

Appendix B – Odour survey form

Odour Investigation Form Showing FIDOL Factors and Odour Character Descriptors

Odour Survey Form

File: ________________ **Date:** _________/____________/_____________ **Staff:** ___________________________ **Signed:** _____________________

L Location	Time 24 Hour	F Frequency How often?	I Level 0-6 Table 4.2	D Total Sum of "F"	O Offensiveness Table 4.4	Character: Description of Odour (001-040)	Wind Direction & Speed m/s:	Comments and Alleged Source:
	From: To:							
	From: To:							
	From: To:							
	From: To:							
	From: To:							

FIDOL Factors

FIDOL Factor	Description
F - Frequency	How often the odour is noticed i.e. once for 20 seconds then went away for 30 seconds, or it was a constant odour for two minutes.
I - Intensity	The strength of the odour (refer to the German VDI odour intensity scale – Table 4.2).
D - Duration	The length or total sum of an odour event at a particular site i.e. there were two 20 second wafts in the three minutes at one location, therefore the duration was 40 seconds.
O - Offensiveness	This determines how adverse the odour is. The odour may be pleasant, neutral or unpleasant but still be offensive (refer to Table 4.4 as an example of rating adverse effects – if the odour is not offensive, then the value is 0).
L – Location	The location is the place where the observations are recorded. Location needs to include the type of land use/activities in the vicinity i.e. residential/industrial etc.
Odour Character Descriptors	**001** Fragrant, **002** Perfumy, **003** Sweet, **004** Fruity, **005** Bakery (fresh bread), **006** Coffee-like, **007** Spicy, **008** Meaty (cooked, good), **009** Sea/marine **010** Herbal, green, cut grass, **011** Bark-like, birch bark, **012** Woody, resinous, **013** Medicinal, **014** Burnt, smoky, **015** Soapy, **016** Garlic, onion, **017** Cooked vegetables, **018** Chemical, **019** Etherish, anaesthetic, **020** Sour, acrid, vinegar, **021** Like blood, raw meat, **022** Rubbish, **023** Compost **024** Silage, **025** Sickening, **026** Musty, earthy, mouldy, **027** Sharp, pungent, acid, **028** Metallic, **029** Tar-like, **030** Oily, fatty, **031** like gasoline, solvent **032** Fishy, **033** Putrid, foul, decayed, **034** Paint-like, **035** rancid, **036** Sulphidic, **037** Dead animal, **038** Faecal (like-manure), **039** Sewer odour, **040** Describe the odour yourself

Table 4.2 German VDI 3882 Odour Intensity Scale

Odour Intensity	Intensity Level
Extremely strong	6
Very strong	5
Strong	4
Distinct	3
Weak	2
Very Weak	1
Not perceptible	0

Table 4.4 An Example of Scale for Rating Adverse Effects

Perceived odour strength	Intensity level rating	Description
Extremely strong	6	In normal circumstances, this should be very rare in a field situation. For an offensive type of odour, the reaction would be to mitigate against further exposure. This remains the dominant thought and motivation until the exposure level is reduced. The odour cannot be tolerated.
Very strong	5	The odour character is clearly recognisable. For an offensive type of odour, exposure to this level is considered unpleasant/undesirable to the point that action to mitigate against further exposure is considered or taken.
Strong	4	The odour character is clearly recognisable. For an offensive type of odour, exposure to this level would be considered unpleasant/undesirable.
Distinct	3	The odour character is clearly recognisable. Note that this must still apply even if in a different context or situation – for example, not knowing or expecting what type of odour may be present. The odour is tolerable – even for an offensive odour.
Weak	2	The assessor is reasonably sure that odour is present but not 100% sure of that the odour character represents odour from the source, assuming no prior knowledge of the source.
Very Weak	1	The odour character is not recognisable. There is probably some doubt whether the odour is actually present (i.e. it simply doesn't smell like 'fresh air'). A useful strategy where the odour is borderline between 'not perceptible' and 'very weak' is to alternate such observations between 0 and 1.
No odour	0	No odour

Appendix C – Odour monitoring 2011

Odour Monitoring undertaken by ETC June and July 2011

emissiontestingconsultants

MELBOURNE
Unit 2, 160 New Street,
Ringwood, VIC 3134
Phone +61 3 9870 2644
Freecall 1300 782 007
Fax +61 3 9870 4055

PERTH
Unit 3, 4 Monash Gate,
Jandakot, WA 6164
Phone +61 8 9417 9133
Freecall 1300 782 007

www.emission.com.au
ABN 74 474 273 172

Date: 21 July 2011

Report No: 110197r

Page: 1 of 13

GHD Services Pty Ltd
Level 8, 180 Lonsdale Street
Melbourne VIC 3000

Emission Testing – June and July 2011
Wyndham City Council Landfill

Dear Mr Tim Pollock,

Tests were performed on 28 June and 15 July 2011 to determine odour emissions to air from the tipping face and the leachate pond at the Wyndham City Council Landfill, Werribee.

Yours faithfully
Emission Testing Consultants

Harry Braun BSc
Operations Manager

hb@emission.com.au

TEST PROTOCOL

Tipping Face

Four separate testing periods were done over two separate test days. Midday and afternoon tests were performed on 28 June 2011. Early morning and morning tests were performed on the 15 July 2011.

Tipping face on 28 June 2011 was located at approximately position L6 on active cell 4A as shown on Plan of Premises on page 9.

Tipping face on 15 July 2011 was about halfway between S10 and L5 on cell 1B as shown on Plan of Premises on page 9.

The two test days were chosen by GHD because of the predicted light wind conditions.

Tipping face sampling was performed by sampling at four locations downwind and parallel to the lee edge of the tipping face. The four locations were evenly spaced at a measured distance across the length of the tipping face. The locations were also chosen so as not to interfere with the tipping operations.

A smoke tube was used to determine the direction and course of the wind to assist in the set-up of the sampling positions.

The four sampling positions were spatially recorded from co-ordinates depicted on an i-Phone.

Sampling was done at a height 1.5 metres above ground level by fitting PTFE lines to star pickets driven into the ground.

Sampling at the four locations was done simultaneously. At the same time an upwind sample was collected at a location on the windward side of the tipping face directly opposite the downwind samples.

Wind speed and temperature were recorded at the time of the sampling using a hand held anemometer and a thermocouple.

Smoke tube plume characteristics were also noted at the time of sampling.

A portable weather station was also set up on the clean fill depot hill at the top of Cell 1A, logging at 5 minute averages throughout the duration of all the testing periods. Refer to Plan of Premises on Page 9 for site location.

Leachate Pond

The leachate pond system at Wyndham landfill consisted of two ponds side by side. One was full and not in current use. The other was being used to collect leachate discharged from a single tanker pumping leachate in batches from a well immediately behind the tipping face throughout the day.

A singleton odour flux sample was collected off the bank at the tipping point and another singleton sample was collected off the bank at the end opposite the tipping point.

It could be assumed that the leachate pond not in use would have an average odour flux rate no more than that of the sample collected at the end opposite the tipping point.

Each pond, although of different shapes was found to have a similar surface area of approximately 2500 square metres.

RESULTS

Tipping Face – Midday Test

28 June 2011

Size of tipping face	30 metres x 50 metres
Length of lee edge of tipping face	30 metres
Sampling distance from lee edge of tipping face	20 metres
Spacing between the 4 downwind samples	10 metres
Sampling height above ground	1.5 metres
Wind speed during sampling at test location	0.02-1.5 m/sec (0.65 m/sec average)
Wind direction during sampling at test location	E - SE
Ambient temperature at test location	12.1°C
Smoke tube plume observation	Steady horizontal with minimal spread in any plane

Sample No	Sampling time (hours)	Odour concentration, ou	Sample location
56	1146-1154	87	37°56’10’’S, 144°35’35’’E
55	1146-1154	91	37°56’10’’S, 144°35’35’’E
141	1146-1154	73	37°56’11’’S, 144°35’35’’E
168	1146-1154	82	37°56’11’’S, 144°35’36’’E
19 (upwind)	1146-1154	< 30*	Not recorded

* Actual upwind concentration from odour data sheet was < 17 odour units. This result is not NATA accredited.

Tipping Face – Afternoon Test

28 June 2011

Size of tipping face	50 metres x 50 metres
Length of lee edge of tipping face	50 metres
Sampling distance from lee edge of tipping face	20 metres
Spacing between the 4 downwind samples	10 metres
Sampling height above ground	1.5 metres
Wind speed during sampling at test location	0.8-3.2 m/sec (2.2 m/sec average)
Wind direction during sampling at test location	SE
Ambient temperature at test location	12.5°C
Smoke tube plume observation	Horizontal with discernable plume rise and spread in both horizontal and vertical plane

Sample No	Sampling time,hours	Odour concentration, ou	Sample location
164	1445-1453	102	37°56’10’’S, 144°35’36’’E
115	1445-1453	78	37°56’10’’S, 144°35’36’’E
120	1445-1453	82	37°56’10’’S, 144°35’35’’E
64	1445-1453	66	37°56’11’’S, 144°35’35’’E
60 (upwind)	1445-1453	< 30*	Not recorded

* Actual upwind concentration from odour data sheet was < 21 odour units. This result is not NATA accredited.

Tipping Face – Early Morning Test

15 July 2011

Size of tipping face	Active 50 metres x 50 metres (100 x 80 partially covered – previous tipping only centrally covered)
Length of lee edge of tipping face	50 metres
Sampling distance from lee edge of tipping face	25 metres
Spacing between the 4 downwind samples	7 metres
Sampling height above ground	1.5 metres
Wind speed during sampling at test location	0.5-2.4 m/sec (1.3 m/sec average)
Wind direction during sampling at test location	W
Ambient temperature at test location	7.8°C
Smoke tube plume observation	Horizontal with little plume rise or spread but with intermittent sudden break-up

Sample No	Sampling time,hours	Odour concentration, ou	Sample location
52	0520-0529	113	37°56'8''S, 144°35'35''E
82	0520-0529	173	37°56'8''S, 144°35'35''E
60	0520-0529	148	37°56'8''S, 144°35'35''E
120	0520-0529	197	37°56'9''S, 144°35'35''E
74 (upwind)	0520-0529	< 30*	37°56'14''S, 144°35'33''E

* Actual upwind concentration from odour data sheet was < 10 odour units. This result is not NATA accredited.

Tipping Face – Morning Test

15 July 2011

Size of tipping face	Active 50 metres x 50 metres (100 x 80 partially covered – previous tipping only centrally covered)
Length of lee edge of tipping face	50 metres
Sampling distance from lee edge of tipping face	15 metres
Spacing between the 4 downwind samples	7 metres
Sampling height above ground	1.5 metres
Wind speed during sampling at test location	0.3-1.2 m/sec (0.65 m/sec average)
Wind direction during sampling at test location	NW
Ambient temperature at test location	6.4°C
Smoke tube plume observation	Horizontal with little plume rise or spread

Sample No	Sampling time,hours	Odour concentration, ou	Sample location
115	0816-0825	197	37°56’10’’S, 144°35’35’’E
92	0816-0825	173	37°56’10’’S, 144°35’35’’E
46	0816-0825	130	37°56’11’’S, 144°35’35’’E
78	0816-0825	129	37°5611’’S, 144°35’35’’E
26 (upwind)	0816-0825	42	Not recorded

Active Leachate Pond – Tipping Point

28 June 2011

110197 1

Location	**Leachate Pond - tipping end**
GPS co-ordinates	37°56'5"S, 144°35'14"E
Date tested	28-06-11
Location Description	Off bank
Surface Description	Dark grey
Sampling Method	Isolation flux
Equilibration time, hrs	1226 - 1255
Sample ID	133
Dilution ratio	1
Sampling time, hrs	1255 - 1303
odour concentration, ou	**66**
odour flux rate, ou/m²/min	**2.3**
Source area, m^2	**2500**
odour mass rate, ou/min	**5800**
Surface temperature (°C)	14
Chamber temperature (°C)	16
Ambient temperature (°C)	14

Active Leachate Pond – Opposite Tipping Point

28 June 2011

110197 2 **Location**	**Leachate pond - opposite tipping end**
GPS co-ordinates	37°56'4"S, 144°35'12"E
Date tested	28-06-11
Location Description	Off bank
Surface Description	Dark brown (Tannin colour)
Sampling Method	Isolation flux
Equilibration time, hrs	1314 - 1330
Sample ID	92
Dilution ratio	1
Sampling time, hrs	1330 - 1338
odour concentration, ou	**56**
odour flux rate, ou/m²/min	**2.1**
Source area, m^2	**2500**
odour mass rate, ou/min	**5300**
Surface temperature (°C)	15
Chamber temperature (°C)	16
Ambient temperature (°C)	14

PLAN OF PREMISES

ODOUR SAMPLING AND ANALYSIS PARAMETERS

Day 1

Technique: 110197		**AS4323.3 - Forced Choice**	
Date and time of analysis:		29-06-11 , 1000-1200	
Sample pre-dilution:	19	Nil	
	56	Nil	
	55	Nil	
	141	Nil	
	168	Nil	
	60	Nil	
	164	Nil	
	115	Nil	
	120	Nil	
	64	Nil	
	133	Nil	
	92	Nil	
Quality Requirements		**Acceptance criteria**	**Current value**
n-Butanol threshold value (ppb)		20-80	34
Repeatability “r”		≤0.477	0.256
Repeatability “10r”		≤3.00	1.80
Accuracy “A”		<0.217	0.181

Day 2

Technique: 110197		**AS4323.3 - Forced Choice**	
Date and time of analysis:		15-07-11 , 1500-1700	
Sample pre-dilution:	74	Nil	
	26	Nil	
	82	Nil	
	52	Nil	
	120	Nil	
	60	Nil	
	115	Nil	
	92	Nil	
	46	Nil	
	78	Nil	
Quality Requirements		**Acceptance criteria**	**Current value**
n-Butanol threshold value (ppb)		20-80	45
Repeatability “r”		≤0.477	0.293
Repeatability “10r”		≤3.00	1.96
Accuracy “A”		<0.217	0.168

RECORDED WEATHER DATA

Day 1 -28/06/2011

Date	Humidity %	Temperature °C	Absolute pressure Hpa	Av Wind speed m/sec	Gust m/sec	Direction
28-06-11 10:59	72	14.3	1032.5	0.3	1	SWW
28-06-11 11:04	71	13.7	1032.5	0.7	1	NE
28-06-11 11:09	73	13.3	1032.5	0	0.7	N
28-06-11 11:14	76	12.9	1032.5	0.7	1.4	S
28-06-11 11:19	81	12.4	1032.3	0.7	1.4	SSE
28-06-11 11:24	83	12.2	1032.3	1	1.7	S
28-06-11 11:29	83	12.3	1032.3	1	1.7	SE
28-06-11 11:34	81	12.3	1032.1	0	1	NE
28-06-11 11:39	80	12.4	1031.9	0.3	2	E
28-06-11 11:44	80	12.4	1031.9	0.7	2	SE
28-06-11 11:49	83	12.2	1031.9	0.3	1.7	E
28-06-11 11:54	84	12	1031.8	1	1.7	SE
28-06-11 11:59	84	12.1	1031.9	0.7	1.7	E
28-06-11 12:04	82	13.2	1031.8	2	3.1	SE
28-06-11 12:09	82	12.7	1031.8	1.7	2.7	S
28-06-11 12:14	83	12.5	1031.6	0.3	1	S
28-06-11 12:19	81	12.8	1031.6	1	1.7	E
28-06-11 12:24	80	13.4	1031.4	0.3	1	SE
28-06-11 12:29	76	14.2	1031.2	0.3	2	S
28-06-11 12:34	77	13.5	1031	1	1.7	SW
28-06-11 12:39	79	13.4	1031.2	1.4	2	S
28-06-11 12:44	79	12.8	1031.3	0.7	1.4	SE
28-06-11 12:49	80	12.6	1031.3	0.7	1.4	SSW
28-06-11 12:54	80	13	1031.1	0.7	1.7	SE
28-06-11 12:59	79	13.3	1031.1	1.4	2.4	SE
28-06-11 13:04	78	13.3	1031	0.7	1	S
28-06-11 13:09	78	13.7	1031	1	1.7	E
28-06-11 13:14	75	14	1030.6	2	2.7	SE
28-06-11 13:19	75	14.2	1030.4	0.7	1.7	SSE
28-06-11 13:24	74	14.2	1030.3	1	1.4	SE
28-06-11 13:29	73	14.4	1030.4	1.4	2	SSE
28-06-11 13:34	75	14.6	1030.2	1	1.7	SE
28-06-11 13:39	74	14.3	1030.3	1.4	2	SSE
28-06-11 13:44	77	14.2	1030.1	2.7	3.7	S
28-06-11 13:49	79	13.6	1030.2	2	3.1	S
28-06-11 13:54	79	13.9	1030.3	2	3.1	S
28-06-11 13:59	79	13.8	1030.1	2.4	3.4	S
28-06-11 14:04	79	13.7	1030.2	2.4	3.4	S
28-06-11 14:09	78	13.8	1030.1	2.4	3.4	S
28-06-11 14:14	79	13.8	1030	2.7	3.1	S
28-06-11 14:19	80	13.4	1029.9	2.7	3.7	SSE
28-06-11 14:24	81	13.4	1030.1	2.7	3.7	S
28-06-11 14:29	80	13.2	1030.1	2.7	3.4	SE
28-06-11 14:34	81	13	1030.2	2.4	3.4	S
28-06-11 14:39	81	12.6	1030.2	2	3.1	SE
28-06-11 14:44	82	12.6	1030.2	2.7	3.4	SE
28-06-11 14:49	82	12.4	1030.3	2.4	3.4	SSE
28-06-11 14:54	83	12.3	1030.3	2.4	3.1	SE
28-06-11 14:59	82	12.3	1030.3	2.4	3.1	S
28-06-11 15:04	82	12.3	1030.3	2.4	3.4	S
28-06-11 15:09	83	12.5	1030.4	2	3.1	S

Weather data measured at the top of Cell 1A approximately 250 metres SE of the tipping face

Day 2 -15/07/2011

Date	Humidity %	**Temperature °C**	Absolute pressure Hpa	Wind speed m/sec	Gust m/sec	Direction
15-07-11 5:01	74	9.8	1030.5	1.4	1.7	W
15-07-11 5:06	82	8.4	1030.7	1	1.7	W
15-07-11 5:11	86	7.8	1030.6	1.7	2.4	W
15-07-11 5:16	87	7.5	1030.6	1.4	2	W
15-07-11 5:21	88	7.3	1030.5	1.4	2	W
15-07-11 5:26	88	7.1	1030.5	1.4	1.7	W
15-07-11 5:31	89	7	1030.5	1.4	2	W
15-07-11 5:36	90	7	1030.5	1.4	1.7	W
15-07-11 5:41	89	6.9	1030.5	1.4	2	W
15-07-11 5:46	89	6.8	1030.6	1.4	2	NW
15-07-11 5:51	90	6.6	1030.6	0.7	1	NW
15-07-11 5:56	90	6.6	1030.6	0.7	1	NW
15-07-11 6:01	90	6.6	1030.6	0.3	0.7	NW
15-07-11 6:06	89	6.5	1030.7	0	0.3	NW
15-07-11 6:11	89	6.4	1030.8	0	0.3	NW
15-07-11 6:16	89	6.4	1030.8	0.7	1.4	N
15-07-11 6:21	88	6	1031	0.7	1	NE
15-07-11 6:26	89	5.6	1030.9	1	1.4	N
15-07-11 6:31	90	5.5	1031.1	0.7	1.4	N
15-07-11 6:36	91	5.5	1031.1	0.7	1.4	N
15-07-11 6:41	91	5.5	1031.1	0.3	0.7	N
15-07-11 6:46	91	5.4	1031.1	0.3	0.7	N
15-07-11 6:51	91	5.3	1031.3	0.3	0.7	N
15-07-11 6:56	91	5.3	1031.3	0.3	0.7	N
15-07-11 7:01	92	5.3	1031.1	0.3	0.7	NW
15-07-11 7:06	92	5.5	1031.2	0.3	0.7	NW
15-07-11 7:11	91	5.5	1031.4	0.7	1	NE
15-07-11 7:16	91	5.5	1031.6	0	0.3	N
15-07-11 7:21	92	5.5	1031.6	0	0.7	N
15-07-11 7:26	92	5.5	1031.7	0	0.3	N
15-07-11 7:31	92	5.5	1031.7	0.7	1	NE
15-07-11 7:36	91	5.3	1031.7	0.3	0.7	NE
15-07-11 7:41	92	5.2	1031.6	0	0.3	NE
15-07-11 7:46	92	5.2	1031.8	0.3	0.7	NE
15-07-11 7:51	92	5.4	1031.7	0	0	NE
15-07-11 7:56	92	5.5	1031.6	0	0.3	NE
15-07-11 8:01	92	5.6	1031.6	0.3	0.7	N
15-07-11 8:06	92	5.5	1031.7	0.7	1	NE
15-07-11 8:11	92	5.4	1031.8	0.3	0.7	N
15-07-11 8:16	92	5.7	1031.8	0.7	1	N
15-07-11 8:21	91	6	1031.9	0.7	1	N
15-07-11 8:26	90	6.1	1031.8	0.7	1	N
15-07-11 8:31	90	6.2	1031.9	0.7	1	N
15-07-11 8:36	90	6.4	1032	0.3	1	N
15-07-11 8:41	90	6.8	1032.2	0.7	1	N
15-07-11 8:46	90	7	1032.1	0.3	0.7	N
15-07-11 8:51	90	7.5	1032.2	0.3	0.7	NW

Weather data measured at the top of Cell 1A approximately 350 metres SE of the tipping face.

TEST METHODS

The following methods are accredited with the National Association of Testing Authorities (NATA) and are approved for the sampling and analysis of gases. Specific details of the methods are available on request.

All sampling and analysis conducted in accordance with EPA Victoria approved methods and EPA Victoria publication 440.1.

Parameter	Sampling Method	NATA	Analytical Laboratory	Analytical Method	NATA
Odour	AS4323.3	Yes	Emission Testing Consultants	AS4323.3	Yes
Odour isolation flux sampling	ETC 130	Yes	Emission Testing Consultants	AS4323.3	Yes

DEFINITIONS

The following symbols and abbreviations are used in this test report:

<	Less than the minimum limit of detection using the specified method.
~	Approximately
NA	Not applicable

Appendix D – Sample survey questionnaire

Telephone questionnaire for environmental survey – Source: (Ministry for the Environment, 2001)

Telephone questionnaire for environmental survey

Please note that for most of the questions you only enter the codes.

Introduction

READ “Good evening, my name is <name> from <company>, an independent environmental research company. We are currently carrying out research looking at environmental issues in your local community. Could I please speak to a person in your household who is over 18 years old, and whose birthday it is next?”

Once contact is established reintroduce self if necessary and READ:

“The survey only takes five minutes to complete and all your responses will remain totally confidential. Would now be a convenient time, or may I call back later?”

If yes, continue.

If no, make time to call back, and note on summary sheet.

If refused, thank and close, and note on summary sheet.

If asked who the survey is for, READ:

“We need to keep the research as objective as possible, so I can’t tell you that straight away. However, I promise that I will tell you at the end of the questionnaire.”

If refused, thank and close, and note on summary sheet.

If agree, continue (note on summary sheet). READ:

1a “What do you consider to be the main environmental issues facing your local community at present, if any? By environmental issues I mean things that affect the physical environment like water quality and pollution.” **Do not read list. Code all mentions.**

- Air pollution
- Noise
- Water pollution
- Drinking-water quality
- Sprays/pesticides/herbicides, etc.
- Motor vehicle emissions
- Other (specify)
- Don’t know **Go to Q2**
- None **Go to Q2**

1b “Of the issues you have mentioned, which do you feel is the most important to your community?” **Do not read list. Code one only. Note responses in priority order.**

- Air pollution (general)
- Air pollution from industry
- Noise (general)
- Noise from industry
- Water pollution (general)
- Water pollution from industry

- Drinking-water quality
- Sprays/pesticides/herbicides, etc.
- Motor vehicle emissions
- Other (specify)

2a “During spring, do you suffer any effects from plant pollen such as hayfever or allergies?”

- Yes **Continue**
- No **Go to Q3**
- Refused **Go to Q3**

2b “How much of a problem is this for you?” **READ OUT all three and rotate order in which they are read out.**

- Not very serious
- Somewhat serious
- Very serious

2c “Does this problem require you to take any forms of medication?”

- Yes
- No
- Sometimes

3a “How often do you notice noise from any local industries?” **READ and rotate order.**

- All the time **Continue**
- Often
- Sometimes
- Seldom
- Never **Go to Q4**

3b “To what degree does this noise annoy you? You might want to write this scale down. Do you find this noise ...” **READ scale and rotate order.**

- Definitely not annoying
- Very little annoyance
- Little annoyance
- Some annoyance
- Annoying
- Quite annoying
- Very annoying
- Extremely annoying

3c “What is the most common source of this noise?” **Do not read out.**

- Industry
- Parties
- Traffic
- Other (specify)

4a “How often do you notice an odour or smell from industry in or around your home?” **READ and rotate order.**

- All the time **Continue**
- Often
- Sometimes
- Seldom
- Never **Go to Q5**

4b “To what degree does this odour annoy you? Do you find this odour is ...” **READ scale and rotate order**.

- Definitely not annoying
- Very little annoyance
- Little annoyance
- Some annoyance
- Annoying
- Quite annoying
- Very annoying
- Extremely annoying

4c “What do you think is the most common cause of this odour?” **Do not read out. Add appropriate causes, e.g.**

- Fertiliser factory
- Sewer line
- Traffic
- Asphalt
- Wool scour
- Fish processing
- Other **(Please write it down____)**

4d “Can you describe this odour?” **Do not read out. Add appropriate descriptors, e.g.**

- Do not know
- Chemical/acidic
- Sulphur/rotten eggs
- Fertiliser
- Oily
- Fishy
- Coal fire
- Sewer
- Other **(Please write it down____)**

4e “Can you specify the activity that causes this odour?” **Do not read out. List relevant local industries:**

- Do not know
- Other **(Please write it down____)**

5 “Finally, just a few short questions to finish. What is your occupation?”

- Agriculture/fishery
- Clerical
- Elementary (unskilled)Sales/service
- Home duties
- Legislation, administration, management
- Plant/machine operators
- Professional
- Technical
- Trade
- Retired
- Study
- Unemployed

6 How old are you?

- 18–19
- 20–24
- 25–29
- 30–34
- 35–39
- 40–44
- 45–49
- 50–54
- 55–59
- 60–64
- 65–69
- 70–74
- 75–79
- 80–84
- 85+

7 “Do you live on the <east> side of <relevant road or local landmark> or on the <west> side of <relevant road or local landmark>.” **Please write response.**

If respondent refuses, assure them that their personal details will not be divulged.

8 Code gender:

- Male
- Female

“Thank you for your time. This research has been conducted on behalf of <client>. If you have any queries you can contact <contact>, collect on <phone>. My name is <name>.

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Document Status

Rev No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
DRAFT						26/06/15
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Appendix I – Acoustic Management Plan

Wyndham City Council

Municipal Refuse Disposal Facility
Acoustic Management Plan

August 2015

Table of contents

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Figure index

Appendices

Plan amendments

Reviews of this Acoustic Management Plan should be carried out on an annual basis. A record of change should be documented in the following table. If significant changes or incidents occur at site, this plan should be reviewed and updated.

Revision Date:	Sections Revised:	Pages Revised:	Revised By:	Authorised By:
June 2015	New document		Prepared by GHD	

Document Approval

RDF Manager ....

Date ..../............../..............

Glossary of terms

Term	Description
AWS	Automatic Weather Station.
dB	Unit of measurement for Sound Pressure Level known as a decibel, which is 10 times the logarithm (base 10) of the ratio of a given sound pressure to a reference pressure; used as a unit of sound.
dB(A)	'A-weighted' decibel measurement. Developed in the 1930's as a way to represent the sound frequency sensitivity of the human ear.
GDA94	The Geocentric Datum of Australia is a system of latitudes and longitudes, or east and north coordinates used to track locations.
L_{Aeq} (period)	Equivalent sound pressure level: the steady sound level that, over a specified period of time, would produce the same energy equivalence as the fluctuating sound level actually occurring.
L_{A1} (period)	The sound pressure level that is exceeded for 1% of the measurement period.
L_{A10} (period)	The sound pressure level that is exceeded for 10% of the measurement period.
L_{A90} (period)	The sound pressure level that is exceeded for 90% of the measurement period.
L_{Amax}	The maximum sound level recorded during the measurement period.
L_{Amin}	The minimum sound level recorded during the measurement period.
Lin	LIN or linear is a device or circuit with a linear characteristic, meaning that a signal passing through it is not distorted and/or it excludes a filter.
Lw	A logarithmic measure of the sound power of a noise emitting object as a relation to the threshold of hearing. The Sound Power Level can be abbreviated as PWL or L_w, see below for more detail.
Mitigation	Reduction in severity.
NA	Not applicable.
RDF	City of Wyndham Refuse Disposal Facility (RDF).
Receiver	A noise modelling term used to describe a map reference point where noise is predicted. A sensitive receiver would be a home, work place, church, school or other place where people spend time at which noise from the development can be heard.
SEPP	State environmental protection policy.

Term	Description
Sound Pressure Level (SPL)	The Sound Pressure Level (SPL) is the change in air pressure above and below the average atmospheric pressure (amplitude) cause by a passing pressure wave; this is then converted to decibels and can be abbreviated as SPL or L_p. The SPL can be calculated as: $SPL\ or\ Lp = 10\ Log_{10}\left({}^{P^2}\!/_{P_0^2}\right)\ \ [dB]$ or more simply $SPL\ or\ Lp = 20\ Log_{10}\ P + 94\ \ [dB]$ Where: SPL or L_p = Sound Pressure Level P = Root-mean-square (rms) sound pressure (Pascals or Pa) P_0 = International reference pressure 20 micropascals.
Sound Power Level (PWL)	The Sound Power Level (PWL) is defined as the average rate at which sound energy is radiated from a sound source and is measured in watts (W). The Sound Power Level can be abbreviated as PWL or L_w. The PWL can be calculated as: $PWL\ or\ Lw = 10\ Log_{10}\left({}^{W}\!/_{W_0}\right)\ \ [dB]$ or more simply $PWL\ or\ Lw = 10\ Log_{10}(W) + 120\ \ [dB]$ Where: PWL or L_w = Sound Power Level W = acoustic energy of the source given in watts (W) W_0 = International reference sound power of 10^{-12} Watt (W).

1. Introduction

The City of Wyndham Refuse Disposal Facility (RDF) is one of the few commercial landfills in Australia, operated by a local government. A number of Councils have landfills but for the most part, these are for the exclusive use of the Council and/or its ratepayers. Around 90% of the refuse deposited at the RDF comes from other municipalities or private firms.

The RDF commenced operation in 1975 as a site for the disposal of the then Shire of Werribee refuse. Over time, due to its location and size, the RDF has developed the capacity to accept more waste.

In April 2015, the RDF was granted a planning permit (WYP1221/07.03) through the Victorian Civil and Administrative Tribunal (VCAT). The permit contains a number of conditions including acoustic requirements. Condition 3 limits the height of the RDF to 44 m AHD (approximately 24 m above natural ground level). Three other conditions relate to the development of an acoustic management plan and are the basis for this report.

1.1 Purpose of this report

The purpose of this report is to provide the Wyndham City Council (Council) Municipal Refuse Disposal Facility (RDF) with an Acoustic Management Plan (AMP) to enable staff to understand and manage potential noise impacts from the RDF.

The AMP will also enable the RFD to demonstrate compliance with condition 8 of the RDF's Planning Permit NO.WYP1221/07.03 as follows:

By 1 March 2015, the permit holder must submit an Acoustic Management Plan prepared by a suitably qualified acoustic consultant or firm to the Responsible Authority for approval. The Acoustic Management Plan must detail:

- *all potential noise sources from the land (including those associated with ongoing landfill activities, truck traffic, unloading of waste, and occasions where additional machinery is required on site);*
- *the proposed scheduling of works and activities (including measures to avoid or minimise overlap between different noise generating activities carried out on the land, including but not limited to vehicle movements, cell construction, lining, capping, earthmoving, rehabilitation, shaping, filling, drilling, resource recovery, as well as any quarrying activities);*
- *measures and operational procedures for limiting noise emissions from the land including noise from vehicles and equipment operating on the land; and*
- *how noise emissions will be managed to ensure compliance with Condition 6 of this permit.*

1.2 Scope and limitations

This report: has been prepared by GHD for Wyndham City Council and *may only be used and relied on by Wyndham City Council for the purpose agreed between GHD and the Wyndham City Council as set out in section 1.1 of this report.*

GHD otherwise disclaims responsibility to any person other than Wyndham City Council arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer section 1.3 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Wyndham City Council and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

1.3 Assumptions

The AMP is based on the following assumptions:

- Information provided by the client was truthful, accurate and up to date at the time of reporting
- Information gathered from other sources is accurate and up to date at the time of reporting.

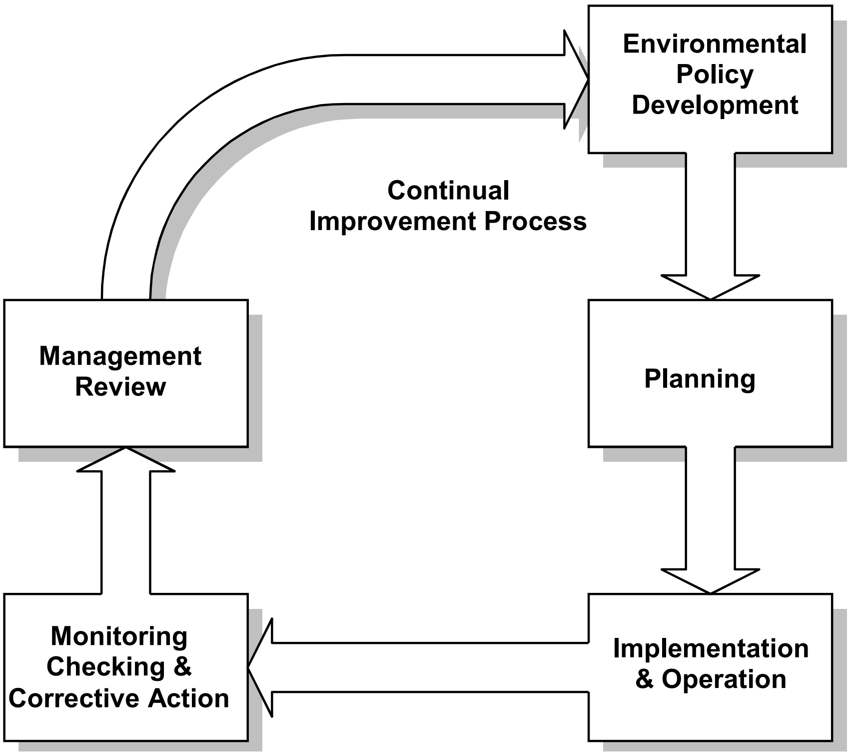
2. Document handling

2.1 AMP amendments

A review of the overall system performance for the RDF in relation to noise management should be undertaken on an annual basis and as a result the AMP should be updated to reflect any changes. This review should address the need for changes to policy and objectives, changing circumstances and a commitment to continual improvement, refer to Figure 1.

Obsolete documents should be removed electronically and from the site to guard against unintended use. Obsolete documents that are retained for legal and/or knowledge preservation purposes should be suitably identified.

Figure 1 Continual improvement process



Source: (Wyndham City Council, 2014)

2.2 Copies of the AMP

The AMP is a live document and as such, the online version is the master document. Any printed copies of the master are subordinate and should be electronically stamped using a watermark with “Copy Only” or alternatively physically stamped in red ink.

AMP documentation must be legible, identifiable, traceable, stored and maintained in such a way that they are readily retrievable and protected against damage, deterioration or loss and retained for at least 12 months.

2.3 AMP document location

An electronic version of this Acoustic Management Plan (AMP) and its appendices (in both PDF & MSWord formats) are located on City of Wyndham Refuse Disposal Facility (RDF) Electronic Document Management System (EDMS) document folder reference qA218038.

2.4 Environmental record management

Maintenance and storage of environmental records, including training records, results of audits and reviews in relation to noise and this AMP, are to be legible, identifiable and traceable to the activity involved and stored and maintained in such a way that they are readily retrievable and protected against damage, deterioration or loss. Their retention times shall be established and recorded. Records will be maintained, as appropriate to the system and to Council, to demonstrate conformance to the requirements of this AMP.

3. Emergency contacts

The following section provides a list of the key contact people for the RDF operation.

3.1 Council personnel

A list of relevant Council personnel involved in the day to day operation of the RDF, weigh-bridge, transfer station, system maintenance, spare parts, and management are listed in Table 1.

Table 1 Council personnel

	Name of Person	Role	Day Phone Number	A/H Phone Number	Mobile Number	Email Address
1	Michael Ballock	Manager RDF	03 9742 0870	0437 066 233	0438 066 233	Michael.ballock@wyndham.vic.gov.au
2	Mehrdad Tezengi	Operations Manager	03 9742 0167	0401 712 076	0401 712 076	mehrdad.tezengi@wyndham.vic.gov.au
3	Mick Waterworth	Site Team Leader	0419 558 107	0419 558 107	0419 558 107	-
4	Daryl Johnson	Site Team Leader	0427 513 887	0427 513 887	0427 513 887	-
5						
6						
7						
8						
9						
10						
11						
12						

3.2 Stakeholders

A list of relevant government, emergency services, composting facility, bio-gas power generation facility, quarry operation and other useful stakeholders are listed in Table 2.

Table 2 Stakeholders

	Name of Organisation	Name of Person	Day Phone Number	A/H Phone Number	Mobile Number	Email Address
1	Holcim	Graeme Jones	03 8734 6507	0419 476 077	0419 476 077	graeme.jones@holcim.com
2	LMS Energy	Jason Dockerill	08 8291 9018	0403 518 418	0403 518 418	Jason.dockerill@lms.com.au
3	Veolia	Max Spedding	0400 880 677	0400 880 677	0400 880 677	max.spedding@veolia.com.au
4						
5						
6						
7						
8						
9						
10						
11						
12						

4. Site Description

The following sections describe the operational hours of the RDF, the location of sensitive receivers, accepted waste types, sources of waste, activities undertaken at the RDF and a summary of the local meteorology for the local RDF area.

4.1 Hours of operation

Operating hours of the RDF are from 12 am to 4.30 pm Monday to Friday, although public access to the transfer station is limited to 8 am to 4 pm. The tipping face operates from 6 am to 4 pm on Saturday and 8.30 am to 4.30 pm on Sunday and public access is allowed between 8.30 am and 4 pm on both days.

4.2 Sensitive receivers

The *State environment protection policy (Control of Noise from Commerce, Industry and Trade) No. N-1* ('SEPP N-1') defines a noise sensitive area (sensitive receiver) as the following:

> *'Noise sensitive area means:*
>
> *(a) That part of the land within the apparent boundaries of any piece of land which is within a distance of 10 metres outside external walls of any of the following buildings-*
>
> *Dwelling (except Caretaker's House)*
>
> *Residential Building*
>
> *(b) That part of the land within the apparent boundaries of any piece of land on which is situated any of the following buildings which is within a distance of 10 metres outside the external walls of any dormitory, ward or bedroom of such buildings-*
>
> *Caretaker's House*
>
> *Hospital*
>
> *Hotel*
>
> *Institutional Home*
>
> *Motel*
>
> *Reformative Institution*
>
> *Tourist Establishment*
>
> *Work Release Hostel'* (Victorian Government, 1989)

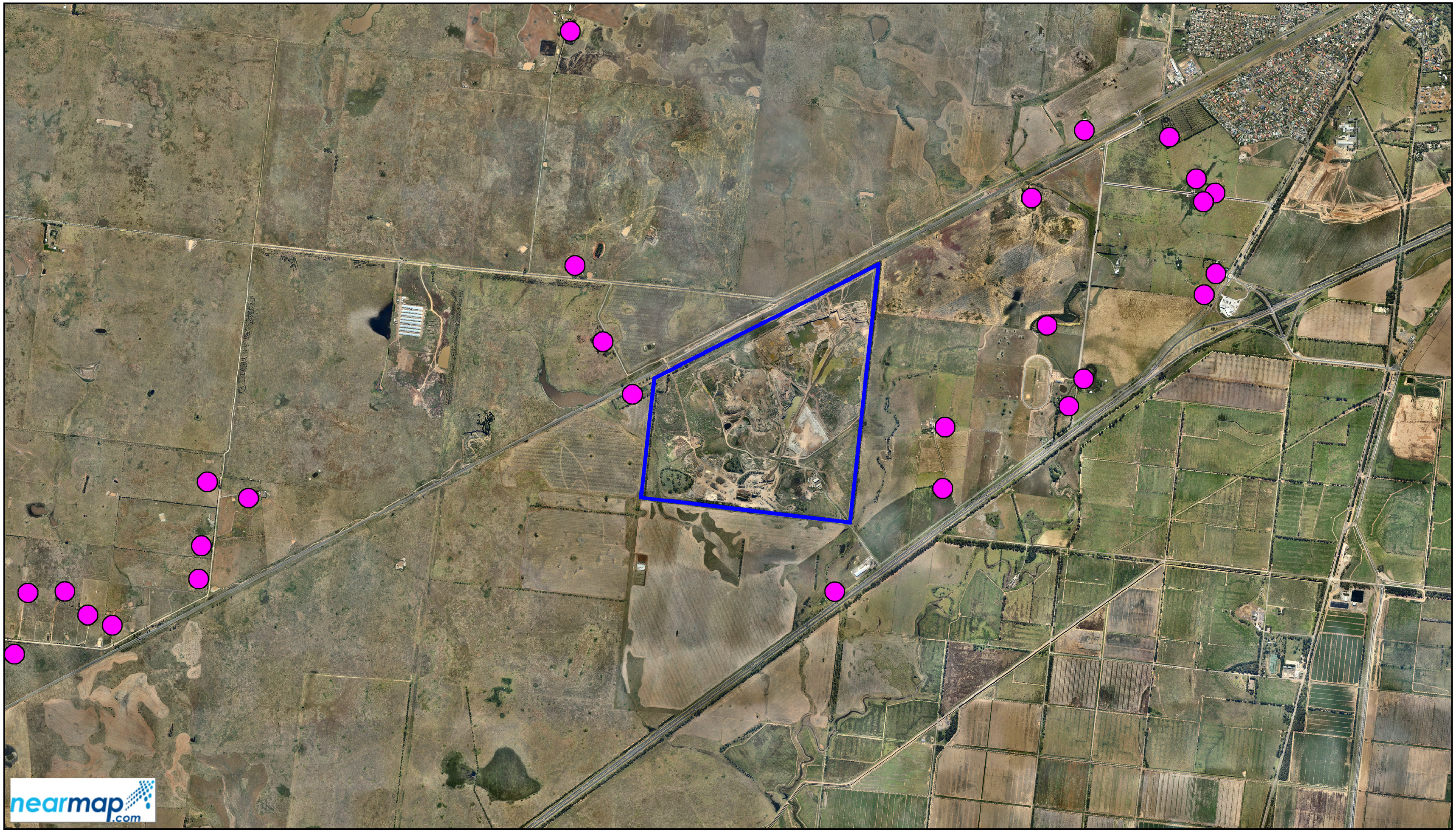
The land surrounding the RDF is predominantly farmland used for grazing; however there are a number of isolated rural residences in the vicinity of the site. The nearest identified residence is approximately 170 m to the west of the site boundary along Galvan Road. The next closest residence is located approximately 560 m to the northwest, with another further northwest of that at approximately 1,100 m. There is one rural residence approximately 540 m to the south of the site and two residences 560 m and 680 m of the eastern site boundary. The residential area of Werribee is located approximately 2.5 km northeast of the site; refer to Table 3 and Figure 2.

The Melbourne-Geelong railway line runs along the northern boundary of the site. Further north is farmland and land owned by Holcim Extractive Industry (Holcim) which is designated for quarrying purposes. Approximately 1.8 km to the west of the site is a relatively large broiler farm consisting of eight sheds.

Table 3 Closest sensitive receivers

Location X: (m)	Location Y: (m)	Distance (m)	Image
287,174.58	5,798,914.81	~170 Northeast	
288,743.24	288,743.24	~540 South	
286,946.28	5,799,320.41	~560 Northwest	

Location X: (m)	Location Y: (m)	Distance (m)	Image
286,730.53	5,799,910.75	~1,100 Northwest	
289,600.39	5,798,657.23	~560 East	
289,583.78	5,798,185.66	~680 East	



0 400 800 1200

Metres (at A4)

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid Of Australia, Zone 55

N
W E
S

LEGEND

🟦	Site Boundary
●	Sensitive Receptor Location

wyndhamcity
city. coast. country

GHD
CLIENTS | PEOPLE | PERFORMANCE

Wyndham City Council
Municipal Refuse Disposal Facility

Job Number	31/32511
Revision	A
Date	22/06/15

Sensitve Receiver Locations

Figure 2

G:\31\32511\GIS\Maps\Working

8/180 Lonsdale St Melbourne VIC 3000 Australia **T** 61 3 8687 8000 **F** 61 3 8687 8111 **E** melmail@ghd.com.au **W** www.ghd.com.au

Imagery: Nearmaps, Extracted by Wyndham City Council 2011. Created by: Craig McVie

4.3 Accepted waste types

The following items can be deposited at the landfill and transfer station.

Landfill

- Putrescible waste
- Solid inert waste
- Shredded pneumatic automotive tyres.

Transfer station

- Paper and cardboard
- Plastic containers
- Glass bottles and jars (clear and coloured – green and brown)
- Aluminium and empty paint tin cans
- Waste motor oil (up to 15 litres only)
- Old car bodies
- Car tyres
- Car batteries
- Green waste
- Steel/metal items
- Gas cylinders
- White goods
- Mattresses.

4.4 Waste sources

The RDF currently receives municipal waste from the following eleven municipalities:

- Boroondara City Council
- Casey City Council (small quantities only)
- City of Greater Geelong
- Hobson Bay City Council
- Maribyrnong City Council (via Citywide)
- Melbourne City Council
- Moonee Valley City Council (via Citywide)
- Moorabool Shire Council
- Port Phillip City Council
- Stonnington City Council
- Wyndham City Council

The RDF also accepts relatively large quantities of commercial and industrial (C&I) waste. The amount of waste presently accepted at the RDF is approximately 450,000 tonnes per annum however this is expected to increase to 600,000 tonnes per annum within five years with the closure of the Corio Landfill.

4.5 Landfill activities

The following sections provide a short summary of activities undertaken within the property boundary at 420 Wests Road, encompassing Lot 1 TP855710, Lot 1 TP319902, Lot 2 TP855710, Lot 2 TP319902, Lot 1 TP138161, Lot 3 TP319902, Lot 1 TP225224, and Lot 4 TP319902.

4.5.1 Active tipping face

The tipping face activities at the RDF have progressively been developed within former quarry areas. Council operates the landfill under Licence 12483 issued by EPA and three planning permits. To date, Cells 1A, 1B, 2A, 2B, 3, and 4A, have been filled and closed, with Cell 4B currently being filled and expected to reach capacity by early 2016. In the long-term, it has been proposed that Cells 5, 6, 7 and 8 will be constructed and filled in succession. Cell 4C is currently under construction. Figure 3 shows a typical active tipping face in action, with waste and top soil trucks traversing to and from the site along with compactors and a bull dozer in operation.

Figure 3 Active tipping face

4.5.2 Leachate pumping activities

Each of the RDF landfill cells has incorporated leachate collection systems, with the exception of Cell 1A. There are currently ten sumps across the site. Leachate is extracted from the sumps as necessary by pumps and transferred to the site's leachate ponds. A typical leachate pumping truck is shown in Figure 4

Figure 4 Leachate pumping

4.5.3 Transfer station and resale shed

The RDF includes a recycling facility and waste transfer station which is open to the public. The transfer station allows small vehicles to deposit waste that would not normally be collected at the kerbside. Larger vehicles, such as garbage trucks, deposit their waste directly onto the tipping face. The transfer station is located on former Cell 1A, along with the weighbridge and a large, roofed push pit where the public deposits waste. After the manual segregation of recyclables by site staff, the remaining waste is deposited at the tipping face.

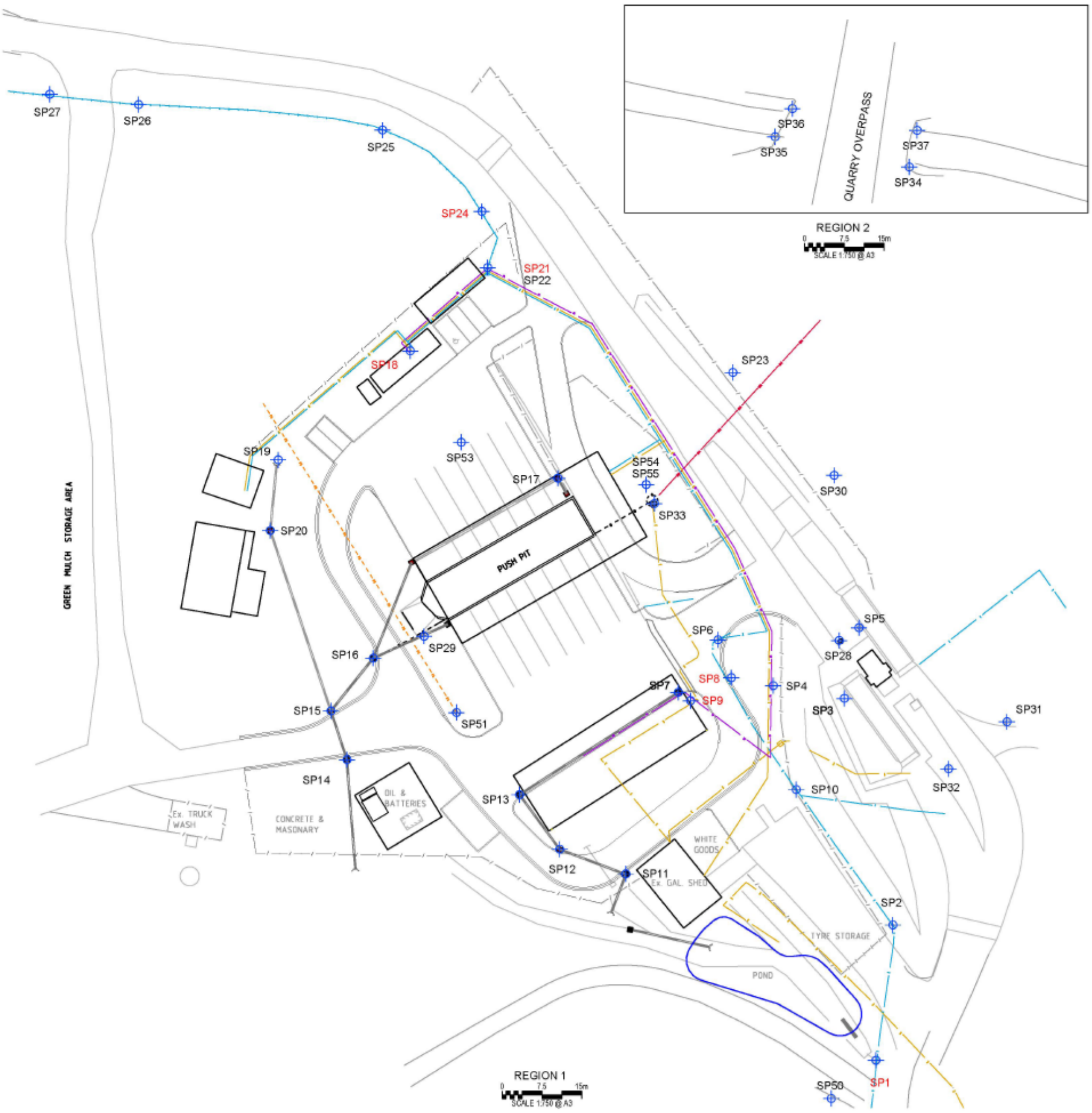
Green waste material is mulched at the site with a portion used for daily cover purposes and the remainder offered to the public free of charge.

The public have access to the Resale Shop to either drop off unwanted items or to purchase an item. Types of waste accepted at the transfer station are provided in section 4.3.

An image of the transfer station with weighbridge to the left and a site layout plan are provided in Figure 5 and Figure 6

Figure 5 Transfer station and weighbridge

Figure 6 Transfer station layout



Source: (Compass Environmental, 2014)

4.5.4 Organics processing

Veolia has commenced operation of the green waste transfer station and propose to locate a green organics processing facility at the RDF site in the future for processing of approximately 35,000 tonnes per annum of green waste material using an In-vessel Organic composting method. Figure 7 shows the current Veolia site with essentially a bunded area for stockpile and transfer of green waste to and from site.

Figure 7 Current organics transfer station

4.5.5 Biogas power generation

Biogas power generating operations, while located on the same property as the RDF, are not RDF activities. These operations are not governed by the RDF's EPA licence 12483 and Planning Permit No. WYP1221/07.03 and therefore any noise from this facility is not managed under this AMP.

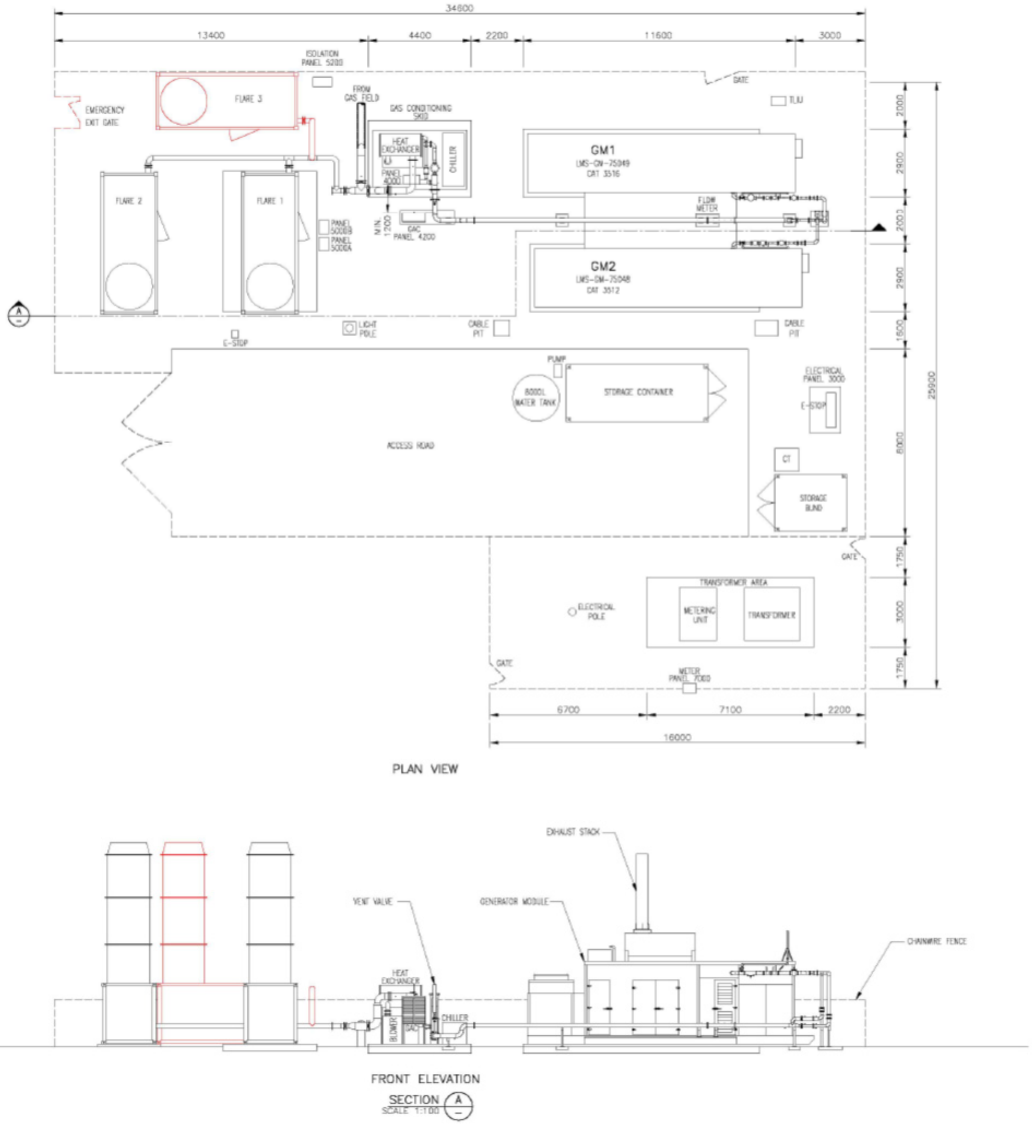
The on-site power generation facility is owned and operated by LMS Energy. The landfill gas extraction system consists of a network of extraction wells, well stations and a main pipeline. Landfill gas is extracted from wells in Cell 1B (9 extraction wells), Cell 2A (14 extraction wells), Cell 2B (16 extraction wells) and Cell 3 (32 extraction wells) and Cell 4A (20 extraction wells) and then piped to a main line feeding the generator. An older landfill gas extraction system is also located in Cell 1A (15 extraction wells), refer to Figure 8.

Figure 8 Landfill gas piping network

Source: Wyndham City Council

Figure 9 Biogas power generation plant

Figure 10 Biogas facility layout



Source: Wyndham City Council

4.5.6 Quarry operations

Quarrying operations, while located on the same property as the RDF, are also not RDF activities therefore this operation is not governed by the RDF's EPA licence 12483 and Planning Permit No. WYP1221/07.03. Any noise from this source is not managed under this AMP.

The quarrying operation is presently undertaken by Holcim Ltd (Holcim) under a lease with Council and a DEPI (now DELWP) Work Authority (WA184) and associated Work Plan. The quarry produces around one million tonnes of rock per annum and at current extraction rates, it is anticipated that the remaining rock will allow for approximately 20 years future excavation. Void space is being created by the quarrying activities at a rate greater than landfill airspace is being consumed by waste disposal operations at the RDF, with the north east and western sections of the site still remaining to be extracted and is subject to Council obtaining the necessary approvals to extend the landfill into the quarrying voids. It is apparent that landfilling operations will continue at the site for many decades.

The hours of operation for all quarry activities and product dispatch are 7 am – 5 pm Monday to Friday and 7 am – 12 pm on Saturdays.

Figure 11 Quarry operations

4.6 Meteorology

The climate at Wyndham Vale is classified as temperate with no dry season (warm summer) under the Australian objective classification system set out by the Bureau of Meteorology (BoM) Australia[1]. Such a classification indicates four distinct seasons with regard to temperature variation and rainfall events throughout the entire year.

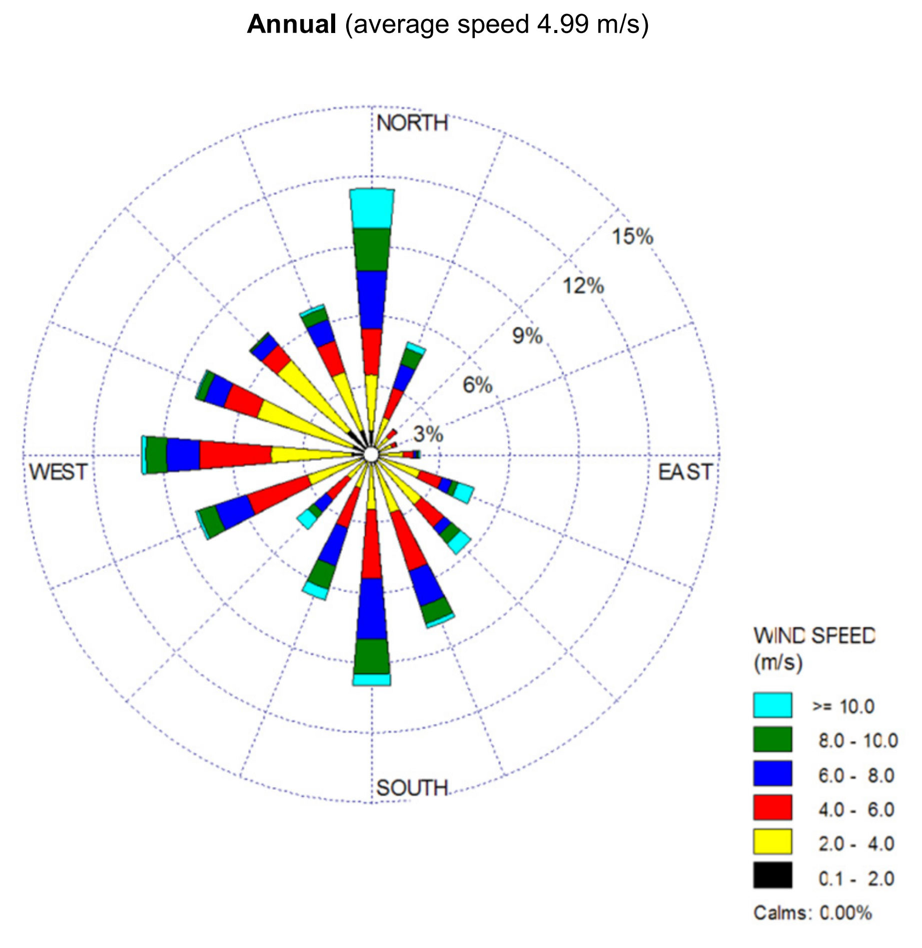
A well-developed moderate ground based temperature inversion; such as commonly occurs on clear, calm nights or ‘downwind’ conditions are favourable to sound propagation. As a result, noise levels experienced at receiver locations are expected to be enhanced in these meteorological circumstances.

The general wind climate at a site is most readily displayed by means of wind rose plots, giving the incidence of winds from different directions for various wind speed ranges. The areas of particular interest are:

- The prevailing wind directions
- The relative incidence of more stable light wind conditions and temperature inversions.

The EPA approved meteorological dataset from Point Cook for the year 1995 is presented in Figure 12 below.

Figure 12 Wind roses for EPA Point Cook



Annual (average speed 4.99 m/s)

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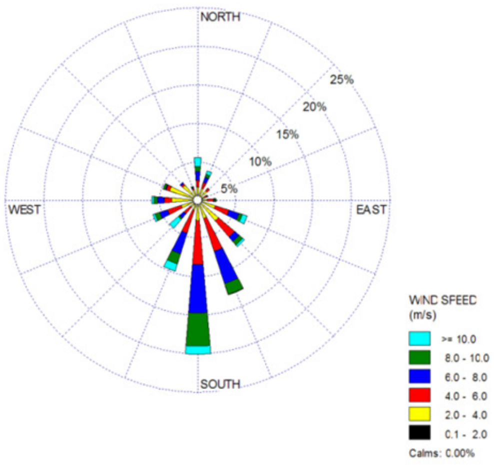
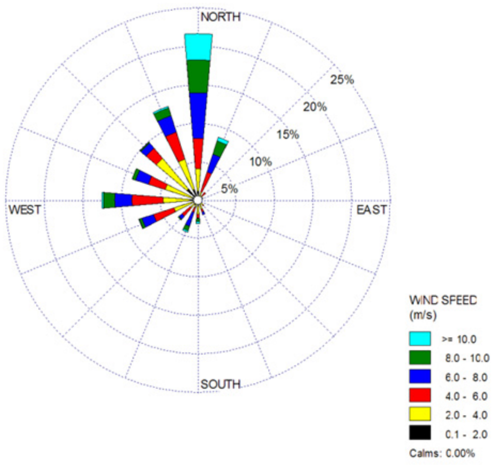
[1] http://www.bom.gov.au/climate/environ/other/koppen_explain.shtml

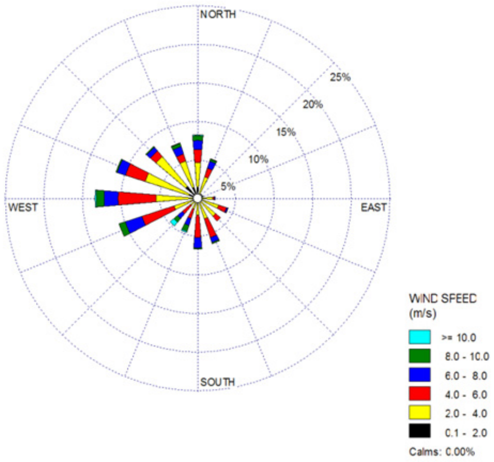
Summer (average speed 5.47 m/s)



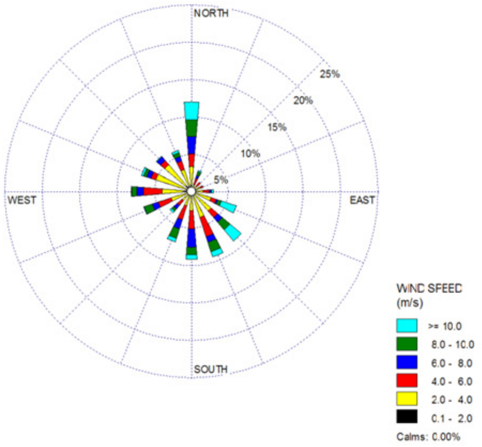
Winter (average speed 5.08 m/s)



Autumn (average speed 4.20 m/s)



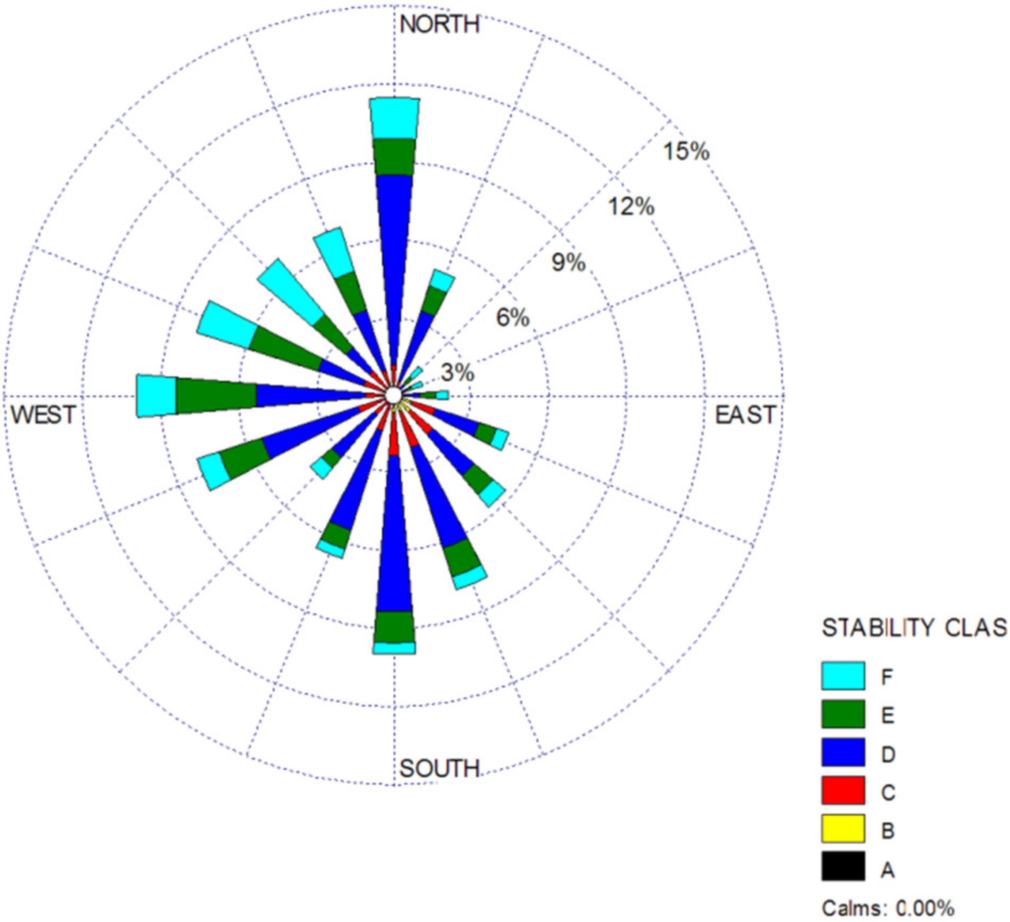
Spring (average speed 5.26 m/s)



The Pasquill/Gifford scale of atmospheric stability consists of six stability classes. Stability classes A, B and C represent, strongly, moderately and slightly unstable atmospheres respectively.

Stability category D classifies a neutral atmosphere and E and F slightly and moderately stable atmospheres respectively. Stable conditions persist at night, with clear skies and weak gradient winds. Such conditions are often coupled with ground based, radiation forced temperature inversions, sometimes with fog, mist or frost.

Figure 13 Annual stability rose – Point Cook



5. Noise sources

The *State environment protection policy (Control of Noise from Commerce, Industry and Trade) No. N-1* (SEPP N-1) specifies that beneficial uses shall be the normal domestic and recreational activities including, in particular, sleep in the night period.

There are a number of potential noise sources which originate from landfill activities at the RDF. The following section provides an indication of likely potential noise sources at the site.

5.1 Active tipping face noise

Noise release at the active tipping face is unavoidable due to the type of equipment being used, however there is opportunity to minimise this noise through management of operational times, haul routes, barriers, speed restrictions, reversing beeper modifications and good mechanical maintenance.

The key noise sources during the operation of the RDF landfill area are from the heavy machinery and delivery trucks such as:

- Bull dozer
- Compactors
- Topsoil trucks
- Haul trucks from transfer station
- Council rubbish trucks
- Extended length rubbish trucks
  - Walking floor
  - Push ram
- Construction trucks

Trucks bring in waste material, which is then unloaded, spread out and compacted. Following this, waste material is periodically covered by fresh soil delivered from the quarry; Figure 14 shows typical mobile plant found on the tipping face at the RDF.

Figure 14 Typical mobile equipment found at active tipping face

5.2 Leachate pumping activities

Potential noise impacts associated with leachate pumping may include:

- Truck movements to and from the site
- Truck pumping activities
- Reversing beeper noise, refer to Figure 4.

5.3 Transfer station activities

Potential noise impacts associated with the recycling facility and waste transfer station may include:

- Vehicles arriving and departing from the transfer station including:
  - Cars/station wagons\
  - Commercial van/panel van
  - Trailer single axle
  - Trailer tandem
- Noise emissions associated with vehicle exhaust during idle events
- Front end loader movements
- Reversing beeper noise
- Metal, wooden boards, other objects impacting on ground
- Any metal bin or skip noise
- Peoples voices onsite
- General loading and unloading activities
- Transfer to landfill trucks
- Green waste mulching activities.

5.4 Organics processing

The green organics transfer station is owned and operated by Veolia and as such noise from this site is not applicable to this AMP. However, potential noise impacts associated with the green organics transfer station and the proposed processing facility may include:

- Truck movements to and from the site
- Truck unloading activities
- Excavator noise during truck loading activities.

Potential future in-vessel composting noise may include:

- Truck movements to and from the site
- Truck unloading activities
- Excavator or loader noise during truck loading activities
- Sorting/screening noise
- Grinder noise
- Front end loader noise
- Drum roller and roller motor noise

- Auger/screw motor noise
- Windrow turner
- Conveyors
- Reversing beeper noise.

5.5 Biogas power generation

The power generation facility is owned and operated by LMS Energy and as such noise from this facility is not applicable to this AMP. However, noise generating activities from the general LMS operation may include:

- Generator exhaust stack noise
- Generator engine casing and enclosure noise
- Gas flare exhaust noise
- Transformer noise
- Reciprocal generator noise
- Compressor noise
- Cooling fan noise
- Vehicles arriving to and departing from the LMS facility

5.6 Quarry operations

The quarry is owned and operated by Holcim (Australia) Pty Ltd and as such noise from this site is not applicable to this AMP. However, noise generating activities from the general quarrying operation may include:

- Primary crusher
- Secondary crusher
- Tertiary crusher
- Conveyors
- Screens/shakers
- Loaders
- Hopper noise
- Haul trucks
- Traffic movements, and
- Vehicle exhaust noise
- Reversing beeper noise.
- Rock blasting events which occur approximately twice a month.

5.7 Other noise sources

Other off-site noise generating activities in the local area include:

- Princes Freeway
- Melbourne- Geelong Railway

- Truss Factory - Morrisons Lane
- Traffic noise to and from the RDF.

6. Legislative Requirements

6.1 Acts

The principal legislation for pollution control in Victoria is the Environment Protection Act 1970 (the Act). The Act regulates the discharge or emission of waste to water, land or air by a system of works approvals and licences. The Act also specifically controls pollution of the atmosphere including under 'beneficial use', the protection of public benefit from the effects of waste discharges, such as odour emissions, emission of noise and the transport and disposal of waste (EPA Victoria, 2014, October).

6.2 Policies

Table 4 summarises the policies relevant to the RDF operation.

Table 4 Relevant policies

Policy	Description
State environment protection policy (Control of Noise from Commerce, Industry and Trade) No. N-1 (SEPP N-1)	State environment protection policies (SEPPs) set out policies of the government to manage environmental pollution.
Waste management policy (WMP) *Siting, Design and Management of Landfills*, No. S264, Gazette 14/12/2004.	In 2002 the Environment Protection Act was amended by the Environment Protection (Resource Efficiency) Act 2002 to allow EPA scope to develop waste management policies (WMPs) (EPA Victoria, 2014, October). There are currently nine WMPs, however only one is relevant to noise.

The *State environment protection policy (Control of Noise from Commerce, Industry and Trade) No. N-1* (SEPP N-1) identifies beneficial uses as the normal domestic and recreational activities including, in particular, sleep in the night period and defines a 'beneficial use' as:

> *'Means a use of the environment or any element or segment of the environment which is conducive to public benefit, welfare, safety or health and which requires protection from the effects of the emission of noise.'* (Victorian Government, 1989)

6.3 Guidelines and standards

Table 5 summarises the EPA guidelines and Australian Standards relevant to noise from the RDF operation.

Table 5 Relevant guidelines

Guideline	Description
EPA Publication 480 *Best Practice Environmental Management - Environmental Guidelines for Major Construction Sites (BPEM)*	This document takes into consideration construction noise as may occur during a landfill cell construction activity at the RDF. Depending on whether or not the construction site is near houses, schools or hospitals, the impact of noise and vibration on the health and amenity of adjacent residents will need to be taken into consideration.
EPA Publication 1254 *Noise Control Guidelines (former EPA publication TG302/92)*	This document takes into consideration construction noise as may occur during a landfill cell construction activity at the RDF and refuse collection by council rubbish trucks.

Guideline	Description
EPA Publication 1412 *Information Bulletin - Sepp N–1 and NIRV Explanatory Notes*	This document explains the industry noise standards that apply in Victoria: • State environment protection policy (Control of Noise from Commerce, Industry and Trade) No. N–1 (SEPP N–1) • Noise from industry in regional Victoria: Recommended maximum noise levels from commerce, industry and trade premises in regional Victoria (NIRV; EPA publication 1411).
EPA Publication 508 (now in draft as Publication 1577) *Composting*	Applies to facilities that receive less than 36,000 tonnes per annum (tpa) or approximately 100 tonnes per day (tpd).
EPA Publication 788.2 *Best Practice Environmental Management - Siting, Design, Operation and Rehabilitation of Landfills (BPEM)*	Publication 788.2 states that "*appropriate buffer distances must be maintained between the landfill and sensitive land uses (receptors) to protect those receptors from any impacts resulting from a failure of landfill design or management or abnormal weather conditions. These failures might constitute discharge from the site of potentially explosive landfill gas, offensive odours, noise, litter and dust*". Section 4 of the BPEM classifies landfills into waste streams where Type 2 consists of putrescible (municipal) waste, solid inert waste and fill material and Category C prescribed industrial waste. Type 3 waste consists of solid inert waste and fill material. The RDF is classified as Type 2 and has the following separation distances under the BPEM: • 100 m from surface waters • 500 m from building or structures • 1500 m from aerodrome for piston propeller-driven aircraft • 3000 m from an aerodrome for jet aircraft.
EPA publication 1320.3 Annual performance statement (APS) guidelines	This document provides guidance to licence holders on how to report on their annual environmental performance.
EPA publication 1321.2 Licence assessment guidelines	This document provides guidance to licence holders to take a risk-based approach to the development of their monitoring program, as well as interpreting and using data.
EPA publication 1322.5 Licence management guidelines	This document provides guidance to licence holders to understand the content of their licence, what needs to be done to comply and how EPA expects them to perform and respond to non-compliance incidents.
EPA publication 1323.2 Landfill licensing guidelines	This document provides guidance to landfill operators and environmental auditors, to assist understanding of license requirements specific to landfills.
AS 1055.1:1997	Australian Standard AS 1055.1:1997 Acoustics – Description and Measurement of Environmental Noise, Part 2: General procedures.
AS 1055.2:1997	Australian Standard AS 1055.2:1997 Acoustics – Description and Measurement of Environmental Noise, Part 2: Application to Specific Situations.
AS 1055.3:1997	Australian Standard AS 1055.3:1997 Acoustics – Description and Measurement of Environmental Noise, Part 2: Acquisition of Data Pertinent to Land Use.
AS IEC 61672.1:2004	Australian Standard AS IEC 61672.1:2004 Electroacoustics - Sound Level Meters, Part 1: Specifications.
AS IEC 61672.2:2004	Australian Standard AS IEC 61672.2:2004 Electroacoustics - Sound Level Meters, Part 2: Pattern Evaluation Tests.

Guideline	Description
AS 2436:2010	Australian Standard AS 2436:2010 Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites.

6.4 Licences, permits and approvals

The RDF maintains a number of licences, permits and approvals as outlined in Table 6.

Table 6 Licence, permits and approvals

Licence/permit/approval	Description
EPA Licence 12483	This licence allows for solid inert waste, putrescible waste and shredded tyres to be deposited to land for cells 4A and 4B.
Planning Permit No. WYP1221/07.03	This planning permit allows the use of land and associated works for the expansion of an existing refuse disposal facility (into Cells 4, 5, 6, 7, & 8) in accordance with the endorsed plans.
EPA Works Approval 104203	This works approval allows for the extension of a putrescible waste landfill by the addition of an approved area for a new cell (Cell 4C).

7. Duties and responsibilities

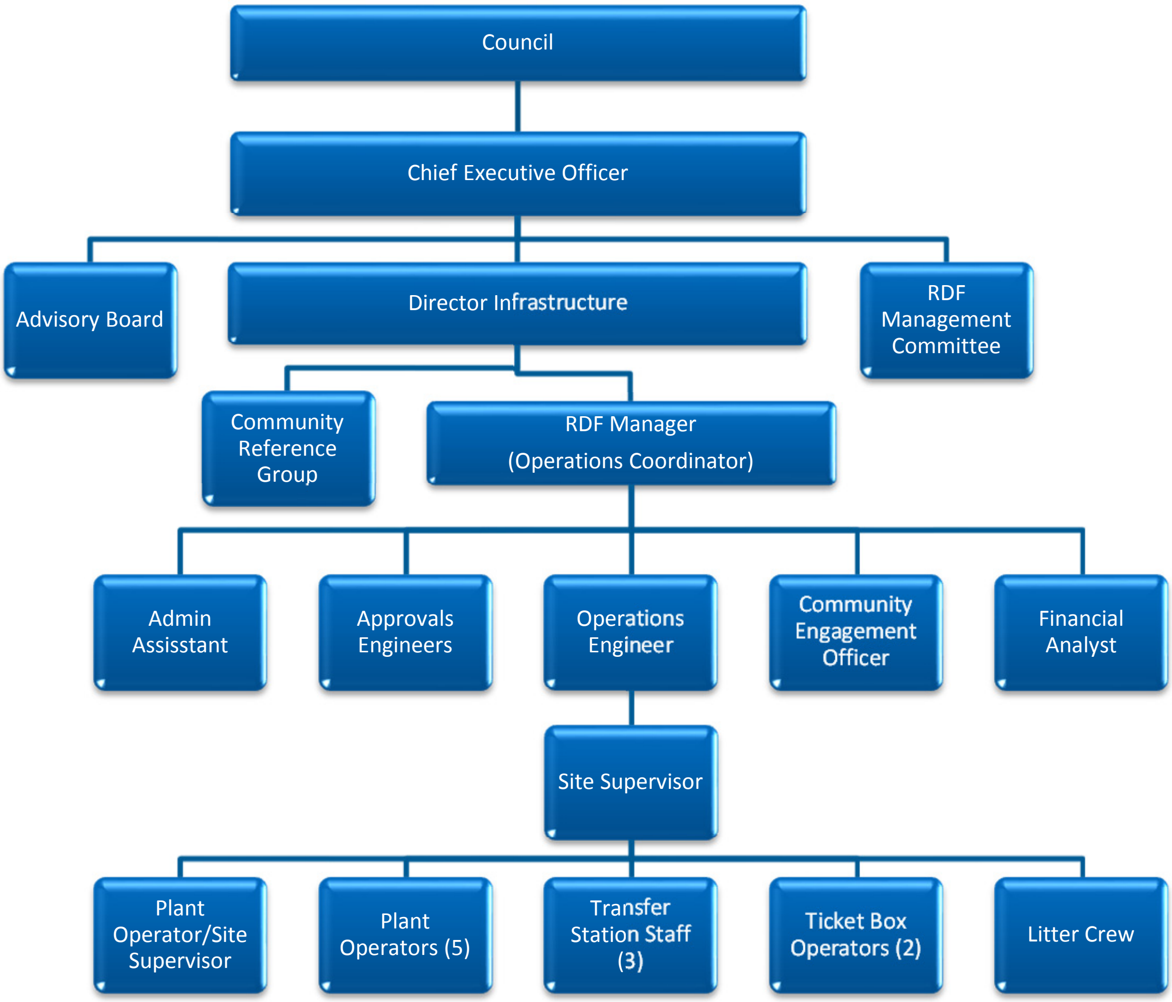
Council will provide resources needed for the implementation and control of the AMP. Resources include human resources with specialised skills, technology and financial resources.

The following section outlines the RDF organisation structure, and staff duties and responsibilities with regard to minimising noise impacts from the site.

7.1 Organisation structure

The RDF is governed by the Wyndham City Council and its Chief Executive Officer. A general organisational structure is provided in Figure 15.

Figure 15 Organisation structure



7.2 Offsite roles and responsibilities

The following section provides a summary of staff duties and responsibilities for the operation of the RDF but who are not on site on a day to day basis.

7.2.1 Chief Executive Officer

The Chief Executive Officer is responsible to Council for the overall performance of all Council functions and operations. The CEO is broadly responsible that the RDF is operated in accordance with its legal requirements, EPA Licence, SEPPs and this AMP. This includes the undertaking of management system audits as required and that all staff are, through the responsible Director and Manager, aware of their performance, safety, quality and environmental responsibilities.

The Chief Executive is responsible for the allocation of suitably trained staff and appropriate resources, such that the operation of the site is undertaken in an efficient and effective manner.

7.2.2 Director of Infrastructure

The Director of Infrastructure is responsible for the effective management of Council infrastructure including the assets utilised at the RDF.

7.3 On-site roles and responsibilities

The following section provides a summary of staff duties and responsibilities for the operation of the RDF and who are on site on a day to day basis.

7.3.1 RDF Manager (Operations Coordinator)

The RDF Manager is the on-site functional manager responsible for the day-to-day management of the operations of the RDF including verification of records, checklists, procedures, inspections and reports, identification of training and awareness needs for site staff, and management of operations involved in implementation of the AMP on site.

The RDF Manager has responsibility for the monitoring and management of leachate and groundwater investigations in accordance with the EPA Licence, or where the EPA Licence is not prescriptive, in accordance with relevant Commonwealth and Victorian legislation, regulation and guidance. The RDF manager shall:

- Supervise daily works on the site and site staff
- Implement this AMP on site including regular filling out of AMP checklists and the undertaking of noise surveys and monitoring as required
- Plan operations of plant and equipment and on-site maintenance
- Record waste placement and traceability details
- Plan and manage stockpiles and covers, including top soil supply and usage
- Plan site asset maintenance, such as buildings, gates, road access and drainage channels, landscaping and plantings, fencing, and other site assets
- Manage groundwater and surface water
- Supervise the operation of leachate collection and monitoring systems and undertake and supervise noise surveys from associated equipment
- Investigate and report complaints and management of complaint procedures
- Maintain and provide data for records, procedures, inspections, reports, and reporting of non-compliances.

7.3.2 Weighbridge attendant

The weighbridge attendant is responsible for logging the receipt of waste and verification of type of waste category being delivered. The weighbridge attendant is also responsible for the completion of operational records, checklists, procedures, recording of complaints and unauthorised and illegal waste brought to site.

7.3.3 Plant operators

The plant operators are responsible for operating vehicles used for transporting of waste from the transfer station to the tipping face. Plant operators are also responsible for:

- Receipt of waste deposited at tip face by large vehicles
- Spreading, compaction and covering of waste
- Plant and equipment operation and routine maintenance
- Completion of operational records, checklists, procedures, inspections and reports
- Observation and notification of unauthorised and illegal waste dumping.

Examples of plant operated include; TANA E520 compacter, TANA E520 compacter, CAT 773B topsoil cartage, CAT D8T bulldozer and the CAT 730 for waste transfer to the tipping face.

7.3.4 Transfer station attendant

The transfer station attendant supervises waste receipt at the transfer station and provides direction to members of the public and vehicles to maintain public safety and operational efficiency and screen for unauthorised and illegal waste.

As part of the AMP, the transfer station attendant is expected to minimise noise as much as practical at the transfer station including preventing noisy items being dropped from height.

7.4 Training

Only trained and competent staff can operate at the RDF. All training related to noise sources, noise management, noise surveys and testing should be included in the site induction for new staff and regular refresher training for existing staff.

Noise survey competency testing should then be carried out one month after induction and then six monthly for the first 12 months to check that all noise surveys are carried out to the required standards (refer to section 9).

7.4.1 Training in the AMP

Awareness training for staff should include:

- The importance of conforming with the AMP
- The significant environmental impacts, potential or actual that their work activities may create and the environmental benefits of improved personal performance
- Their roles and responsibilities in achieving conformance with the AMP
- The possible consequences of departure from specified operating procedures.

7.4.2 Role specific training

- Transfer weighbridge attendees are required to undergo an induction into the requirements of the RDF’s EPA licence
- All staff are required to undergo an induction into the requirements of the RDF’s operation
- Plant operators are required to undergo an induction into the requirements of the RDF’s EPA licence. Leading hands should undertake training to qualify as a Licensed Plant Operator and complete an EPA approved Landfill Operator course.

8. Noise management

The key noise sources located within and under control of the RDF include the open tipping face, the leachate pumping activities, transfer station push pit noise and green waste mulching. The following sections outline a number of management options that if considered reasonable and feasible, may be available for the RDF to minimise noise impacts from the site.

8.1 Active tipping face noise

The following are a list of recommendations for consideration in the management of noise from the tipping face at the RDF:

- Review daily operations as required to minimise noise by undertaking noisy activities nearer the middle of the day to prevent early morning noise
- Implement a preventative maintenance programme to minimise equipment failure and excessive noise for all mobile equipment used on-site
- Installation of broad band reversing beepers on all mobile equipment used at the RDF.
- Use of appropriate and well maintained mufflers on all/any exhaust systems in use
- Use of lower engine rpm during operations where practical
- Review haul routes to provide access to the tipping face via areas least exposed to sensitive receiver locations through topography shielding and central portions of the site located further from sensitive receiver locations
- Install earthen bunds along haul routes to reduce noise exposure at sensitive receiver locations
- Continued road maintenance to provide a smooth surface for truck movements to prevent empty truck bin ‘chatter’ when departing from the site.
- Install signage to educate delivery truck drivers on minimising noise from impact events such as banging tail gates closed and hitting the side of truck wells to remove debris lodged in the holding pen.
- Review compactor, bull dozer and soil delivery movements to minimise usage and the need for reversing
- Train staff about the importance of regulatory compliance and management for achieving compliance
- Identify relevant operating procedures and control parameters to minimise noise emissions
- Check daily for excessive noise and implement controls if required. In the event that any offensive noise occurs off site, the source of the noise should be investigated and operations stopped until the source of excessive noise can be mitigated
- Limiting vehicle speeds to no more than 20 km/hr using signage. Periodically utilise Speed Monitor Awareness Radar Trailers (SMART) devices to educate drivers of their onsite speed or install smart signs, refer to Figure 16.

Figure 16 Speed Signs

8.2 Leachate pumping activities

The following are a list of recommendations for consideration in the management of noise from leachate pumping activities at the RDF:

- Timing of removal and transportation of leachate to be managed to occur during the late morning and early afternoon periods when noise impacts are minimal.
- Identify relevant operating procedures and control parameters to minimise noise, including haul routes to and from leachate sumps designed to provide access without the need to reverse
- Install broad band reversing beepers on any sucker trucks used at the RDF
- Enclose any external pumps to minimise noise
- Use of appropriate and well maintained mufflers on all/any exhaust systems in use
- Use of lower engine rpm during pumping where practical
- Implement a preventative maintenance programme to minimise equipment failure and excessive noise from sucker trucks used on-site
- Install earthen bunds at pumping locations to reduce noise exposure at sensitive receiver locations
- Train staff about the importance of regulatory compliance and management for achieving compliance.

8.3 Transfer station noise

The following are a list of recommendations for consideration in the management of noise from transfer station activities at the RDF:

- Review daily operations as required to minimise noise by undertaking noisy activities nearer the middle of the day to prevent early morning noise
- Implement a preventative maintenance programme to minimise equipment failure and excessive noise for all mobile equipment used on-site
- Install broad band reversing beepers on all mobile equipment used at the RDF
- Investigate vehicle movements onsite to reduce the need/occurrence of reversing activities on-site due to improvements in site layout and driver training
- Use of appropriate and well maintained mufflers on all/any exhaust systems in use (under the control of the RDF)
- Use of lower engine rpm during operations where practical

- Install signage to educate the public on minimising noise from impact events such as dropping noise generating materials such as metal sheeting and hitting the sides of vehicles to remove debris lodged in the holding pen or trailer
- Train staff about the importance of regulatory compliance and management for achieving compliance
- Identify relevant operating procedures and control parameters to minimise noise emissions
- Check daily for excessive noise and implement controls if required. In the event that any offensive noise occur off site, the source of the noise should be investigated and operations stopped until the source of excessive noise can be mitigated
- Limiting vehicle speeds to no more than 20 km/hr through signage. Periodically, utilise Speed Monitor Awareness Radar Trailers (SMART) devices to educate drivers of their onsite speed or install smart signs, refer to Figure 16
- Continued road maintenance to provide a smooth surface for truck movements to prevent empty truck bin ‘chatter’ when departing from the site.
- Green waste mulching
  - Mitigation at the mulcher location is the most plausible solution. This may include:
    - Placing the mulcher behind intervening topography
    - Shielding the mulcher through use of buildings, shipping containers, earth bunds
    - Reducing working hours of the mulching equipment beginning later and finishing earlier each day, to allow residents time to wake up and potentially leave for work or other activities and return to a quieter environment
    - Not undertaking mulching during other noisy activities to reduce cumulative noise impacts offsite
    - Mulching activities could be separated into:
      - Lighter material that the equipment can easily grind through and is potentially quieter
      - Material that is much larger and will cause the mulcher to work harder and therefore generate more noise
      - The heavier material can then be processed on weekdays only during the late morning and early afternoon periods when noise is less of an issue.

8.4 Future operations and non RDF noise

As there are a number of sources on site that are both within and not within RDF control, such as the quarry operation, understanding the cumulative noise impacts from all existing and future operations within the property boundary is important in designing a suitable noise management strategy for the entire site. It is recommended that the RDF and other stakeholders maintain and update a predictive noise model for the entire site to aid in understanding offsite impacts from existing and future developments on-site such as the in vessel composting facility proposed by Veolia.

9. Noise surveys

Periodic noise surveys should be undertaken and when excessive noise from the RDF is detected, this should be investigated to assess its source and if operating procedures require adjustment to reduce noise generation. The following sections provide guidance on the general method for undertaking a noise survey. Noise surveys should be undertaken in accordance with SEPP-N1 measurement guidelines (Victorian Government, 1989).

9.1 Monitoring locations

The selection of monitoring locations should be decided with consideration to the requirements of the SEPP-N1 as follows:

- The measurement point shall be located within a noise sensitive area or at a derived point, as appropriate
- Where the measurement point is in a noise sensitive area, the measurement point shall be located outdoors
- The measurement point in a noise sensitive area shall be located at a point where the maximum effective noise level occurs.

Figure 19 shows suggested noise survey monitoring locations. The noise survey should start with the locations downwind and closest to the RDF.

9.2 Measurement parameters

The selection of monitoring parameters to record should be decided with consideration to the requirements of the SEPP-N1 as follows:

- The noise from the RDF shall be measured so as to obtain a L_{Aeq} that is representative of the audible noise over a continuous 30 minute period
- The L_{Aeq} shall be adjusted where necessary to obtain the effective noise level
- The measurement shall be carried out using an A-weighted filter
- The measurement shall be carried out using fast (F) time-weighting
- The L_{Aeq} may be considered equivalent to the average meter readings when the meter indicates the noise being emitted is steady and does not vary by more than 8 dB(A)
- Cumulative adjustments to the L_{Aeq} shall be made, when required, for noise character, duration and measurement position to assess the effective noise level, according to the following formula:

  Effective noise level = $L_{Aeq} + A_{tone} + A_{dur} + A_{int} + A_{ref} + A_{ind} + A_{imp}$, refer to the consolidated SEPP-N1, containing all variations for further detail at http://www.epa.vic.gov.au/about-us/legislation/~/media/Files/about_us/Legislation/docs/Consolidated-policy.pdf
- Monitoring should not be conducted during rainfall or excessive wind (greater than 5 m/s).

An example noise survey form for completion during attended measurements (short-term) is provided in Appendix B.

9.3 Noise survey equipment

There are two performance categories, Class 1 or Class 2, suitable for noise monitoring equipment. In general, the specifications for both classes have the same design goals and differ mainly in the tolerance limits and range of temperatures they can be operated in. Tolerance limits for Type/Class 2 instruments are greater than or equal to those for a Type/Class 1 instruments.

The instruments can be designed for use as either a short term or long-term measurement instrument or both. Short term sound level meters (SLMs) are generally mounted on a tripod to avoid disturbance by the operator during attended measurements. Long term monitors (noise loggers) are capable of storing data over a number of days or weeks and generally come packaged in a weather proof case with the microphone mounted so as to be between 1.2 metres and 1.5 metres above the ground, refer to Figure 17. The SLM should conform to the requirements of Australian Standards AS IEC 61672.1-2004: *Electroacoustics – Sound level meters Part 1: Specifications.*

Figure 17 Typical sound level meters

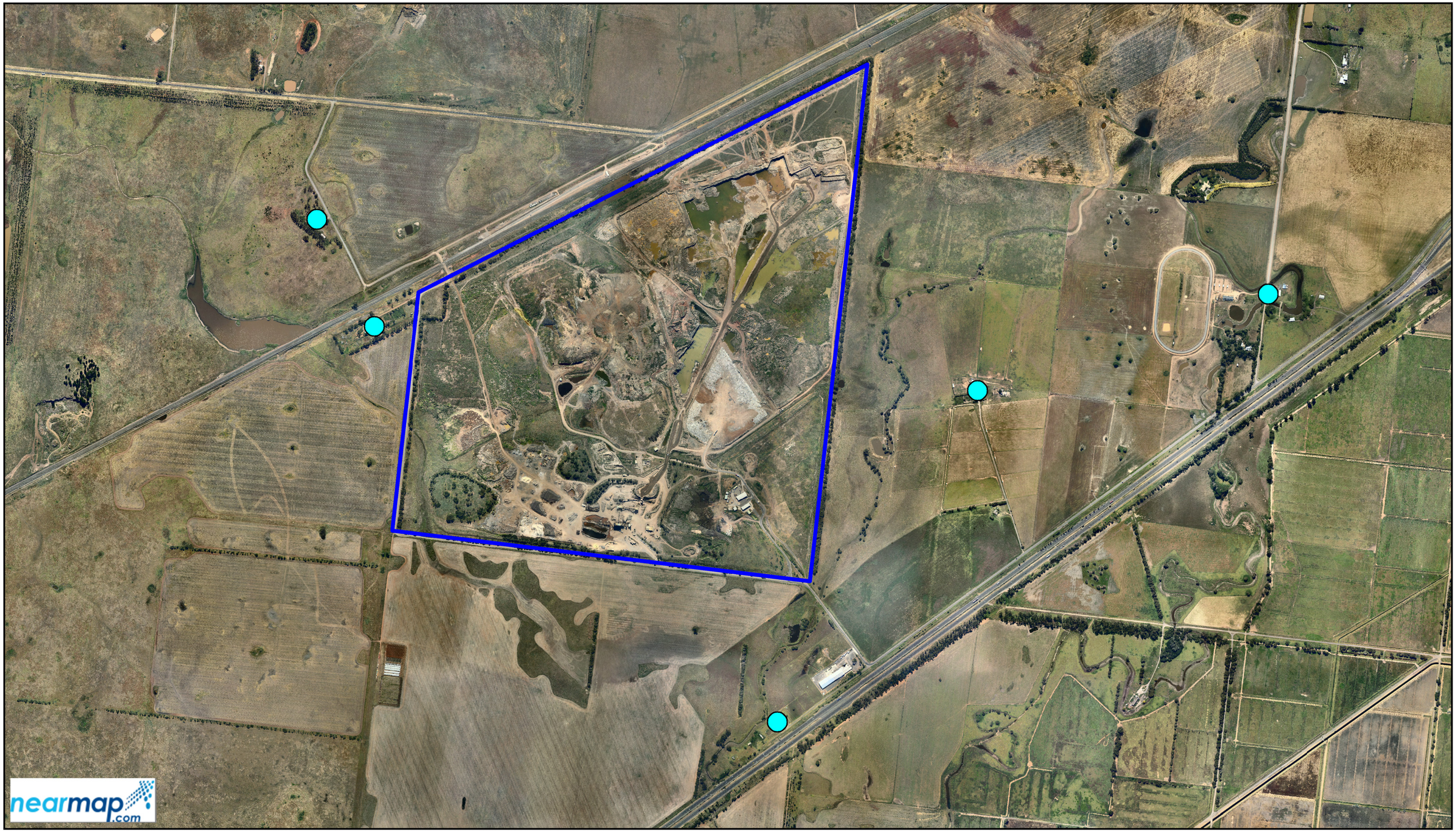
Long-term Yellow Case	Long-term Black Case	Short-term on a tripod

All noise monitoring instruments should be in current National Association of Testing Authorities (NATA) calibration at the time of use. All instruments should be field-checked and calibrated using a filed calibrator both before and after noise measurements are undertaken.

No discrepancies in excess of +/- 0.5 dB should be found during the monitoring exercise as is required under Section 5.6 of the Australian Standards AS 1055.1:1997: *Acoustics – Description and measurement of environmental noise Part 1: General Procedures*.

Hand held wind meters are useful for noise surveys and can provide weather data on a range of parameters at each survey location such as wind speed, wind direction, temperature, barometric pressure, altitude, humidity, wind chill, wet bulb temperature, dew point, delta T (temperature) and density altitude, refer to Figure 18. Of these parameters wind speed and temperature and humidity are the most important parameters with wind speeds greater than 5 m/s invalidating noise measurements at the microphone.

Figure 18 Typical hand-held wind meter



0 200 400 600
Metres (at A4)

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid Of Australia, Zone 55

N
W E
S

LEGEND

▬	Site Boundary
●	Noise Survey Location

Wyndham City Council
Municipal Refuse Disposal Facility

Job Number	31/32511
Revision	A
Date	22/06/15

Noise Survey Locations

Figure 19

G:\31\32511\GIS\Maps\Working

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Imagery: Nearmaps, Extracted by Wyndham City Council 2011. Created by: Craig McVie

10. Incident response procedure

The objective of the incident response procedure is to provide a response to community concerns that relate to noise issues. The incident response procedure will be the responsibility of the RDF Manager. The RDF Manager will investigate all incidents, apply corrective and preventative measures document and record the outcomes.

10.1 Incident/complaint

An incident/complaint handling and response procedure will be established as a part of the RDF's Hazard and Incident and Reporting System (HIR). This system provides the means of reporting and recording incidents, assessing the incident including a risk assessment and identifying preventative/corrective actions for all incidents.

In the event that an incident/complaint occurs, an incident/complaint report form should be completed and relevant information entered in the RDF database. Details recorded will include; complainant name, time and date of complaint, nature of the complaint/incident and any actions/response undertaken, refer to Appendix A. The RDF Manager will contact the complainant and discuss the outcomes of the investigation and if required any corrective action(s) taken.

10.2 Incident assessment

An incident assessment will include assessing the likely causes of the event using information regarding prevailing climatic conditions the nature of landfilling activities taking place and the undertaking of a noise monitoring survey. In the event that a complainant considers that noise from the RDF operation is impacting on their amenity, a noise investigation will be undertaken by trained RDF or Council staff as soon as practicable and the complaint register and noise survey forms in Appendix A and Appendix B will be completed.

10.3 Additional actions

After an incident or noise complaint, an assessment of any additional noise mitigation and/or management measures will be considered. Additional noise surveys may be required to clearly identify sources of noise. Once additional measures have been implemented, further noise surveys will be required to assess their effectiveness.

11. Community consultation

Community consultation is a key part of maintaining the relationship between the RDF and surrounding community. Consultation with key stakeholders should occur on a regular basis.

The RDF has already undertaken a number of initiatives with respect stakeholder consultation, such as:

RDF Advisory Committee – Consultation with this committee, consisting of three Councillors (representing the community) and five Council officers, occurs on a regular basis. The reports from these meetings are presented to the Council at regular Council Meetings and are available via the Council website as part of the Council Meeting Reports.

Public Exhibitions - Special advertised public consultation events have been held to discuss proposed expansions of the RDF.

Community Information Sessions - Public information sessions have been held to discuss Works Approval matters and provide an opportunity for the public to raise any questions prior to lodgement.

Community Reference Group – A Community Reference Group (CRG) has been established and has met on a number of occasions. The group has an independent chairperson and consists of two City of Wyndham Councillors, three Council staff, a representative of the Metropolitan Waste Management Group (MWMG) and seven community representatives. The CRG has been established as a forum for providing advice and the exchange of information in relation to waste management and resource recovery generally, including the RDF.

Key Stakeholder consultation – Management of Holcim (Australia) Pty Ltd, the adjacent quarry operators Veolia, the green waste composting operator and LMS, the biogas power generation facility operator meet as required.

Ad-hoc meetings have occurred with interested residents to explain any proposed changes at the RDF site and provide an opportunity for them to raise any concerns.

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Appendices

Appendix A – Noise complaint log sheet

Example Noise Complaint Log Sheet, (Environmental Protection Agency Office of Environmental Enforcement (OEE))

Noise Log Record Sheet

Name: ________________________________

Address: ____

Address of Suspected Noise Source: ____

Date	Start Time	Finish Time	Description of Noise (e.g. reversing beeper, truck, compactor, mulcher etc)	Other Comments (e.g. Intensity, or if noise detected at location other than your above address)

Declaration of True Record

I (Name) ______________________ confirm that the above list is a true record of events recorded

From (Date) ___________ to (Date) ___________.

Signature:_________________________________ Date:___________________

Appendix B – Noise survey form

Noise Investigation Form

SOUND LEVEL RECORDING FORM

Project No: Date

Project Name: Page of

Client: Performed by

Site: Monitoring Position

SLM Make: /Model: /Serial Nº:

CAL Make: /Model: /Serial Nº: /Level : (dB) /Frequency: (Hz)

SLM=Sound Level Meter CAL=Calibrator (pistonphone)

1. Monitoring Interval: (mins)
2. Start Time: Finish Time:
3. Calibration performed before monitoring: Y/N factor= dBA
4. Calibration performed after monitoring: Y/N factor= dBA

L_{eq} = L1= Lpeak=

L_{10}= Lmax= L90=

Lmin= Height of meter *(1.2m minimum)*

Weather Conditions at time of Monitoring

Wind Speed m/second

(note: max allowable = 5m/sec)

Approximate Direction =

Ambient Temperature = °C

Relative Humidity %

Cloud Cover %

Inversion Layer Y/N

Others (fog, drizzle)

Sketch of Monitoring Location and Distance to Noise Source.

DISTINCTIVE NOISE SOURCES Dominant noise source

NOISE CHARACTER (broad band , impulsive, tonal)

METER SETTINGS (Linear, exponential:, weightings; a, b, c,: fast, slow, impulsive)

Appendix C – Sample survey questionnaire

Telephone questionnaire for environmental survey – Source: (Ministry for the Environment, 2001)

Telephone questionnaire for environmental survey

Please note that for most of the questions you only enter the codes.

Introduction

READ “Good evening, my name is <name> from <company>, an independent environmental research company. We are currently carrying out research looking at environmental issues in your local community. Could I please speak to a person in your household who is over 18 years old, and whose birthday it is next?”

Once contact is established reintroduce self if necessary and READ:

“The survey only takes five minutes to complete and all your responses will remain totally confidential. Would now be a convenient time, or may I call back later?”

If yes, continue.

If no, make time to call back, and note on summary sheet.

If refused, thank and close, and note on summary sheet.

If asked who the survey is for, READ:

“We need to keep the research as objective as possible, so I can’t tell you that straight away. However, I promise that I will tell you at the end of the questionnaire.”

If refused, thank and close, and note on summary sheet.

If agree, continue (note on summary sheet). READ:

1a “What do you consider to be the main environmental issues facing your local community at present, if any? By environmental issues I mean things that affect the physical environment like water quality and pollution.” **Do not read list. Code all mentions.**

- Air pollution
- Noise
- Water pollution
- Drinking-water quality
- Sprays/pesticides/herbicides, etc.
- Motor vehicle emissions
- Other (specify)
- Don’t know **Go to Q2**
- None **Go to Q2**

1b “Of the issues you have mentioned, which do you feel is the most important to your community?” **Do not read list. Code one only. Note responses in priority order.**

- Air pollution (general)
- Air pollution from industry
- Noise (general)
- Noise from industry
- Water pollution (general)
- Water pollution from industry

- Drinking-water quality
- Sprays/pesticides/herbicides, etc.
- Motor vehicle emissions
- Other (specify)

2a “During spring, do you suffer any effects from plant pollen such as hayfever or allergies?”

- Yes **Continue**
- No **Go to Q3**
- Refused **Go to Q3**

2b “How much of a problem is this for you?” **READ OUT all three and rotate order in which they are read out.**

- Not very serious
- Somewhat serious
- Very serious

2c “Does this problem require you to take any forms of medication?”

- Yes
- No
- Sometimes

3a “How often do you notice noise from any local industries?” **READ and rotate order.**

- All the time **Continue**
- Often
- Sometimes
- Seldom
- Never **Go to Q4**

3b “To what degree does this noise annoy you? You might want to write this scale down. Do you find this noise ...” **READ scale and rotate order.**

- Definitely not annoying
- Very little annoyance
- Little annoyance
- Some annoyance
- Annoying
- Quite annoying
- Very annoying
- Extremely annoying

3c “What is the most common source of this noise?” **Do not read out.**

- Industry
- Parties
- Traffic
- Other (specify)

4a “How often do you notice an odour or smell from industry in or around your home?” **READ and rotate order.**

- All the time **Continue**
- Often
- Sometimes
- Seldom
- Never **Go to Q5**

4b “To what degree does this odour annoy you? Do you find this odour is ...” **READ scale and rotate order**.

- Definitely not annoying
- Very little annoyance
- Little annoyance
- Some annoyance
- Annoying
- Quite annoying
- Very annoying
- Extremely annoying

4c “What do you think is the most common cause of this odour?” **Do not read out. Add appropriate causes, e.g.**

- Fertiliser factory
- Sewer line
- Traffic
- Asphalt
- Wool scour
- Fish processing
- Other **(Please write it down____)**

4d “Can you describe this odour?” **Do not read out. Add appropriate descriptors, e.g.**

- Do not know
- Chemical/acidic
- Sulphur/rotten eggs
- Fertiliser
- Oily
- Fishy
- Coal fire
- Sewer
- Other **(Please write it down____)**

4e “Can you specify the activity that causes this odour?” **Do not read out. List relevant local industries:**

- Do not know
- Other **(Please write it down____)**

5 “Finally, just a few short questions to finish. What is your occupation?”

- Agriculture/fishery
- Clerical
- Elementary (unskilled)Sales/service
- Home duties
- Legislation, administration, management
- Plant/machine operators
- Professional
- Technical
- Trade
- Retired
- Study
- Unemployed

6 How old are you?

- 18–19
- 20–24
- 25–29
- 30–34
- 35–39
- 40–44
- 45–49
- 50–54
- 55–59
- 60–64
- 65–69
- 70–74
- 75–79
- 80–84
- 85+

7 “Do you live on the <east> side of <relevant road or local landmark> or on the <west> side of <relevant road or local landmark>.” **Please write response.**

If respondent refuses, assure them that their personal details will not be divulged.

8 Code gender:

- Male
- Female

“Thank you for your time. This research has been conducted on behalf of <client>. If you have any queries you can contact <contact>, collect on <phone>. My name is <name>.

GHD

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0	C McVie	C Evenden		D Kovacs		13/08/2015

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Appendix J – Noise Survey Monitoring Report (Compass Environmental)

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Wyndham City Council

Noise Survey Monitoring
April-June 2016
Wests Road Refuse Disposal Facility, Werribee

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0	29 July 2016	Margaret Mazur Principal Environmental Hydrogeologist

Contents

Figures

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Abbreviations

dB	Unit of measurement for sound pressure level known as a decibel
dB(A)	‘A weighted’ decibel measurement. To represent the sound frequency sensitivity of the human ear.
L_{eq}	Equivalent sound pressure level: the steady sound level that over a specific time period would produce the same energy equivalence as the fluctuating sound level actually occurring.
L_1	The sound pressure level that is exceeded for 1% of the monitoring period.
L_{10}	The sound pressure level that is exceeded for 10% of the monitoring period and is approximately the average of the maximum noise levels.
L_{90}	The sound pressure level that is exceeded for 90% of the monitoring period.
L_{max}	The absolute maximum sound level recorded over the monitoring period.
RDF	Refuse Disposal Facility
SEPP	State Environment Protection Policy

1 Introduction

1.1 Background and Objectives

Compass Environmental have been engaged by Wyndham City Council (“the council”) to complete noise survey monitoring at the Refuse Disposal Facility (RDF) located at Wests Road, Werribee, Victoria (“the site”). The site has operated as a basalt quarry for over 40 years, with the void spaces created by the basalt quarrying used for land filling purposes since 1975. Wyndham City Council has operated the RDF since 1976. The landfill is currently licenced to accept solid inert wastes, putrescible wastes and shredded tyres.

In April 2015, the RDF was granted a planning permit (WYP1221/07.03) through the Victorian Civil and Administrative Tribunal (VCAT). The permit required the development of an Acoustic Management Plan and other acoustic management procedures. Wyndham City Council engaged GHD to prepare an Acoustic Management Plan, which was issued in August 2015 and is further discussed in **Section 3.3**.

The landfill activities are licenced by EPA Victoria under licence number 12483. Condition LI_A2 of the licence (refer to **Appendix A**) states unacceptable noise (including vibration) must not be emitted beyond the boundaries of the premises. As per criteria outlined in EPA Publication 1332.6, noise compliance means:

- ❒ The site must not have received any verified noise complaints. Verified complaints are those that can be shown to be caused by noise that comes from your site at a frequency, duration and/or level that is ‘unacceptable’. If a noise complaint is verified, a non-compliance with this condition must be reported.
- ❒ Identify your risk level for unacceptable noise (see below) and maintain plans and procedures to manage the risk.
- ❒ The site must have procedures in place to follow up a complaint.

The objective of the noise surveying was to implement monitoring requirements outlined in the Acoustic Management Plan, to ensure unacceptable noise is not emitting from the site boundary due to landfill activities, identify potential impacts on the surrounding environment amenity, and provide Wyndham City Council with recommendations to minimise impacts, if any.

1.2 Scope of Work

The monitoring works were completed in accordance with the recommended methodologies outlined in the Acoustic Management Plan (GHD 2015), further discussed in **Section 3.3**. The scope of work documented in this report is provided in **Table 1** below.

Table 1 Summary of Scope of Work

Date	Task
April 2016	❒ Daytime noise survey at six monitoring locations (N1-N6).
May 2016	❒ Daytime noise survey at six monitoring locations (N1-N6). ❒ Night time noise survey at six monitoring locations (N1-N6).
June 2016	❒ Daytime noise survey at six monitoring locations (N1-N6). ❒ Night time noise survey at six monitoring locations (N1-N6).
July 2016	❒ Preparation of this report.

2 Site Characteristaion

2.1 Site Description

The site is located on Wests Road in Werribee and has an approximate area of 2,366,000 m^2 (236 ha). The site is bounded by Wests Road to the south and west of the site, the Melbourne to Geelong railway line to the north and a vacant block of land to the east, refer to **Figure 1** for a site location plan and **Figure 2.1** below.

Figure 2.1. Site Layout

(Source: Nearmap Image April 2016)

The site is largely open space, with a cluster of buildings (including the weighbridge office, site offices, amenities buildings, retail spare parts shed, canopies for the storage of batteries, canisters, fire extinguishers, motor oil and wastes) located in the southeast of the site, comprising the Refuse Disposal Facility (RDF).

The site includes eight landfill cells including 1A, 1B, 2A, 2B, 3, 4A, 4B and 4C. Cells 1A, 1B, 2A, 2B, and 3 are closed cells, with minor filling being completed in Cells 4A and 4B during the monitoring period. Cell 4C along the eastern site boundary is the active cell.

The RDF operates between 1.00 am and 4.00 pm. The main on-site sources of noise include:

- ❒ Active tip face, including compactors, bulldozers, trucks (including rubbish and extended length rubbish trucks), and haul trucks. Active Cell 4C is considered the main potential source of noise from landfill activities on-site due to the level of activity and location along the eastern site boundary.
- ❒ Leachate pumping activities, including pump trucks and automated pumping system.
- ❒ Transfer station, including vehicles arriving and departing, vehicle exhausts, front end loader movements, reversing beepers, compaction of waste, metal bins and skip noise, voices, general loading and unloading activities, transfer of waste to landfill trucks, and green waste mulching.
- ❒ Organics transfer station, including truck movements, truck unloading activities, and excavator noise.
- ❒ Gas extraction system, including generator exhaust stack noise, generator engine casing and enclosure noise, gas flare exhaust noise, transformer noise, reciprocal generator noise, compressor noise, cooling fan noise, vehicle movements, and installation of extraction wells (when being completed).

A detailed noise assessment completed by ERM in 2014 (further discussed in **Section 3.2**) measured noise emissions from plant, equipment and machinery used at the RDF. Sound power levels for the equipment being utilized at the site varied between 105 dB(A) and 112 dB(A) (including dozer and dump truck – 108 dB(A), dozer up to 109 dB(A), dozer and compactor – 105 dB(A), and dozer truck and compactor – 112 dB(A)). The differences in noise emission levels were mostly associated with operator techniques and type of material on the equipment. The overall logarithmic average of all activities was 109 dB(A).

Land in the west and northeast of the site is operated as an active basalt quarry, operated by Holcim. The hours of operation at the quarry are generally between 8.00 am and 5.30 pm. Main noise sources from quarry operations include crushers, conveyors, screens and shakers, loaders, hopper noise, haul trucks, traffic on and to the site, vehicle exhausts, reversing beeper noise, sirens and rock blasting. Quarry operations are considered the main point source of noise within the site boundary.

2.2 Surrounding Land Uses

The use of the land in the vicinity of the site is described in **Table 2** below.

Table 2 Surrounding Land

Direction	Surrounding Land Use
North	A railway line is located immediately north of the site. North of the railway line is arable agricultural land.
South	Agricultural arable land directly south, with a commercial property and the Princes Highway further south.
East	Rural properties with the land mainly used for grazing.
West	Rural properties with the land mainly used for grazing.

Noise sources in the vicinity of the site include the Princes Highway, Melbourne-Geelong Railway line, Truss Factory at 375 Wests Road, air traffic, agricultural machinery/vehicles, and vehicle traffic on Wests Road, Manor Road and Bulban Road.

Nearby sensitive receptors to the RDF include:

- ☐ A residential property located at 48 Manor Road, approximately 1.8 km northwest of active Cell 4C and 1.9 km northwest of the transfer station.
- ☐ A residential property located at 21 Station Street, approximately 1.5 km west of active Cell 4C and 1.45 km northwest of the transfer station.
- ☐ A commercial property located at 375 Wests Road, approximately 1.0 km south of active Cell 4C and 600 m southeast of the transfer station.
- ☐ A residential property located approximately 540 m east of active Cell 4C and 800 m northeast of the transfer station.
- ☐ Residential properties located along Browns Road located approximately 1.5 km east of active Cell 4C and 1.85 km northeast of the transfer station at their closest points.

These adjacent sensitive receptors were targeted as part of the noise survey monitoring program, further discussed in **Section 5**.

3 Previous Investigations

Compass Environmental is aware of three previous noise assessments completed at the site, with a brief overview of each assessment provided below.

3.1 Review of Noise Events from Wyndham Landfill (Matrix Acoustics 2014)

Matrix Acoustics completed noise monitoring at the RDF between 4 and 11 August 2014 to isolate noise events emanating from site operations at the landfill. Heavy vehicles were the primary source of noise targeted. The purpose of the monitoring was to determine noise levels that would be received at a noise sensitive receiver located to the east of the site.

The noise monitoring was completed using an ARL Ngara Type 1 environmental noise logger. For weekdays, heavy vehicle noises were audible including reversing beepers. The attributable noise levels ranged between 40 and 47 dB(A) on weekday early mornings, with continuous noise observed emanating from the Princes Freeway (up to 41 dB(A)), which was 700 m south of the sampling locations. Heavy freight trains (47 dB(A)) and aircraft events (50 dB(A) constituted louder event maximum noise levels but were not of a continuous nature.

The report stated that noise levels were above other ambient noise sources, but not much above the Princes Freeway. The report stated that the reversing beepers were the main prominent noise source.

Compass understands following review of the report, Wyndham City Council changed all reversing beepers on council operated vehicles to much lower frequency mufflers. Since this has been implemented there have been no noise complaints received by the council.

3.2 Noise Compliance Monitoring – Complaint Validation (ERM 2014)

ERM were engaged by Wyndham City Council to complete noise monitoring to verify complaints received by the council from a nearby residential property regarding night time (between 1.00 am and 3.00 am) noise emissions from the RDF. The monitoring was completed after reversing beepers on council vehicles had been replaced with much lower frequency mufflers.

The objective of the monitoring was to quantify existing and RDF noise levels via measurement at a background location to the east of the site (adjacent the residential property where a complaint had previously been received by the council), assess compliance in accordance with SEPP N-1 State Government of Victoria - Environment Protection Act 1970 – *State Environment Protection Policy (Control of Noise from Industry, Commerce and Trade)*, identify potential impacts on the surrounding environment and provide the council with recommendations to minimise impacts, if necessary.

ERM completed noise monitoring, derived noise emission source levels from plant on-site and developed noise limits based on measured ambient and background noise levels for the agricultural property to the east of the site. The sampling location had minimal impact from vehicle traffic.

The monitoring completed by ERM determined that the RDF noise generated from the RDF was acceptable in accordance with SEPP N-1.

3.3 Acoustic Management Plan (GHD 2015)

GHD were engaged by Wyndham City Council to complete an Acoustic Management Plan as per requirements in the planning permit WYP1221/07.03 issued in April 2015. The Acoustic Management Plan outlines management options for the active tip face noise, leachate pumping activities, transfer station noise, and future operations. The Acoustic Management Plan also recommended noise surveys are completed especially when excessive noise from the RDF is detected, and details incident response procedures and community consultation.

4 Relevant Guidelines

The main guidelines applicable to noise monitoring at the RDF include:

- ☐ State Government of Victoria - Environment Protection Authority (EPA Victoria) - *Environment Protection Act 1970 – Section 20 – Wyndham City Council License: 12483*, last amended 27 July 2016.
- ☐ State Government of Victoria - Environment Protection Authority (EPA Victoria) - *Publication 1322.6: License Management*, dated May 2015.
- ☐ State Government of Victoria - Environment Protection Act 1970 – *State Environment Protection Policy (Control of Noise from Industry, Commerce and Trade) No.N-1* (SEPP N-1) varied 31/10/2001 (No. S183, Gazette 31/10/2001).
- ☐ State Government of Victoria - Environment Protection Authority (EPA Victoria) – *Designation of Types of Zones and Reservations in the Metropolitan Region Planning Schemes for the Purposes of State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade) No. N-1*, dated February 2000.
- ☐ Standards Australia AS IEC 61672.1–2004TM (AS61672) – *Electro Acoustics - Sound Level Meters Specifications Monitoring*.
- ☐ Standards Australia AS1259.2-1990TM (AS1259) – *Acoustics – Sound Level Meters – Integrating Averaging*.
- ☐ Standards Australia AS/IEC 60942:2004/IEC 60942:2003 (IEC60942) – Australian StandardTM – *Electroacoustics – Sound Calibrators*.
- ☐ Standards Australia AS1055–1997TM (AS1055) – *Description and Measurement of Environmental Noise*, Parts 1, 2 and 3.
- ☐ International Organisation for Standardisation (ISO) 3746:2010 (ISO3746) - *Acoustics - Determination of Sound Power Levels and Sound Energy Levels of Noise Sources using Sound Pressure - Survey Method using an Enveloping Measurement Surface over a Reflecting Plane*.
- ☐ *Wyndham City Council Municipal Refuse Disposal Facility Acoustic Management Plan* issued by GHD in August 2015.

5 Noise Survey Monitoring

5.1 Scope

The noise survey monitoring requirements have been based on methodology outlined in the Acoustic Management Plan (GHD 2015). The Management Plan requires noise surveys to be completed to assess if the RDF and its operating procedures require adjustment to reduce noise generation. The noise survey methodology is detailed in the following sections.

Compass completed daytime noise survey monitoring (after 8.00 am) on 28 April, 24 May and 28 June 2016. The night time monitoring was completed (after 1.00 am when the RDF begins operation) on 25 May and 29 May 2016. All locations (N1-N6) were monitored during each event, with all monitoring completed when the landfill was operational.

5.2 Monitoring Locations

The selection of the monitoring locations was decided with consideration to the requirements of the SEPP-N1 and based on recommendations in the Acoustic Management Plan. The locations were based on the following:

- The measurement point to be located within a noise sensitive area or at a derived point.
- Where the measurement point is in a noise sensitive area, the measurement point shall be located outdoors.
- The measurement point in a noise sensitive area to be located at a point where the maximum effective noise level occurs.

The noise surveys were completed at six monitoring locations shown in **Figure 1** and detailed in **Table 3** below.

Table 3 Noise Survey Monitoring Locations

Location ID	Northing MGA	Easting MGA	Description of Location
Off-site Locations			
N1	5799357	286981	Outdoors to the northwest of the site adjacent a residential property located at 48 Manor Road.
N2	5799023	287348	Outdoors to the west of the site adjacent a residential property located at 21 Station Street.
N3	5797467	288939	Outdoors to the south of the site adjacent a commercial property located at 375 Wests Road.
N4	5798044	289686	Outdoors to the southeast of the site at a driveway to a residential property.
N5	5799040	290629	Outdoors to the east of the site adjacent a residential property on Browns Road.
On-site Locations			
N6	5798790	288948	Outdoors on-site along the eastern site boundary adjacent active Cell 4C, where the main on-site point sources of noise are concentrated.

The locations were chosen based on recommendations outlined in the Acoustic Management Plan and access to sample areas.

5.3 Monitoring Methodology

Continuous monitoring was completed at each location for a period of 30 minutes during each sampling event. A Class 1 Sound Pro SE/DL monitor fitted with an A-weighted filter and set for fast time weighting was used to collect noise parameters including L_{max}, L_{eq}, L_1, L_{10} and L_{90}. The Sound Pro unit was mounted to a tripod (1.35 m height) to avoid disturbance to the unit by the field scientist collecting measurements. The Sound Pro unit was calibrated pre and post monitoring at each location using a Quest Technologies QC10 calibrator with a calibration frequency of 114 decibels (dB), to confirm the instrument was working optimally at each sampling location.

During sampling with the Sound Pro monitor other observations were collected including:

☐ GPS co-ordinates of each sampling location using a handheld Magellan GPS unit.
☐ Wind speeds (maximum and average) using a TSI Vane Anemometer that records wind speeds in m/s.
☐ Detailed description of each location.
☐ Determination of distinctive noise sources at each location.
☐ Weather conditions both visual and through electronic access to the weather station located on-site.

The monitoring methodology complied with the Acoustic Management Plan (GHD 2015) and legislation documents listed in **Section 4**.

The monitoring targeted times with no rainfall and low wind speeds forecast. A copy of the monitoring records and equipment calibration certificates are provided in **Appendix B**.

5.4 Monitoring Results

Compass checked the complaints register maintained by Wyndham City Council to confirm if any noise complaints had been received from nearby properties. No noise complaints have been received since 2014, with the complaint in 2014 due to the frequency of the reversing beepers used on council vehicles (as determined by Matrix Acoustics 2014). The council changed all reversing beepers on their vehicles with low frequency mufflers, with no noise complaints received since.

No audible noise from the RDF was evident at any of the off-site monitoring locations (N1-N5) during any monitoring event. Vehicle traffic along the Princes Highway, Wests Road and Browns Road, and trains on the Melbourne-Geelong railway line were the main daytime noise sources for the off-site monitoring locations. The main night time sources of noise for the off-site monitoring locations were vehicle traffic on the Princes Highway and Browns Road. Other less dominant and frequent noise sources included aircraft, wildlife (birds and frogs) and activities at off-site properties.

On-site monitoring location N6 was located adjacent to active Cell 4C and the site boundary, where there was the highest potential for noise to be generated. On-site activities were only slightly audible and intermittent at the site boundary. The data showed that unacceptable noise was not emitting from the site boundary to nearby sensitive receptors. The monitoring data reported much higher noise frequencies (dB(A)) at off-site locations than on-site location N6. The RDF was operational during all monitoring events.

The monitoring was generally completed during periods of suitable weather conditions. Slightly elevated wind speeds were reported at certain locations on 24 May and 28 June, with the average wind speed <5 m/s during all monitoring events.

A review of the calibration data showed the Sound Pro unit was working optimally, indicating that the data obtained is reliable. The monitoring results are provided in **Table 4** below and **Appendix B**.

Table 4 Noise Monitoring Results

Location ID	Date	Start Time	Lmax dB(A)	Leq dB(A)	L1 dB(A)	L10 dB(A)	L90 dB(A)	Observed Noise Sources	Observed Meteorological Conditions
On-site									
N6	28 April 2016	2.20 pm	71.9	58.5	65.9	61.1	51.4	-Bulldozer on cell -RDF Vehicles -Wildlife (birds) - Aircraft	-Temp: 21.1 ºC -Wind Speed (avg.): 0.35 m/s -Wind Speed (max.):0.83 m/s -Wind Direction: N -Cloud Cover: 95%
	24 May 2016	1.00 pm	76.4	61.7	67.5	64.1	57.7	-Bulldozer on cell -RDF Vehicles -Wildlife (birds)	-Temp: 14.70 ºC -Wind Speed (avg.): 3.34 m/s -Wind Speed (max.): 6.56 m/s -Wind Direction: SW -Cloud Cover: 75%
	25 May 2016	1.00 am	62.5	50.2	55.6	51.1	48.5	-Bulldozer on cell -RDF Vehicles	-Temp: 7.27 ºC -Wind Speed (avg.): 0.41 m/s -Wind Speed (max.): 0.86 m/s -Wind Direction: NW -Cloud Cover: 50%
	28 June 2016	11.50 am	75.0	62.3	69.3	64.6	58.4	-Bulldozer on cell -RDF Vehicles -Rubbish trucks -Wildlife (birds)	-Temp: 14.53 ºC -Wind Speed (avg.): 1.68 m/s -Wind Speed (max.): 3.92 m/s -Wind Direction: W -Cloud Cover: 15%
	29 June 2016	1.03 am	64.3	54.9	60.6	57.5	51.1	-Bulldozer on cell -Wind	-Temp: 10.44 ºC -Wind Speed (avg.): 2.79

Location ID	Date	Start Time	Lmax dB(A)	Leq dB(A)	L1 dB(A)	L10 dB(A)	L90 dB(A)	Observed Noise Sources	Observed Meteorological Conditions
									m/s -Wind Speed (max.): 4.63 m/s -Wind Direction: NNW -Cloud Cover: 20%
Off-site									
N1	28 April 2016	1.26 pm	90.1	64.9	79.4	58.4	39.4	-Traffic on Manor Rd -Trains -Wildlife (birds) -Power tools from residential property -Aircraft	-Temp: 21.1 ºC -Wind Speed (avg.): 0.71 m/s -Wind Speed (max.):1.42 m/s -Wind Direction: N -Cloud Cover: 100%
	24 May 2016	12.05 pm	85.5	62.6	77.3	54.6	43.2	-Traffic on Manor Rd -Trains -Wildlife (birds)	-Temp: 14.70 ºC -Wind Speed (avg.): 2.39 m/s -Wind Speed (max.): 5.21 m/s -Wind Direction: SW -Cloud Cover: 80%
	25 May 2016	2.25 am	72.8	44.4	51.8	43.0	37.4	-Traffic on Manor Road -Traffic on highway	-Temp: 7.27 ºC -Wind Speed (avg.): 0.41 m/s -Wind Speed (max.): 0.94 m/s -Wind Direction: NW -Cloud Cover: 50%
	28 June 2016	1.20 pm	84.8	63.0	78.2	54.9	43.1	-Traffic on Manor Rd -Trains	-Temp: 14.53 ºC -Wind Speed (avg.): 1.43 m/s -Wind Speed (max.): 3.16 m/s

Location ID	Date	Start Time	Lmax dB(A)	Leq dB(A)	L1 dB(A)	L10 dB(A)	L90 dB(A)	Observed Noise Sources	Observed Meteorological Conditions
									-Wind Direction: W -Cloud Cover: 15%
	29 June 2016	2.20 am	67.3	45.4	54.0	45.0	41.9	-Traffic on Browns Rd -Wildlife (frogs)	-Temp: 10.44 ºC -Wind Speed (avg.): 1.47 m/s -Wind Speed (max.): 2.65 m/s -Wind Direction: NNW -Cloud Cover: 20%
N2	28 April 2016	12.41 pm	87.7	65.6	80.1	61.6	42.7	-Trains -Traffic on Wests Road -Wildlife (birds) -Aircraft	-Temp: 21.1 ºC -Wind Speed (avg.): 1.14 m/s -Wind Speed (max.): 2.69 m/s -Wind Direction: N -Cloud Cover: 100%
	24 May 2016	11.24 am	89.5	65.1	78.4	57.3	46.3	-Trains -Traffic on Wests Road -Wildlife (birds)	-Temp: 14.70 ºC -Wind Speed (avg.): 4.29 m/s -Wind Speed (max.): 7.08 m/s -Wind Direction: SW -Cloud Cover: 80%
	25 May 2016	1.46 am	65.6	42.7	50.9	44.1	39.1	-Trains -Traffic on Wests Road	-Temp: 7.27 ºC -Wind Speed (avg.): 0.16 m/s -Wind Speed (max.): 0.64 m/s -Wind Direction: NW -Cloud Cover: 40%
	28 June 2016	12.40 pm	89.0	64.8	79.2	58.0	42.9	-Trains -Traffic on Wests Road	-Temp: 64.8 ºC -Wind Speed (avg.): 2.41

Location ID	Date	Start Time	Lmax dB(A)	Leq dB(A)	L1 dB(A)	L10 dB(A)	L90 dB(A)	Observed Noise Sources	Observed Meteorological Conditions
									m/s -Wind Speed (max.): 4.06 m/s -Wind Direction: W -Cloud Cover: 15%
	29 June 2016	1.44 am	64.8	48.3	56.5	50.9	44.0	-Wind	-Temp: 10.44 ºC -Wind Speed (avg.): 3.01 m/s -Wind Speed (max.): 5.11 m/s -Wind Direction: NNW -Cloud Cover: 20%
N3	28 April 2016	11.50 am	88.5	73.1	79.7	75.9	67.8	-Traffic on highway -Traffic on Wests Road -Wildlife (birds)	-Temp: 21.1 ºC -Wind Speed (avg.): 0.74 m/s -Wind Speed (max.): 2.24m/s -Wind Direction: N -Cloud Cover: 90%
	24 May 2016	10.30 am	84.0	74.2	81.0	77.4	67.9	-Traffic on highway -Traffic on Wests Road -Wildlife (birds)	-Temp: 9.95 ºC -Wind Speed (avg.): 4.60 m/s -Wind Speed (max.): 7.28 m/s -Wind Direction: WSW -Cloud Cover: 75%
	25 May 2016	3.05 am	81.3	65.7	76.9	69.4	50.4	-Traffic on highway -Traffic on Wests Road	-Temp: 9.58 ºC -Wind Speed (avg.): 0.74 m/s -Wind Speed (max.): 1.19 m/s -Wind Direction: NW

Location ID	Date	Start Time	Lmax dB(A)	Leq dB(A)	L1 dB(A)	L10 dB(A)	L90 dB(A)	Observed Noise Sources	Observed Meteorological Conditions
									-Cloud Cover: 30%
	28 June 2016	11.04 am	82.8	72.7	79.7	75.8	66.8	-Traffic on highway -Traffic on Wests Road -Wind	-Temp: 7.54 ºC -Wind Speed (avg.): 3.64 m/s -Wind Speed (max.): 5.98 m/s -Wind Direction: NW -Cloud Cover: 15%
	29 June 2016	3.00 am	84.7	64.8	76.4	67.8	49.1	-Traffic on highway	-Temp: 10.44 ºC -Wind Speed (avg.): 0.62 m/s -Wind Speed (max.): 2.03 m/s -Wind Direction: NNW -Cloud Cover: 10%
N4	28 April 2016	11.08 am	86.4	70.0	79.8	71.8	64.8	-Traffic on highway -Traffic on Wests Road -Wildlife (birds)	-Temp: 21.1 ºC -Wind Speed (avg.): 0.8 m/s -Wind Speed (max.):1.9 m/s -Wind Direction: N -Cloud Cover: 90%
	24 May 2016	9.50 am	91.8	74.0	86.7	74.1	64.9	-Traffic on highway -Traffic on Wests Road -Wildlife (birds)	-Temp: 9.95 ºC -Wind Speed (avg.): 3.54 m/s -Wind Speed (max.): 6.25 m/s -Wind Direction: WSW -Cloud Cover: 85%
	25 May 2016	3.41 am	87.7	64.5	72.6	66.6	52.4	-Traffic on highway -Traffic on Wests Road	-Temp: 9.58 ºC -Wind Speed (avg.): 0.88

Location ID	Date	Start Time	Lmax dB(A)	Leq dB(A)	L1 dB(A)	L10 dB(A)	L90 dB(A)	Observed Noise Sources	Observed Meteorological Conditions
									m/s -Wind Speed (max.): 1.56 m/s -Wind Direction: NW -Cloud Cover: 30%
	28 June 2016	10.20 am	93.2	73.2	86.2	73.2	61.4	-Traffic on highway -Traffic on Wests Road -Wildlife (birds)	-Temp: 7.54 ºC -Wind Speed (avg.): 3.28 m/s -Wind Speed (max.): 6.51 m/s -Wind Direction: NW -Cloud Cover: 15%
	29 June 2016	3.36 am	84.6	64.0	72.5	66.8	54.1	-Traffic on highway -Traffic on Wests Road	-Temp: 9.83 ºC -Wind Speed (avg.): 0.72 m/s -Wind Speed (max.): 1.71 m/s -Wind Direction: NW -Cloud Cover: 10%
N5	28 April 2016	9.52 am	92.1	62.2	68.8	54.0	48.2	-Traffic on highway -Traffic on Wests Road -Traffic on Browns Road -Wildlife (birds) -Power tools from private property	-Temp: 20.75 ºC -Wind Speed (avg.): 0.21 m/s -Wind Speed (max.):1.64 m/s -Wind Direction: NNW -Cloud Cover: 90%
	24 May 2016	8.48 am	84.0	60.7	71.9	54.3	52.7	-Traffic on highway -Traffic on Wests Road -Traffic on Browns Road -Wildlife (birds)	-Temp: 9.95 ºC -Wind Speed (avg.): 3.49 m/s -Wind Speed (max.): 5.46 m/s

Location ID	Date	Start Time	Lmax dB(A)	Leq dB(A)	L1 dB(A)	L10 dB(A)	L90 dB(A)	Observed Noise Sources	Observed Meteorological Conditions
									-Wind Direction: WSW Cloud Cover: 80%
	25 May 2016	4.18 am	66.8	55.9	62.5	58.7	50.8	-Traffic on highway -Traffic on Wests Road	-Temp: 9.58 ºC -Wind Speed (avg.): 1.14 m/s -Wind Speed (max.): 2.03 m/s -Wind Direction: NW -Cloud Cover: 35%
	28 June 2016	9.19 am	83.1	59.7	73.9	52.5	47.5	-Traffic on highway -Traffic on Wests Road -Wildlife (birds) -Wind (mild)	-Temp: 7.54 ºC -Wind Speed (avg.): 2.04 m/s -Wind Speed (max.): 4.79 m/s -Wind Direction: NW -Cloud Cover: 10%
	29 June 2016	4.12 am	72.1	55.9	63.7	58.1	52.2	-Traffic on highway -Wildlife (frogs)	-Temp: 9.83 ºC -Wind Speed (avg.): 0.82 m/s -Wind Speed (max.): 2.38 m/s -Wind Direction: NW -Cloud Cover: 5%

6 Conclusions

Compass Environmental has completed noise survey monitoring as per requirements in the Acoustic Management Plan. The objective of the noise surveys is to ensure unacceptable noise is not emitting from the site boundary due to landfill activities. The noise survey monitoring completed between April and June 2016 has demonstrated that noise generated at the RDF is acceptable to nearby sensitive receptors. This is confirmed by no noise complaints received by the council since 2014. During all rounds of monitoring, all council vehicles at the RDF were using low frequency mufflers, which minimises noise generation.

Based on the noise surveys and review of the complaints register, the RDF is compliant with condition LI_A2 of their EPA Victoria licence 12843. Compass Environmental has not recommended any specific noise mitigation measures, management measures or additional monitoring options to those already implemented at the site.

7 References

EPA 2015. Publication 1322.6 Licence Management. May 2015.

ERM 2014. Wests Road Refuse Disposal Facility Noise Compliance Monitoring – Complaint Validation. 8 December 2014.

GHD 2015. Wyndham City Council Municipal Refuse Disposal Facility Acoustic Management Plan. August 2015.

Matrix Acoustics 2014. Review of noise events from Wyndham Landfill. 3 September 2014.

8 Limitations

This report has been prepared in accordance with the agreement between Wyndham City Council and Compass Environmental. The services performed by Compass Environmental have been conducted in a manner consistent with the level of quality and skill generally exercised by the consulting profession.

This report is based on the conditions encountered and data reviewed between April and July 2016. Compass Environmental assumes no responsibility for any changes that may have occurred after this time. The methodologies and sources of information used by Compass Environmental are outlined in the report. Compass Environmental has made no independent verification of this information beyond the agreed scope of work and assumes no responsibility for any inaccuracies or omissions.

This report has been prepared for the use of Wyndham City Council and may not contain sufficient information for purposes of other parties or users. Any reliance on this report by a third party shall be at its sole risk.

This report should be read in full and may be not used to support any other objectives than those set out in the report.

FIGURES

NORTH:

SCALE: 0 75 150 225 300m
SCALE 1:15,000 @ A3

MONITORING LOCATION: N1

BASE PLAN: MEINHARDT (R01-02)

CLIENT: WYNDHAM CITY COUNCIL

LOCATION: **WESTS ROAD WERRIBEE**

DETAIL: **NOISE SURVEY MONITORING LOCATIONS**

DRAWN BY: AE

REVIEWED BY: SH

DRAWING DATE: 27 JULY 2016

FILE REFERENCE: 1192_DRW2AV01.DWG

FIGURE NUMBER: **1**

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COMPASS ENVIRONMENTAL PTY LTD
SUITE 6, 5 ROSE STREET HAWTHORN EAST VICTORIA 3123
PH: 9819 4704 FAX: 9819 4724 EMAIL: enquiry@compassenviro.com.au

APPENDIX A

EPA Licence

ENVIRONMENT PROTECTION ACT 1970
SECTION 20

LICENCE

WYNDHAM CITY COUNCIL

Holder of

Licence: **12483**

Issued: 06/01/1992

Last Amended: 27/07/2016

ABN: 38 393 903 860

Registered Address: 45 PRINCES HWY
WERRIBEE VIC 3030

Premises Address: 420 WESTS RD
WERRIBEE VIC 3030

Scheduled Categories: A05 Landfills

Description: The licence holder operates a landfill. This licence allows for solid inert waste, putrescible waste and shredded tyres to be deposited to land.

Quentin Cooke

....

QUENTIN COOKE
Team Leader
Development Assessments
Delegate of the Environment Protection Authority

Issued under the *Environment Protection Act 1970*, Section 20

PREAMBLE

Licences

Who we are: The Environment Protection Authority (“EPA”) is an independent statutory authority established under the *Environment Protection Act 1970* (“the Act”). Our purpose is to protect and improve our environment by preventing harm to the environment and human health.

Why we issue licences: EPA is responsible for preventing or controlling pollution (including noise) and improving the quality of the environment. This responsibility includes regulating activities that may present a danger to the environment. One of the tools available to EPA is the licensing of certain scheduled premises that may present a risk to the environment.

Section 20 of the Act requires the occupier of a “scheduled premises” to obtain an EPA licence to discharge, handle, treat or dispose of waste to the environment. These premises are defined in the *Environment Protection (Scheduled Premises and Exemptions) Regulations 2007* (“the Regulations”).

When we issue licences: EPA will issue a licence when satisfied that an applicant has put in place measures to protect the environment. Licences allow activities to occur and set performance outcomes based on a site’s environmental risk. EPA can amend, suspend or revoke a licence in response to changes in standards, site activities or licence holder performance. Licence holders must submit an annual performance statement and pay an annual fee to EPA. All licences and performance statements are publicly available.

Licence information and obligations

For the purposes of this licence “You” means the licence holder identified on the first page of this licence at the “premises” identified on the first page and represented in Schedule 1.

If you object to any of the licence conditions, you may have the decision reviewed by applying in writing to the Registrar, Planning and Environment Division, Victorian Civil and Administrative Tribunal (“VCAT”), 7th Floor, 55 King Street, Melbourne within 21 days of the date of issue. An application fee may be applicable when lodging an appeal with VCAT. Contact VCAT on (03) 9628 9777 for further details on fees associated with an appeal. A copy of the appeal should also be forwarded to the Manager, Development Assessments Unit, Environment Protection Authority, GPO Box 4395, Melbourne, 3001, within 7 days of lodgement of the appeal.

Interested (third) parties may also appeal against the licence within 21 days of the date of issue. The Tribunal will notify you if such appeals are received. If an appeal is lodged, this licence will not come into effect.

Compliance: You must comply at all times with the Act and all policies and regulations administered by EPA. Strict penalties apply for non-compliance with any part of your licence or making a false claim on your annual performance statement.

Licence structure

Structure: Your licence has multiple parts:

- Environmental performance conditions - setting out the performance outcomes you must meet;
- Schedule 1A - locality plan of your premises;
- Schedule 1B - plan of premises (provided by you).

Some types of licences also contain Schedule 1C - final landfill contour plans and/or Schedule 2 - tables specifying wastes that may be accepted at the premises and the associated treatment applied to them.

CONDITIONS

General Conditions

LI_G1	Waste from the premises must not be discharged to the environment except in accordance with this licence.
LI_G2	You must immediately notify EPA of non-compliance with any condition of this licence.
LI_G3	By 30 September each year you must submit an annual performance statement to EPA for the previous financial year in accordance with the Annual Performance Statement Guidelines (EPA Publication 1320).
LI_G4	Documents and monitoring records used for preparation of the annual performance statement must be retained at the premises for seven years from the date of each statement.
LI_G6	You must maintain a financial assurance calculated in accordance with the EPA method.
LI_G7	In accordance with the method and frequency specified in section 50SB of the Act you must (a) calculate the amount of landfill levy payable, (b) prepare a landfill levy statement and (c) submit to EPA both the statement and fee payable.

Amenity Conditions

LI_A1	Offensive odours must not be discharged beyond the boundaries of the premises.
LI_A2	Unacceptable noise (including vibration) must not be emitted beyond the boundaries of the premises.
LI_A3	Nuisance dust must not be discharged beyond the boundaries of the premises.

Waste Acceptance Conditions

LI_WA1	Only wastes listed in Schedule 2 may be accepted at the premises.
LI_WA2	Wastes accepted at the premises may only be treated or disposed of in accordance with Schedule 2.

Waste Management Conditions

LI_WM3	You must ensure that litter is not deposited beyond the boundaries of the premises.
LI_WM4	You must ensure that waste does not burn at the premises.

Landfill Conditions

LI_L1	You must implement a monitoring program, verified by an environmental auditor appointed pursuant to the Act, which enables both you and EPA to determine compliance with this licence.
LI_L2	You must engage an environmental auditor appointed pursuant to the Act to conduct the environmental audits at the frequency specified in the verified monitoring program.
LI_L3	By the end of each day's operations waste must be covered with a layer of soil at least 0.30 metres thick or using another method of cover approved by EPA.

LI_L4	Waters contaminated by leachate must not be discharged beyond the boundaries of the premises.
LI_L4.1	You must extract leachate from cell(s) Cell 4A, Cell 4B, Cell 4C Stage 1 and Cell 4C Stage 2 such that the depth of leachate above the lowest point of the drainage layer does not exceed 300 mm.
LI_L5	You must prevent emissions of landfill gas from exceeding the investigation levels specified in Best Practice Environmental Management, Siting, Design, Operation and Rehabilitation of Landfills (EPA Publication 788).
LI_L6	You must progressively rehabilitate landfill cells in accordance with Best Practice Environmental Management, Siting, Design, Operation and Rehabilitation of Landfills (EPA Publication 788).
LI_L7	You must not start constructing a new cell without written EPA approval.
LI_L8	You must ensure that an independent annual survey is conducted for each landfill cell to (a) determine the quantity of waste deposited and verify the amount of landfill levy payable, (b) demonstrate the need for any new cells and (c) confirm that cell heights are less than the approved pre-settlement contour plan.
LI_L9.1	You must manage each landfill cell so that its final contour prior to settlement is not higher at any point than the pre-settlement contour plan shown in Schedule 1.
LI_L10	A weighbridge must be used to determine the weight of waste deposited at the premises.

Air Conditions

Licence does not have any discharge to air conditions.

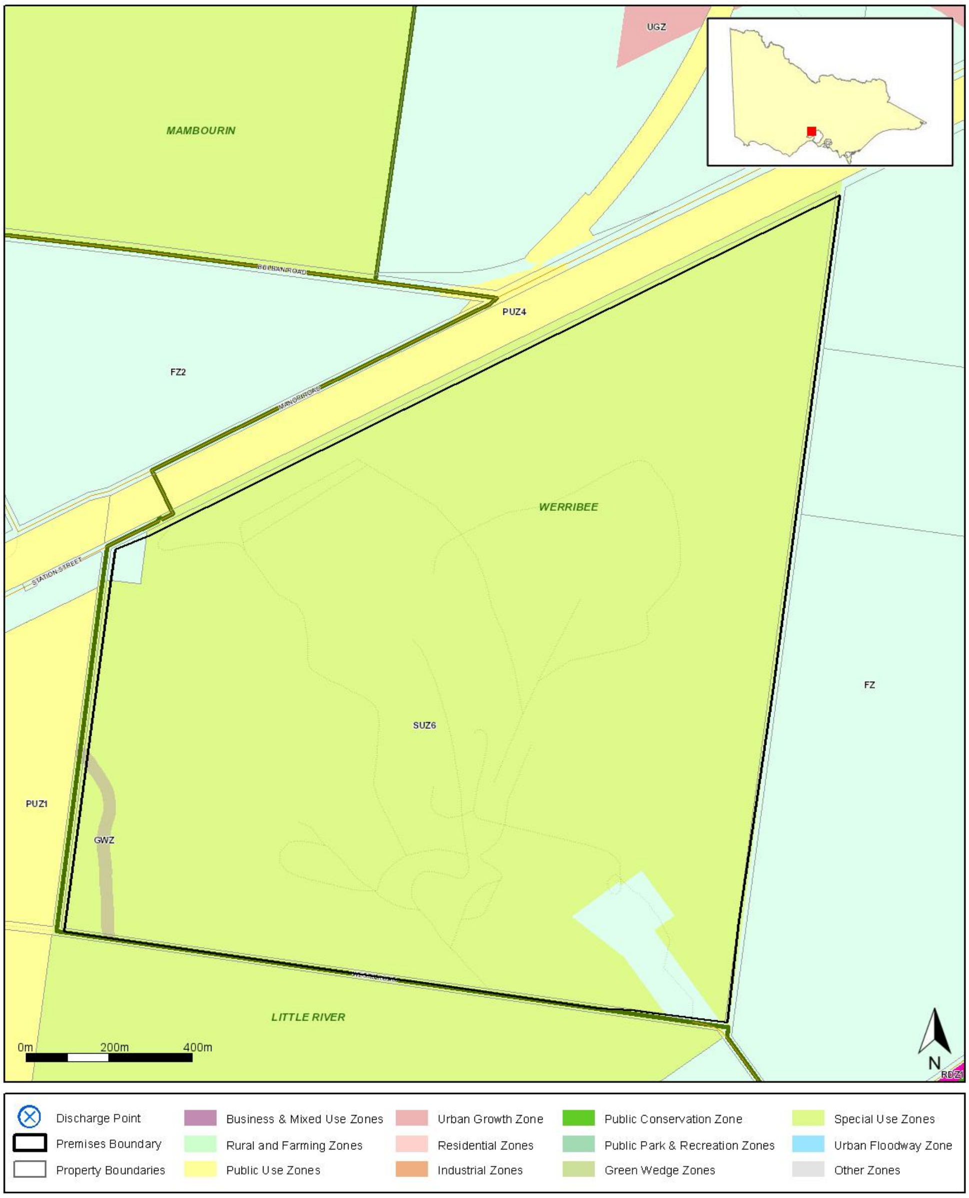
Water Conditions

LI_DW1	Stormwater discharged from the premises must not be contaminated with waste.

Land Conditions

LI_DL1	You must not contaminate land or groundwater.

SCHEDULE 1A - LOCALITY PLAN



Licence:	12483
Company Name:	WYNDHAM CITY COUNCIL
ABN:	38 393 903 860
Premises Address:	Werribee Landfill, 420 Wests RD, WERRIBEE VIC 3030
Issued:	06/01/1992
Last Amended:	27/07/2016

Before relying on the information in this map, users should carefully evaluate its accuracy, currency, completeness and relevance for their purposes, and should obtain any appropriate professional advice relevant to their particular circumstances.

SCHEDULE 1B - PREMISES PLAN

RDF Plan of Premises - 420 Wests Rd, Werribee

Legend

●	Site centroid: Lon 144.589477 Lat -37.932637	●	Leachacte Pond	▲	Leachate	●	Groundwater Bores	🟩	LGU Facility
●	Gas Monitoring Bores	▭	New Leachate Pond	●	Future Leachate Pond	▭	Active Cells	▨	Clean Fill Depot

wyndhamcity

0 75 150 225 300 375 m

Ref #9315, 12678

Created by Wyndham GIS
gis@wyndham.vic.gov.au

Disclaimer: This graphic is suitable for information only. Wyndham City Council accepts no responsibility for accuracy or contents for displayed data.

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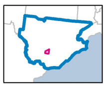

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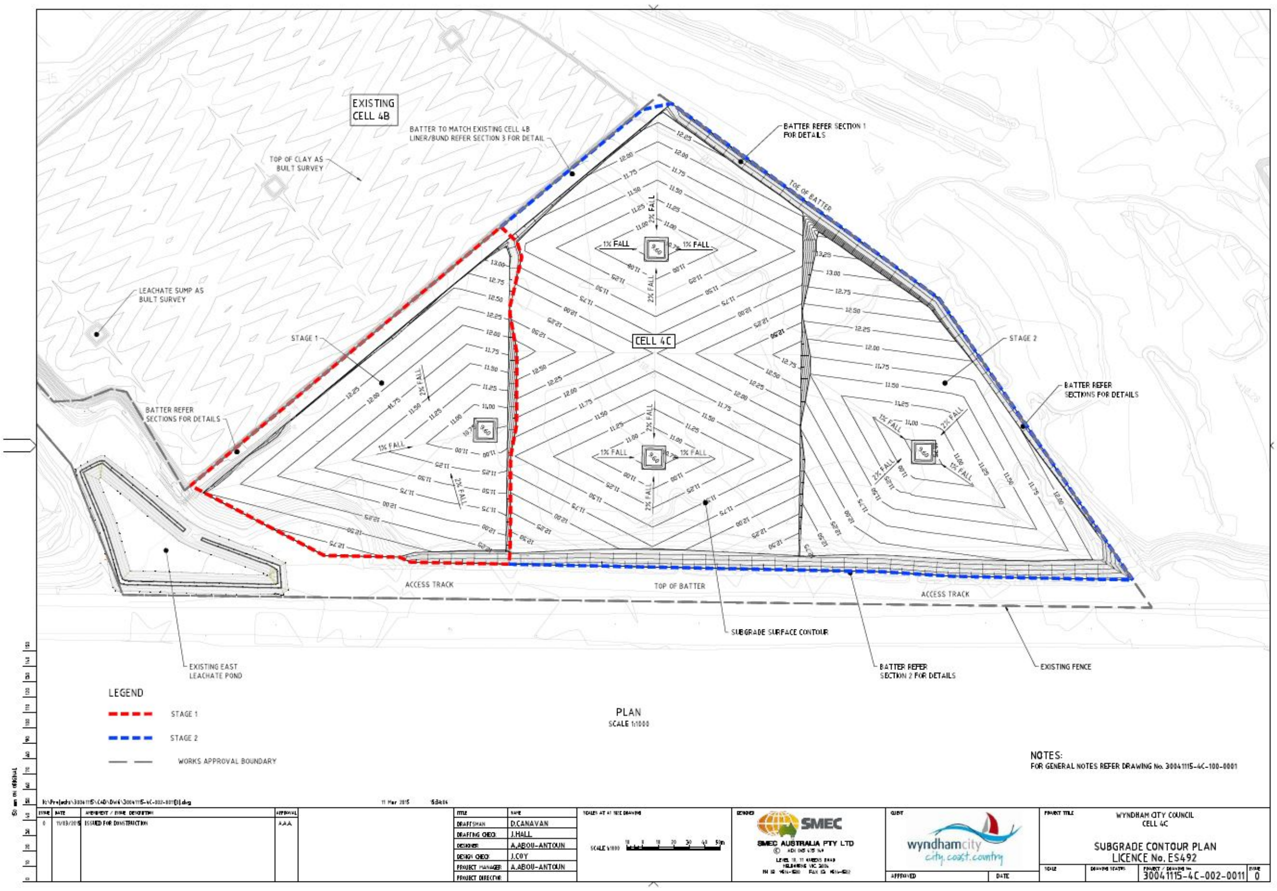
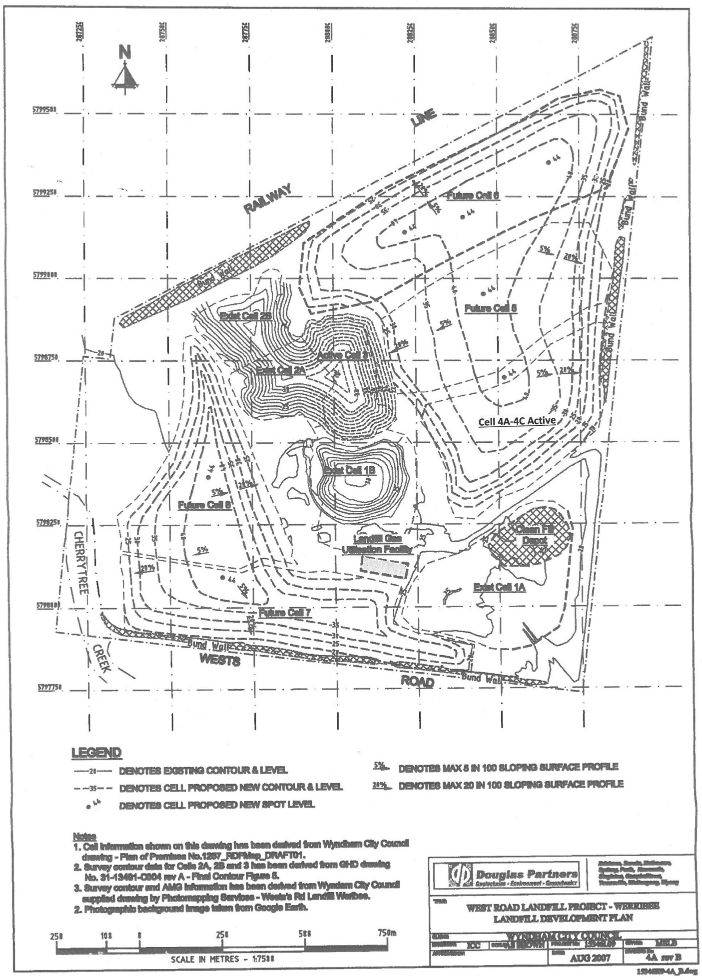
SCHEDULE 1B - PREMISES PLAN



Licence:	12483
Company Name:	WYNDHAM CITY COUNCIL
ABN:	38 393 903 860
Premises Address:	Werribee Landfill, 420 Wests RD, WERRIBEE VIC 3030
Issued:	06/01/1992
Last Amended:	27/07/2016

Before relying on the information in this map, users should carefully evaluate its accuracy, currency, completeness and relevance for their purposes, and should obtain any appropriate professional advice relevant to their particular circumstances.

SCHEDULE 1C - CONTOUR PLAN



Licence:	12483
Company Name:	WYNDHAM CITY COUNCIL
ABN:	38 393 903 860
Premises Address:	Werribee Landfill, 420 Wests RD, WERRIBEE VIC 3030
Issued:	06/01/1992
Last Amended:	27/07/2016

Before relying on the information in this map, users should carefully evaluate its accuracy, currency, completeness and relevance for their purposes, and should obtain any appropriate professional advice relevant to their particular circumstances.

SCHEDULE 2 - WASTE ACCEPTANCE TABLES

Disposal to Landfill - General Waste

Landfill Cell	Waste Type
CELL 4B	Putrescible waste
	Solid inert waste
	Tyres shredded into pieces < 250 mm
CELL 4C STAGE 1	Putrescible waste
	Solid inert waste
	Tyres shredded into pieces < 250 mm
CELL 4C STAGE 2	Putrescible waste
	Solid inert waste
	Tyres shredded into pieces < 250 mm
Cell 4A	Putrescible waste
	Solid inert waste
	Tyres shredded into pieces < 250 mm

APPENDIX B

Noise Survey Field Monitoring Data and Equipment Calibration Records

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NOISE LEVEL MONITORING FORM

LOCATION ID: N5

Project details:

Date: 28·4·16	Time: 9:52am	Project number: 1192	Project manager: SH
Client: WCC		Project location: Wembee	Monitored by: fM

Equipment details:

Calibrator make: Quest Technologies	Model: QC-10/QC-20	Serial Number: QI 090186
	Level: 114 dB	Frequency: 1000 Hz
Wind speed meter make: TSi	Model: Vane anemometer	Serial Number: TS72575 18002
Sound level meter: Quest technologies	Model: SLM TYPE 1	Serial Number: BJK110022
	Meter settings (e.g. linear, exponential, weightings: a, b, c, fast, slow, impulsive): A-weighted filter + fast time weighting.	
	Calibration reading pre monitoring (time and dB):	113·9 dB
	Calibration reading post monitoring (time and dB):	114.2 dB

Location sampling details:

Description of location:	Grass verge opposite residential property, just off Browns rd.
Distinctive noise sources:	- Background traffic from M1 motorway, - local traffic from Westt Rd & Brown Rd. - Birds; crows, finches - powertool in distance, approx 300m away, intermittend drilling.
GPS coordinates:	0290629E, 5799040N

Field measurements:

Monitoring interval:	30 mins		
Start time:	10·17AM	Finish time:	10·47AM
Noise field parameters dB(A): TWA - 50·1 dB		Lmax	92·1 dB
		Lmin	
		Leq	62·2 dB
		L1	68·8 dB
		L10	54·0 dB
		L90	48·2 dB
Height of meter (note: 1.2 minimum above ground level):		1·35 m	
Noise character (e.g. broad band, impulsive, tonal):		Just audible for background intermittent Dominant for traffic on Browns Rd.	

Weather conditions during monitoring:

Wind speed:	Maximum: 1·64 m.	m/second
	Average: 0·21	m/second
	Approximate direction:	NNW
Ambient temperature:	20.75°c	
Relative humidity:	45·60 %	
Cloud cover:	90 %	
Inversion layer Y/N:	Y - minor drizzle	
Other (e.g. fog, drizzle etc.)	minor drizzle	

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NOISE LEVEL MONITORING FORM

LOCATION ID: N4

Project details:

Date: 28·4·16	Time: 11·08Am	Project number: 1192	Project manager: SH
Client: WCC		Project location: Werribee	Monitored by: PM

Equipment details:

Calibrator make: Quest Technologies	Model: QC-10 / QC-20	Serial Number: QIJ090186
	Level: 114 dB	Frequency: 1000Hz
Wind speed meter make: TSI	Model: Vane anemometer	Serial Number: TS 72 57518002
Sound level meter: Quest technologies	Model: SLM TYPE 1	Serial Number: BJK110022
	Meter settings (e.g. linear, exponential, weightings: a, b, c, fast, slow, impulsive): A-weighted filter + fast time weighting	
	Calibration reading pre monitoring (time and dB):	114·2 dB
	Calibration reading post monitoring (time and dB):	114·0 dB

Location sampling details:

Description of location:	Driveway off Westr Rd. Approx 10m off West Rd.
Distinctive noise sources:	- Traffic from M1 motorway - Traffic from West rd. - Wildlife, including crows & finches
GPS coordinates:	0289686E, 5798044N

Field measurements:

Monitoring interval: 30 mins	
Start time: 11·12Am	Finish time: 11·42Am
Noise field parameters dB(A): TWA - 58·0 dB	Lmax 86·4 dB Lmin Leq 70·0 dB L1 79·8 dB L10 71·8 dB L90 64·8 dB
Height of meter (note: 1.2 minimum above ground level):	1·35 m
Noise character (e.g. broad band, impulsive, tonal):	Audible for M1 traffic, intermittent Dominant for West Rd. traffic.

Weather conditions during monitoring:

Wind speed:	Maximum: 1·90 m/second Average: 0·80 m/second Approximate direction: N
Ambient temperature:	21·1 °C
Relative humidity:	48·4 %
Cloud cover:	90 %
Inversion layer Y/N:	N
Other (e.g. fog, drizzle etc.)	V·minor drizzle.

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NOISE LEVEL MONITORING FORM

LOCATION ID:	N3

Project details:

Date: 28·4·16	Time: 11·50Am	Project number: 1192	Project manager: SH
Client: WCC		Project location: wembee	Monitored by: PM

Equipment details:

Calibrator make: Quest Technologies	Model: QC-10 / QC-20	Serial Number: QIJ090186
	Level: 114 dB	Frequency: 1000 Hz
Wind speed meter make: TSI	Model: Vane anemometer	Serial Number: T57251518002
Sound level meter: Quest technologies	Model: SLM TYPE 1	Serial Number: BJK110022
	Meter settings (e.g. linear, exponential, weightings: a, b, c, fast, slow, impulsive): A-weighted filter + fast time Weighting	
	Calibration reading pre monitoring (time and dB):	114·0 dB
	Calibration reading post monitoring (time and dB):	114·1 dB

Location sampling details:

Description of location:	LAne off West Rd. Approx 25m from M1 motorway
Distinctive noise sources:	- Traffic from M1 motorway - local traffic from laneway off West Rd. - Wildlife, including birds; crows
GPS coordinates:	0288939E, 5797467N

Field measurements:

Monitoring interval:	30 mins	
Start time:	11.54 Am	Finish time: 12.24 pm
Noise field parameters dB(A):	Lmax	88·5 dB
	Lmin	
	Leq	73·1 dB
	L1	79·7 dB
	L10	75·9 dB
	L90	67·8 dB
Height of meter (note: 1.2 minimum above ground level):	1·35 m	
Noise character (e.g. broad band, impulsive, tonal):	Dominant, constant from M1 motorway	

Weather conditions during monitoring:

Wind speed:	Maximum: 2.24	m/second
	Average: 0·74	m/second
	Approximate direction:	N
Ambient temperature:	21·1 °C	
Relative humidity:	48·4 %	
Cloud cover:	90 %	
Inversion layer Y/N:	N	
Other (e.g. fog, drizzle etc.)	minor drizzle, r	

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NOISE LEVEL MONITORING FORM

LOCATION ID: N2

Project details:

Date: 28.4.16	Time: 12.41pm	Project number:	1192	Project manager:	SH
Client: WCC		Project location:	Wembee	Monitored by:	pm

Equipment details:

Calibrator make: Quest Technologies	Model: QC-10 / QC-20	Serial Number: Q15090186
	Level: 114 dB	Frequency: 1000Hz
Wind speed meter make: TSI	Model: Vane anenometer	Serial Number: T5725151 8002
Sound level meter: Quest Technologies	Model: SLM TYPE 1	Serial Number: BJK110022
	Meter settings (e.g. linear, exponential, weightings: a, b, c, fast, slow, impulsive): A-Weighted filter + fast time Weighting	
	Calibration reading pre monitoring (time and dB):	114.0 dB
	Calibration reading post monitoring (time and dB):	113.8 dB

Location sampling details:

Description of location:	Grass verge infront of residential property Approx 2m from Wests Rd.
Distinctive noise sources:	- Traffic from West Rd. - Train - Intermittent - overhead planes - intermittent - wildlife - Crows - Intermittent
GPS coordinates:	0287348E, 5799023N

Field measurements:

Monitoring interval:	30 mins		
Start time:	12.48 pm	Finish time:	1.18 pm
Noise field parameters dB(A): TWA - 53.6 dB		Lmax	87.7 dB
		Lmin	
		Leq	65.6 dB
		L1	80.1 dB
		L10	61.6 dB
		L90	42.7 dB
Height of meter (note: 1.2 minimum above ground level):		1.35 m	
Noise character (e.g. broad band, impulsive, tonal):		Intermittent & Infrequent traffic, Audible	

Weather conditions during monitoring:

Wind speed:	Maximum:	2.69	m/second
	Average:	1.14	m/second
	Approximate direction:	N	
Ambient temperature:		21.1	°C
Relative humidity:		48.4	%
Cloud cover:		100	%
Inversion layer Y/N:		Y	
Other (e.g. fog, drizzle etc.)		minor drizzle	

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NOISE LEVEL MONITORING FORM

LOCATION ID: N1

Project details:

Date: 28.4.16	Time: 1.26pm	Project number:	1192	Project manager:	SH
Client:	WCC	Project location:	Werribee	Monitored by:	YM

Equipment details:

Calibrator make: Quest Technologies	Model: QC-10 / QC-20	Serial Number: QIJ090186	
	Level: 114 dB	Frequency: 1000 Hz	
Wind speed meter make: TSI	Model: Vane anemometer	Serial Number: T5725I518002	
Sound level meter: Quest technologies	Model: SLM TYPE 1	Serial Number: BJK110022	
	Meter settings (e.g. linear, exponential, weightings: a, b, c, fast, slow, impulsive): A-weighted filter + fast time weighting		
	Calibration reading pre monitoring (time and dB):	113.9 dB	
	Calibration reading post monitoring (time and dB):	114.1 dB	

Location sampling details:

Description of location:	Grass verge infront of residential property Approx 3m from Manor Rd
Distinctive noise sources:	- Traffic from Manor Rd - intermittent - Train - intermittent - wildlife, birds i.e Crows, intermittent - Powertool in distance - intermittent - Planes.
GPS coordinates:	0286981E, 5799357N

Field measurements:

Monitoring interval:	30 mins	
Start time:	1.30 pm	Finish time: 2.00pm
Noise field parameters dB(A): TWA - 52.9 dB		Lmax 70.1 dB
		Lmin
		Leq 64.9
		L1 79.4
		L10 58.4
		L90 39.4
Height of meter (note: 1.2 minimum above ground level):		1.35 m
Noise character (e.g. broad band, impulsive, tonal):		intermittent & infrequent traffic, Audible

Weather conditions during monitoring:

Wind speed:	Maximum: 1.42 m/s m/second
	Average: 0.71 m/s m/second
	Approximate direction: N
Ambient temperature:	21.1 °C
Relative humidity:	48.40%
Cloud cover:	100 %
Inversion layer Y/N:	Y
Other (e.g. fog, drizzle etc.)	minor drizzle

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NOISE LEVEL MONITORING FORM

LOCATION ID: N6

Project details:

Date: 28·4·16	Time: 2·20pm	Project number: 1192	Project manager: SH
Client: WCC		Project location: Wembee	Monitored by: PM

Equipment details:

Calibrator make: Quest Technologies	Model: Qc-10 / Qc-20	Serial Number: QIJ090186
	Level: 114 dB	Frequency: 1000 Hz
Wind speed meter make: TSI	Model: Vane anemometer	Serial Number: TS7251518002
Sound level meter: Quest technologies	Model: SLM TYPE 1	Serial Number: BJK110022
	Meter settings (e.g. linear, exponential, weightings: a, b, c, fast, slow, impulsive): A-weighted filter, + fast time weighting	
	Calibration reading pre monitoring (time and dB):	114·0 dB
	Calibration reading post monitoring (time and dB):	114·0 dB

Location sampling details:

Description of location:	Approx 15m North of Leachate pond 2.
Distinctive noise sources:	- Bulldozers on live cell - ROF Veehicles - Talking personnel - Wildlife - Birds, Crows - Planes
GPS coordinates:	0288948E, 5798790N

Field measurements:

Monitoring interval: 30 mins	
Start time: 2·30pm	Finish time: 3·00pm
Noise field parameters dB(A): TWA 46·4	Lmax 71·9 dB
	Lmin
	Leq 58·5 dB
	L1 65·9 dB
	L10 61·1 dB
	L90 51·4 dB
Height of meter (note: 1.2 minimum above ground level):	1·35 m
Noise character (e.g. broad band, impulsive, tonal):	Intermittent, audible

Weather conditions during monitoring:

Wind speed:	Maximum: 0·83	m/second
	Average: 0·35	m/second
	Approximate direction:	N
Ambient temperature:		21·1 °C
Relative humidity:		48·4 %
Cloud cover:		95 %
Inversion layer Y/N:		N
Other (e.g. fog, drizzle etc.)		N

airmet
Air-Met Scientific Pty Ltd
1300 137 067

Sound Level Meter

Instrument **SoundPro SE /DL Type**

Serial No. **BJK110022**

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Battery Holder	✓	
	Alkaline Battery	✓	
	Cover	✓	
	Output	✓	
Switch/Keypad	Operation	✓	
Display	Intensity	✓	
	Operation	✓	
Microphone	Type	✓	
	Socket	✓	
	Cable	✓	
	Plug	✓	
PCB	Condition	✓	
Calibrator	Condition	✓	
	Battery Holder	✓	
	IVAC Output	✓	
	Frequency	✓	
A Weighting	Operation	✓	
C Weighting	Operation	✓	
Software	Version	✓	
Datalogger	Operation	✓	
Download	Operation	✓	
Other Tests			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Frequency	Db	Volts AC	Certified	Calibration Equipment	Instrument Reading Before	After
1Khz	114Db	1 Vac	NATA	QC20 QF3070028	114.0 dB	114.0 dB

Calibrated by: **Ken Xu**

Calibration date: **27-Apr-16**

Next calibration due: **24-Oct-16**

Sound Calibrator

airmet

Air-Met Scientific Pty Ltd
1300 137 067

Instrument QC10
Serial No. QIJ090186

Item	Test	Pass	Comments
Calibrator	Condition	✓	
	Battery	✓	
	1 VAC output	✓	
	Frequency	✓	
	Output	✓	
A weighting	Operation	✓	
C weighting	Operation	✓	

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Instrument	Frequency	dB	Certified	Calibration Equipment	Instrument Reading Before	Instrument Reading After
QC10	1 kHz	114	NATA	Sound Pro BJK110022 Cal with QC20 QF3070028	114dB	114.dB

Calibrated by: **Ken Xu**

Calibration date: **27-Apr-16**

Next calibration due: **27-Apr-17**

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NOISE LEVEL MONITORING FORM

LOCATION ID: N5

Project details:

Date: 24.5.16	Time: 8.48Am	Project number: 1192	Project manager: SH
Client: WCC		Project location: Wembee	Monitored by: PM

Equipment details:

Calibrator make: Quest technologies	Model: QC-10	Serial Number: Q1107026
	Level: 114 dB	Frequency: 1000Hz
Wind speed meter make: TSI	Model: Vane anemometer	Serial Number: VELOCI-1
Sound level meter: Quest technologies Sound Pro	Model: SLM TYPE1	Serial Number: BJH070015
	Meter settings (e.g. linear, exponential, weightings: a, b, c, fast, slow, impulsive): A-weighted filter + fast time weighting	
	Calibration reading pre monitoring (time and dB):	113.6 dB
	Calibration reading post monitoring (time and dB):	114.0dB

Location sampling details:

Description of location:	Grass Verge on Browns Rd.
Distinctive noise sources:	- background traffic from M1 & West Rd. - Traffic on Browns Rd. - Wind - Birds, Crows.
GPS coordinates:	0290629E, 5799040N

Field measurements:

Monitoring interval:	30 mins		
Start time:	8.51Am	Finish time:	9.21 am
Noise field parameters dB(A):		Lmax	84.0 dB
		Lmin	—
		Leq	60.7 dB
		L1	71.9 dB
		L10	54.3 dB
		L90	52.7 dB
Height of meter (note: 1.2 minimum above ground level):		1.35 m	
Noise character (e.g. broad band, impulsive, tonal):		Just audible for background, intermittent, dominant for Browns Rd.	

Weather conditions during monitoring:

Wind speed:	Maximum:	5.46	m/second
	Average:	3.49	m/second
	Approximate direction:	WSW	
Ambient temperature:		9.95	°C
Relative humidity:		89	%
Cloud cover:		80	%
Inversion layer Y/N:		N	
Other (e.g. fog, drizzle etc.)		N	

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NOISE LEVEL MONITORING FORM

LOCATION ID: N4

Project details:

Date: 24.5.16	Time: 9.50am	Project number: 1192	Project manager: SH
Client: WLC		Project location: Wembee	Monitored by: fm

Equipment details:

Calibrator make: Quest Technologies	Model: QC-10	Serial Number: QI1070126
	Level: 114 dB	Frequency: 1000 Hz
Wind speed meter make: TSI	Model: Vane anemometer	Serial Number: VELOCI-1
Sound level meter: Quest technologies Sound Pro	Model: SLM TYPE 1	Serial Number: BJH070015
	Meter settings (e.g. linear, exponential, weightings: a, b, c, fast, slow, impulsive): A-Weighted filter + fast time Weighting	
	Calibration reading pre monitoring (time and dB):	113.8 dB
	Calibration reading post monitoring (time and dB):	113.9 dB

Location sampling details:

Description of location:	Driveway off Wests Rd.
Distinctive noise sources:	- Traffic from West Rd. - Traffic from M1 - Birds; crows.
GPS coordinates:	0289686E, 5798044N

Field measurements:

Monitoring interval:	30 mins	
Start time:	9.54am	Finish time: 10.24
Noise field parameters dB(A):		Lmax 91.8 dB
		Lmin –
		Leq 74.0 dB
		L1 86.7 dB
		L10 74.1 dB
		L90 64.9 dB
Height of meter (note: 1.2 minimum above ground level):		1.35 m
Noise character (e.g. broad band, impulsive, tonal):		Audible for M1 traffic, intermittent dominant for West Rd

Weather conditions during monitoring:

Wind speed:	Maximum:	6.25 m/second
	Average:	3.54 m/second
	Approximate direction:	WSW
Ambient temperature:		9.95 °C
Relative humidity:		89 %
Cloud cover:		85 %
Inversion layer Y/N:		N
Other (e.g. fog, drizzle etc.)		N

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NOISE LEVEL MONITORING FORM

LOCATION ID: N3

Project details:

Date: 24.5.16	Time: 10.30Am	Project number: 1192	Project manager: SH
Client: WCC		Project location: Werribee	Monitored by: PM

Equipment details:

Calibrator make: Quest Technologies	Model: QC-10	Serial Number: Q11070126
	Level: 114 dB	Frequency: 1000Hz
Wind speed meter make: TSI	Model: Vane anemometer	Serial Number:
Sound level meter: Quest Technologies Sound pro	Model: SLM TYPE 1	Serial Number: BJH070015
	Meter settings (e.g. linear, exponential, weightings: a, b, c, fast, slow, impulsive): A-weighted filter + fast time weighting	
	Calibration reading pre monitoring (time and dB):	114.1 dB
	Calibration reading post monitoring (time and dB):	114.0 dB

Location sampling details:

Description of location:	Lane off West Rd. Approx 25m from M1
Distinctive noise sources:	- Traffic from M1 - Traffic from West Rd. - Birds; crows.
GPS coordinates:	0288939E, 5797467N

Field measurements:

Monitoring interval:	30 mins		
Start time:	10.32 Am	Finish time:	11.02 Am
Noise field parameters dB(A):		Lmax	84.0 dB
		Lmin	
		Leq	74.2 dB
		L1	81.0 dB
		L10	77.4 dB
		L90	67.9 dB
Height of meter (note: 1.2 minimum above ground level):		1.35 m	
Noise character (e.g. broad band, impulsive, tonal):		Dominant Constant from M1	

Weather conditions during monitoring:

Wind speed:	Maximum:	7.28 m/second
	Average:	4.60 m/second
	Approximate direction:	WSW
Ambient temperature:		9.95°C
Relative humidity:		89 %
Cloud cover:		75 %
Inversion layer Y/N:		N
Other (e.g. fog, drizzle etc.)		N

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NOISE LEVEL MONITORING FORM

LOCATION ID:	N2

Project details:

Date: 24.5.16	Time: 11.24Am	Project number: 1192	Project manager: SH
Client: WCC		Project location: Werribee	Monitored by: fm

Equipment details:

Calibrator make: Quest Technologies	Model: QC-10	Serial Number: QI1070126
	Level: 114 dB	Frequency: 1000Hz
Wind speed meter make: TSI	Model: Vane anemometer	Serial Number:
Sound level meter: Quest Technologies Sound pro	Model: Slm TYPE1	Serial Number: BJH070015
	Meter settings (e.g. linear, exponential, weightings: a, b, c, fast, slow, impulsive): A-weighted filter + fast time Weighting	
	Calibration reading pre monitoring (time and dB):	113.8 dB
	Calibration reading post monitoring (time and dB):	114.1 dB

Location sampling details:

Description of location:	Grass Verge 2m off Werti Rd. Adjacent to residential property.
Distinctive noise sources:	- Traffic from Werti Rd. - Train - intermittent - Birds; crows.
GPS coordinates:	0287348E, 5799023N

Field measurements:

Monitoring interval:	30 mins	
Start time:	11.26Am	Finish time: 11.56Am
Noise field parameters dB(A):	Lmax	89.5 dB
	Lmin	
	Leq	65.1 dB
	L1	78.4 dB
	L10	57.3 dB
	L90	46.3 dB
Height of meter (note: 1.2 minimum above ground level):	1.35m	
Noise character (e.g. broad band, impulsive, tonal):	Intermittent & infrequent traffic; audible	

Weather conditions during monitoring:

Wind speed:	Maximum:	7.08 m/second
	Average:	4.29 m/second
	Approximate direction:	SW
Ambient temperature:		14.70 °C
Relative humidity:		69.20%
Cloud cover:		80 %
Inversion layer Y/N:		N
Other (e.g. fog, drizzle etc.)		N

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NOISE LEVEL MONITORING FORM

LOCATION ID: N1

Project details:

Date: 24.5.16	Time: 12.05pm	Project number: 1192	Project manager: SH
Client: WCC		Project location: Wembee	Monitored by: pm

Equipment details:

Calibrator make: Quest Technologies	Model: QC-10	Serial Number: Q1070126
	Level: 114 dB	Frequency: 1000Hz
Wind speed meter make: TSI	Model: Vane anemometer	Serial Number:
Sound level meter: Quest Technologies Sound pro	Model: SLM TYPE 1	Serial Number: BJH070015
	Meter settings (e.g. linear, exponential, weightings: a, b, c, fast, slow, impulsive): A weighted filter + fast time weighting	
	Calibration reading pre monitoring (time and dB):	114.0 dB
	Calibration reading post monitoring (time and dB):	

Location sampling details:

Description of location:	Grass Verge 3m off Maner Rd. Adjacent to residential property.
Distinctive noise sources:	- Traffic from Manor Rd. - Intermittent - Train. intermittent - Birds; crows
GPS coordinates:	0286981E, 579935/N

Field measurements:

Monitoring interval: 30 mins		
Start time: 12.07 pm	Finish time:	12.37 pm
Noise field parameters dB(A):	Lmax	85.5 dB
	Lmin	
	Leq	62.6 dB
	L1	77.3 dB
	L10	54.6 dB
	L90	43.2 dB
Height of meter (note: 1.2 minimum above ground level):	m	
Noise character (e.g. broad band, impulsive, tonal):	Intermittent & infrequent traffic, audible.	

Weather conditions during monitoring:

Wind speed:	Maximum:	5.21 m/second
	Average:	2.39 m/second
	Approximate direction:	SW
Ambient temperature:		14.70 °C
Relative humidity:		69.20%
Cloud cover:		80 %
Inversion layer Y/N:		N
Other (e.g. fog, drizzle etc.)		N

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NOISE LEVEL MONITORING FORM

LOCATION ID:	N6

Project details:

Date: 24.5.16	Time: 1.00pm	Project number: 1192	Project manager: SH
Client: WCC		Project location: Werribee	Monitored by: PM

Equipment details:

Calibrator make: Quest technologies	Model: QC-10	Serial Number: Q11070126
	Level: 114 dB	Frequency: 1000Hz
Wind speed meter make: TSI	Model: Vane anemometer	Serial Number:
Sound level meter: Quest technologies Sound Pro	Model: SLM TYPE 1	Serial Number: BJH070015
	Meter settings (e.g. linear, exponential, weightings: a, b, c, fast, slow, impulsive): A-Weighted w̄ fast response time	
	Calibration reading pre monitoring (time and dB):	114.0 dB
	Calibration reading post monitoring (time and dB):	

Location sampling details:

Description of location:	- North of leachate pond 2 - Adjacent to Cell 5
Distinctive noise sources:	- Dozers on live cell - ROF Vechicles, & Rubbish trucks. - Birds; Crows
GPS coordinates:	0288948E, 5798790N

Field measurements:

Monitoring interval:	30 mins	
Start time:	1:00pm	Finish time: 1.30pm
Noise field parameters dB(A):		Lmax 76.4 dB
		Lmin
		Leq 61.7 dB
		L1 67.5 dB
		L10 64.1 dB
		L90 57.7 dB
Height of meter (note: 1.2 minimum above ground level):		1.35 m
Noise character (e.g. broad band, impulsive, tonal):		Intermittent, audible.

Weather conditions during monitoring:

Wind speed:	Maximum:	6.56 m/second
	Average:	3.34 m/second
	Approximate direction:	SW
Ambient temperature:		14.70 °C
Relative humidity:		69.2%
Cloud cover:		75 %
Inversion layer Y/N:		N
Other (e.g. fog, drizzle etc.)		N

Gas Detection Air Sampling & Monitoring Environmental & Water Quality Monitoring

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Sound Calibrator

Instrument **QC10**
Serial No. **QII070126**

Item	Test	Pass	Comments
Calibrator	Condition	✓	
	Battery	✓	
	1 VAC output	✓	
	Frequency	✓	
	Output	✓	
A weighting	Operation	✓	
C weighting	Operation	✓	

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Instrument	Frequency	dB	Certified	Calibration Equipment	Instrument Reading Before	After
QC10	1 kHz	114	NATA	Sound Pro BLJ090019 & QC20 S/N:QF3070028	114.0 dB	114.0dB

Calibrated by: Caitlin Tolsma

Calibration date: 19-May-16

Next calibration due: 19-Nov-16

airmet
Air-Met Scientific Pty Ltd
1300 137 067

Sound Level Meter

Instrument **Sound Pro**
Serial No. **BJH070015**

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Battery Holder	✓	
	Alkaline Battery	✓	
	Cover	✓	
	Output	✓	
Switch/Keypad	Operation	✓	
Display	Intensity	✓	
	Operation	✓	
Microphone	Type	✓	
	Socket	✓	
	Plug	✓	
PCB	Condition	✓	
Calibrator	Condition	✓	
	Battery Holder	✓	
	IVAC Output	✓	
	Frequency	✓	
A Weighting	Operation	✓	
C Weighting	Operation	✓	
Software	Version		
Datalogger	Operation	✓	
Download	Operation	✓	
Other Tests			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Frequency	dB	Volts AC	Certified	Calibration Equipment	Instrument Reading	
					Before	After
1Khz	114dB	1 Vac		QC10 QIK020217	114.0dB	114.0dB

Calibrated by: **Caitlin Tolsma**

Calibration date: **23/05/2016**

Next calibration due: **19/11/2016**

Thermo Fisher SCIENTIFIC The world leader in serving Science	**Equipment Certification Report** TSI VelociCalc	**G922**
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	Considered "controlled" if viewed on-line or if hardcopy includes signed/dated "controlled copy" stamp.	Page 1 of 1

This Air Velocity Meter has been performance checked as outlined below:

☑ Powers On
☑ 4 x AA Batteries installed
☑ Electrical Safety Tag attached (AS/NZS 3760)

Tag No: 9987.

Valid to: 23/8/2016

Date: 23/5/2016

Signed: P.D.

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum $30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	**Returned**	**Item**
☑	☐	VelociCalc Model 5725 with Vane Probe
☑	☐	Power supply
☑	☐	Spare AA Batteries (Qty 4)
☑	☐	Calibration certificate
☑	☐	LogDat2 software CD
☑	☐	USB download cable
☑	☐	Manual
☑	☐	Carry case

Date: 23/5/2016

Signed: P.D

TFS Reference	CM005468.	Return Date: / /
Customer Reference	1775-1192	Return Time:
Equipment ID	VELOCI – 1.	Condition on return:
Equipment Serial No.		

"We do more than give you great equipment… We give you great solutions!"

Phone: (Free Call) 1300 735 295 | Environmental Assessment Technologies | Fax: (Free Call) 1800 675 123

Melbourne Branch
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Email: RentalsEnviroVIC@thermofisher.com

Sydney Branch
Level 1, 4 Talavera Road,
North Ryde 2113
Email: RentalsEnviroNSW@thermofisher.com

Adelaide Branch
33 King St
Norwood South Australia 5067
Email: RentalsEnviroSA@thermofisher.com

Brisbane Branch
Unit 2/5 Ross St
Newstead 4006
Email: RentalsEnviroQLD@thermofisher.com

Perth Branch
121 Beringarra Ave
Malaga WA 6090
Email: RentalsEnviroWA@thermofisher.com

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NOISE LEVEL MONITORING FORM

LOCATION ID: N6

Project details:

Date: 25.5.16	Time: 1.00Am	Project number: 1192	Project manager: SH
Client: WCC		Project location: werribee	Monitored by: pm

Equipment details:

Calibrator make: Quest Technologies	Model: QC-10	Serial Number: Q1107012 6
	Level: 114 dB	Frequency: 1000Hz
Wind speed meter make: TSI	Model: Vane anemometer	Serial Number: VELOCI-1
Sound level meter: Quest Technologies Sound pro	Model: SLM-TYPE1	Serial Number: BIH070015
	Meter settings (e.g. linear, exponential, weightings: a, b, c, fast, slow, impulsive): A-weighted w̄ fast responce time	
	Calibration reading pre monitoring (time and dB):	114.0dB
	Calibration reading post monitoring (time and dB):	114.0dB

Location sampling details:

Description of location:	- North of leachate pond - Adjacent to Cell 5
Distinctive noise sources:	- Dozer on live cell, - RDF Vechicles
GPS coordinates:	0288948E, 5798790N

Field measurements:

Monitoring interval: 30 mins		
Start time: 1.01 Am	Finish time:	1.31Am
Noise field parameters dB(A):	Lmax	62.5dB
	Lmin	-
	Leq	50.2dB
	L1	55.6dB
	L10	51.1dB
	L90	48.5dB
Height of meter (note: 1.2 minimum above ground level):	1.35 m	
Noise character (e.g. broad band, impulsive, tonal):	intermittent, audible.	

Weather conditions during monitoring:

Wind speed:	Maximum:	0.86 m/second
	Average:	0.41 m/second
	Approximate direction:	NW
Ambient temperature:		7.27 °C
Relative humidity:		88.40 %
Cloud cover:		50 %
Inversion layer Y/N:		N
Other (e.g. fog, drizzle etc.)		N

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NOISE LEVEL MONITORING FORM

LOCATION ID: N2

Project details:

Date: 25.5.16	Time: 1.46Am	Project number: 1192	Project manager: SH
Client: WCC		Project location: Werribee	Monitored by: pm

Equipment details:

Calibrator make: Quest Technologies	Model: QC-10	Serial Number: Q11070126
	Level: 114 dB	Frequency: 1000 Hz
Wind speed meter make: TSI	Model: Vane anemometer	Serial Number: VELOCI-1
Sound level meter: Quest Technologies	Model: SLM TYPE1	Serial Number: BJH070015
	Meter settings (e.g. linear, exponential, weightings: a, b, c, fast, slow, impulsive): A-weighted, fast responce time	
	Calibration reading pre monitoring (time and dB):	114.0dB
	Calibration reading post monitoring (time and dB):	113.9 dB

Location sampling details:

Description of location:	Grass Verge 3m off Wests Rd.
Distinctive noise sources:	- Minor background noise from M1 - Train - Intermittent
GPS coordinates:	0287348E, 5799023N

Field measurements:

Monitoring interval: 30 mins		
Start time: 1.46am	Finish time:	2.16Am
Noise field parameters dB(A):	Lmax	65.6 dB
	Lmin	—
	Leq	42.7dB
	L1	50.9 dB
	L10	44.1 dB
	L90	39.1 dB
Height of meter (note: 1.2 minimum above ground level):	1.35m	
Noise character (e.g. broad band, impulsive, tonal):	Just audible background	

Weather conditions during monitoring:

Wind speed:	Maximum:	0.64 m/second
	Average:	0.16 m/second
	Approximate direction:	NW
Ambient temperature:		7.27 °C
Relative humidity:		88.40 %
Cloud cover:		40 %
Inversion layer Y/N:		N
Other (e.g. fog, drizzle etc.)		N

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NOISE LEVEL MONITORING FORM

LOCATION ID: N1

Project details:

Date: 25.5.16	Time: 2.25am	Project number: 1192	Project manager: SH
Client: WCC		Project location: Wemblee	Monitored by: pm

Equipment details:

Calibrator make: Quest Technologies	Model: QC-10	Serial Number: Q1107012 6
	Level: 114 dB	Frequency: 1000 Hz
Wind speed meter make: TSI	Model: Vane anemometer	Serial Number: VELOCI-1
Sound level meter: Quest technologies Sound Pro	Model: SLM-TYPE1	Serial Number: BJH070015
	Meter settings (e.g. linear, exponential, weightings: a, b, c, fast, slow, impulsive): A-weighted, fast responce	
	Calibration reading pre monitoring (time and dB):	114.0dB
	Calibration reading post monitoring (time and dB):	114.0dB

Location sampling details:

Description of location:	Grass verge, 2m off Manor Rd.
Distinctive noise sources:	- Background noise from M1 (V. faint) - Traffic on Manor Rd. (V. intermittent)
GPS coordinates:	0286981E, 5799357N

Field measurements:

Monitoring interval: 30 mins	
Start time: 2.25Am	Finish time: 2.55Am
Noise field parameters dB(A):	Lmax 72.8dB
	Lmin –
	Leq 44.4 dB
	L1 51.8 dB
	L10 43.0dB
	L90 37.4dB
Height of meter (note: 1.2 minimum above ground level):	1.35 m
Noise character (e.g. broad band, impulsive, tonal):	Background just audible, traffic on Manor, intermittent, audible

Weather conditions during monitoring:

Wind speed:	Maximum:	0.94 m/second
	Average:	0.41 m/second
	Approximate direction:	NW
Ambient temperature:		7.27 °C
Relative humidity:		88.40 %
Cloud cover:		50 %
Inversion layer Y/N:		N
Other (e.g. fog, drizzle etc.)		N

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NOISE LEVEL MONITORING FORM

LOCATION ID: N3

Project details:

Date: 25.5.16	Time: 3.05	Project number: 1192	Project manager: SH
Client: WCC		Project location: Wembee	Monitored by: pm

Equipment details:

Calibrator make: Quest Technologies	Model: QC-10	Serial Number: Q1107012 6
	Level: 114 dB	Frequency: 1000Hz
Wind speed meter make: TSI	Model: Vane anemometer	Serial Number: VELOCI-1
Sound level meter: Quest Technologies Sound Pro	Model: SLM-TYPE I	Serial Number: BJH070015
	Meter settings (e.g. linear, exponential, weightings: a, b, c, fast, slow, impulsive): A-weighted, fast response time.	
	Calibration reading pre monitoring (time and dB):	114.0 dB
	Calibration reading post monitoring (time and dB):	114.0 dB

Location sampling details:

Description of location:	- Lane off West Rd; approx 25m from M1
Distinctive noise sources:	- Traffic from M1 - traffic on West rd (intermittent)
GPS coordinates:	0288939E, 5797467N

Field measurements:

Monitoring interval:	30 mins	
Start time:	3.05am	Finish time: 3.35am
Noise field parameters dB(A):		Lmax 81.3
		Lmin –
		Leq 65.7
		L1 76.9
		L10 69.4
		L90 50.4
Height of meter (note: 1.2 minimum above ground level):		1.35 m
Noise character (e.g. broad band, impulsive, tonal):		Dominant constant from M1

Weather conditions during monitoring:

Wind speed:	Maximum:	1.19 m/second
	Average:	0.74 m/second
	Approximate direction:	NW
Ambient temperature:		9.58 °C
Relative humidity:		87.50%
Cloud cover:		30 %
Inversion layer Y/N:		N
Other (e.g. fog, drizzle etc.)		N

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NOISE LEVEL MONITORING FORM

LOCATION ID: N4

Project details:

Date: 25-5-16	Time: 3.41Am	Project number: 1192	Project manager: SH
Client: WLL		Project location: wembee	Monitored by: PM

Equipment details:

Calibrator make: Quest Technologies	Model: QC-10	Serial Number: QI1070126
	Level: 114 dB	Frequency: 1000 Hz
Wind speed meter make: TSI	Model: Vane anemometer	Serial Number: VELOCI-1
Sound level meter: Quest Technologies Sound pro	Model: SLM-TYPE 1	Serial Number: BJH070015
	Meter settings (e.g. linear, exponential, weightings: a, b, c, fast, slow, impulsive): A-weighted in fast response time.	
	Calibration reading pre monitoring (time and dB):	114.0dB
	Calibration reading post monitoring (time and dB):	113.9dB

Location sampling details:

Description of location:	Drive way off West Rd.
Distinctive noise sources:	- Traffic from M1 - Traffic from West Rd (intermittent)
GPS coordinates:	0289686E, 5798044N

Field measurements:

Monitoring interval:	30 mins	
Start time:	3.41Am	Finish time: 4.11Am.
Noise field parameters dB(A):	Lmax	87.7dB
	Lmin	—
	Leq	64.5dB
	L1	72.6dB
	L10	66.6dB
	L90	52.4dB
Height of meter (note: 1.2 minimum above ground level):		1.35 m
Noise character (e.g. broad band, impulsive, tonal):		Audible for M1, intermittent dominant for West Rd.

Weather conditions during monitoring:

Wind speed:	Maximum:	1.56 m/second
	Average:	0.88 m/second
	Approximate direction:	NW
Ambient temperature:		9.58 °C
Relative humidity:		87.5 %
Cloud cover:		30 %
Inversion layer Y/N:		N
Other (e.g. fog, drizzle etc.)		N

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NOISE LEVEL MONITORING FORM

LOCATION ID: N5

Project details:

Date: 25.5.16	Time: 4.18	Project number: 1192	Project manager: SH.
Client: WCC		Project location: Wembee	Monitored by: PM

Equipment details:

Calibrator make: Quest Technologies	Model: QC-10	Serial Number: 011070126
	Level: 114 dB	Frequency: 1000 Hz
Wind speed meter make: TSI	Model: Vane anemometer	Serial Number: VELOCI-1
Sound level meter: Quest Technologies Sound Pro	Model: SLM TYPE-1	Serial Number: BJH070015
	Meter settings (e.g. linear, exponential, weightings: a, b, c, fast, slow, impulsive): A-weighted filter + fast response time.	
	Calibration reading pre monitoring (time and dB):	114.dB
	Calibration reading post monitoring (time and dB):	114.dB

Location sampling details:

Description of location:	Grass verge on Browns Rd.
Distinctive noise sources:	- Background traffic from M1 & West Rd.
GPS coordinates:	0290629E, 5799040 N

Field measurements:

Monitoring interval:	30 mins	
Start time:	4.18 am	Finish time: 4.48 am
Noise field parameters dB(A):	Lmax	66.8
	Lmin	—
	Leq	55.9
	L1	62.5
	L10	58.7
	L90	50.8
Height of meter (note: 1.2 minimum above ground level):	1.35 m	
Noise character (e.g. broad band, impulsive, tonal):	Just audible for Background M1 & West Rd.	

Weather conditions during monitoring:

Wind speed:	Maximum:	2.03 m/second
	Average:	1.14 m/second
	Approximate direction:	NW
Ambient temperature:	958 °C	
Relative humidity:	87.50 %	
Cloud cover:	35 %	
Inversion layer Y/N:	N	
Other (e.g. fog, drizzle etc.)	N	

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LOCATION ID: N5

NOISE LEVEL MONITORING FORM

Project details:

Date: 28·6·16	Time: 9.19AM	Project number: 1192	Project manager: SH
Client: WCC		Project location: Wembee	Monitored by: PM

Equipment details:

Calibrator make: Quest Technologies	Model: QC-10	Serial Number: QI1070127
	Level: 114 dB	Frequency: 1000 Hz
Wind speed meter make: TSI	Model: Vane anemometer	Serial Number: T5725151 8002
Sound level meter: Quest Technologies Sound pro	Model: SLM TYPE 1	Serial Number: BLJ090020
	Meter settings (e.g. linear, exponential, weightings: a, b, c, fast, slow, impulsive): A-weighted w fast response time	
	Calibration reading pre monitoring (time and dB):	114.0dB
	Calibration reading post monitoring (time and dB):	114.0dB

Location sampling details:

Description of location:	Grass Verge on Browns Road
Distinctive noise sources:	- Background traffic from M1 & West Rd. - traffic on Browns Rd. - Wind (mild) - Wildlife
GPS coordinates:	0290629E, 5799040N

Field measurements:

Monitoring interval:	30 mins	
Start time:	9.36Am	Finish time: 10.06 AM
Noise field parameters dB(A):	Lmax	83.1 dB
	Lmin	–
	Leq	59.7dB
	L1	73.9dB
	L10	52.5dB
	L90	47.5dB
Height of meter (note: 1.2 minimum above ground level):	1.35 m	
Noise character (e.g. broad band, impulsive, tonal):	Just audible for background intermittent, dominant for Browns rd.	

Weather conditions during monitoring:

Wind speed:	Maximum:	4.79 m/second
	Average:	2.04 m/second
	Approximate direction:	NW
Ambient temperature:		7.54 °C
Relative humidity:		87.0 %
Cloud cover:		10 %
Inversion layer Y/N:		N
Other (e.g. fog, drizzle etc.)		N

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NOISE LEVEL MONITORING FORM

LOCATION ID: N4

Project details:

Date: 28·6·16	Time: 10·20Am	Project number: 1192	Project manager: SH
Client: W.C.C		Project location: wembee	Monitored by: pm

Equipment details:

Calibrator make: Quest Tech.	Model: QC-10	Serial Number: Q11070127
	Level: 114 dB	Frequency: 1000Hz
Wind speed meter make: TSI	Model: Vane anemometer	Serial Number: T5725151800Z
Sound level meter: Quest Tech. Sound pro	Model: SLM TYPE 1	Serial Number: BLJ090020
	Meter settings (e.g. linear, exponential, weightings: a, b, c, fast, slow, impulsive): A-weighted in fast response time	
	Calibration reading pre monitoring (time and dB):	114.0dB
	Calibration reading post monitoring (time and dB):	114.0dB

Location sampling details:

Description of location:	Driveway off West Rd.
Distinctive noise sources:	- Traffic from West Rd. - Traffic from M1 - Birds.
GPS coordinates:	0289686E, 5798044N

Field measurements:

Monitoring interval:	30 mins		
Start time:	10·29Am	Finish time:	10·59Am
Noise field parameters dB(A):		Lmax	93·2dB
		Lmin	–
		Leq	73·2dB
		L1	86·2dB
		L10	73·2dB
		L90	61·4dB
Height of meter (note: 1.2 minimum above ground level):		1·35 m	
Noise character (e.g. broad band, impulsive, tonal):		Audible for M1, intermittent dominant for West Rd.	

Weather conditions during monitoring:

Wind speed:	Maximum:	6·51 m/second
	Average:	3·28 m/second
	Approximate direction:	NW
Ambient temperature:		7·54 °C
Relative humidity:		87·0 %
Cloud cover:		15 %
Inversion layer Y/N:		N
Other (e.g. fog, drizzle etc.)		N

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NOISE LEVEL MONITORING FORM

LOCATION ID: N3

Project details:

Date: 28·6·16	Time: 11·04Am	Project number:	1192	Project manager:	SH
Client: W·C·C		Project location:	Werribee	Monitored by:	Am

Equipment details:

Calibrator make:	Quest Tech.	Model: QC-10	Serial Number:	QI1070127
		Level: 114 dB	Frequency:	1000Hz
Wind speed meter make:	TSi	Model: Vane anemometer	Serial Number:	T57251518002
Sound level meter:	Quest Tech. Sound Pro	Model: SLM TYPE 1	Serial Number:	BLJ090020
		Meter settings (e.g. linear, exponential, weightings: a, b, c, fast, slow, impulsive): A-Weighted w fast responce time		
		Calibration reading pre monitoring (time and dB):	114·0dB	
		Calibration reading post monitoring (time and dB):	114·0dB	

Location sampling details:

Description of location:	Lane off West rd. Approx 25m from M1
Distinctive noise sources:	- Traffic from M1 - Traffic from West rd. - wind
GPS coordinates:	0288939E, 5797467N

Field measurements:

Monitoring interval:	30 mins		
Start time:	11·07Am	Finish time:	11·37Am
Noise field parameters dB(A):		Lmax	82·8dB
		Lmin	-
		Leq	72·7dB
		L1	79·7dB
		L10	75·8dB
		L90	66·8dB
Height of meter (note: 1.2 minimum above ground level):		1·35 m	
Noise character (e.g. broad band, impulsive, tonal):		Dominant Constant from M1	

Weather conditions during monitoring:

Wind speed:	Maximum:	5·98 m/second
	Average:	3·64 m/second
	Approximate direction:	NW
Ambient temperature:		7·54°C
Relative humidity:		87·0%
Cloud cover:		15 %
Inversion layer Y/N:		N
Other (e.g. fog, drizzle etc.)		N

compassenvironmental

NOISE LEVEL MONITORING FORM

LOCATION ID: N6

Project details:

Date: 28·6·16	Time: 11·50am	Project number: 1192	Project manager: SH
Client: W.C.C		Project location: Wembee	Monitored by: PM

Equipment details:

Calibrator make: Quest Tech.	Model: QC-10	Serial Number: Q11070127
	Level: 114 dB	Frequency: 1000Hz
Wind speed meter make: TSi	Model: Vane anemometer	Serial Number: T5725151800 2
Sound level meter: Quest Tech Sound Pro	Model: SLM TYPE 1	Serial Number: BLJ090020
	Meter settings (e.g. linear, exponential, weightings: a, b, c, fast, slow, impulsive): A-weighted in fast responce	
	Calibration reading pre monitoring (time and dB):	114.0 dB
	Calibration reading post monitoring (time and dB):	114.0 dB

Location sampling details:

Description of location:	North of leachate pond.
Distinctive noise sources:	- Dozers on live cell - Rof vechicles & rubbish trucks. - Birds
GPS coordinates:	0288948E, 5798790N

Field measurements:

Monitoring interval:	30mins	
Start time:	11·55am	Finish time: 12·25pm
Noise field parameters dB(A):		Lmax 75·0dB
		Lmin –
		Leq 62·3 dB
		L1 69·3 dB
		L10 64·6 dB
		L90 58·4 dB
Height of meter (note: 1.2 minimum above ground level):		1·35m
Noise character (e.g. broad band, impulsive, tonal):		Intermittent, audible.

Weather conditions during monitoring:

Wind speed:	Maximum:	3·92 m/second
	Average:	1·68 m/second
	Approximate direction:	W
Ambient temperature:		14·53°C
Relative humidity:		71·70 %
Cloud cover:		15 %
Inversion layer Y/N:		N
Other (e.g. fog, drizzle etc.)		N

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NOISE LEVEL MONITORING FORM

LOCATION ID:	N2

Project details:

Date: 28·6·16	Time: 12·40pm	Project number:	1192	Project manager:	SH
Client:	W.C.C	Project location:	Werribee	Monitored by:	RM

Equipment details:

Calibrator make: Quest Tech.	Model:	QC-10	Serial Number:	Q11070127
	Level:	114 dB	Frequency:	1000Hz
Wind speed meter make: TSI	Model:	Vane anemometer	Serial Number:	T57251518002
Sound level meter: Quest Tech. Sound pro	Model:	SLM TYPE I	Serial Number:	BLJ090020
	Meter settings (e.g. linear, exponential, weightings: a, b, c, fast, slow, impulsive): A-weighted w fast responce time			
	Calibration reading pre monitoring (time and dB):		114·0 dB	
	Calibration reading post monitoring (time and dB):		114·0 dB	

Location sampling details:

Description of location:	Grass Verge 2m off West Rd. Adjacent to residential property
Distinctive noise sources:	- Traffic from Wests Rd. - Tram - intermittent -
GPS coordinates:	0287348E, 5799023 N

Field measurements:

Monitoring interval:	30 mins		
Start time:	12·46pm	Finish time:	1·16
Noise field parameters dB(A):		Lmax	89·0dB
		Lmin	—
		Leq	64·8dB
		L1	79·2dB
		L10	58·0dB
		L90	42·9dB
Height of meter (note: 1.2 minimum above ground level):		1·35m	
Noise character (e.g. broad band, impulsive, tonal):		Intermittent traffic, audible	

Weather conditions during monitoring:

Wind speed:	Maximum:	4·06 m/second
	Average:	2·41 m/second
	Approximate direction:	W
Ambient temperature:		14·53°C
Relative humidity:		71·70%
Cloud cover:		15 %
Inversion layer Y/N:		N
Other (e.g. fog, drizzle etc.)		N

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NOISE LEVEL MONITORING FORM

LOCATION ID: N1

Project details:

Date: 28·6·16	Time: 1·20pm	Project number: 1192	Project manager: SH
Client: W·C·C		Project location: Werribee	Monitored by: RM

Equipment details:

Calibrator make: Quest Tech.	Model: QC-10	Serial Number: Q11070127
	Level: 114 dB	Frequency: 1000 Hz
Wind speed meter make: TSi	Model: Vane anemometer	Serial Number: T5725151800Z
Sound level meter: Quest Tech Sound pro.	Model: SLM TYPE 1	Serial Number: BLJ090020
	Meter settings (e.g. linear, exponential, weightings: a, b, c, fast, slow, impulsive): A-weighted in fast responce time	
	Calibration reading pre monitoring (time and dB):	114.0
	Calibration reading post monitoring (time and dB):	114.0

Location sampling details:

Description of location:	Grass verge 3m off Manor Rd.
Distinctive noise sources:	- Traffic from Manor Road - Trains, intermittent.
GPS coordinates:	0286981E, 5799357N

Field measurements:

Monitoring interval:	30 mins	
Start time:	1·22 pm	Finish time: 1·52 pm
Noise field parameters dB(A):	Lmax	84·8 dB
	Lmin	—
	Leq	63.0 dB
	L1	78·2 dB
	L10	54·9 dB
	L90	47·1 dB
Height of meter (note: 1.2 minimum above ground level):		1·35 m
Noise character (e.g. broad band, impulsive, tonal):		Intermittent, audible

Weather conditions during monitoring:

Wind speed:	Maximum:	3·16 m/second
	Average:	1·43 m/second
	Approximate direction:	W
Ambient temperature:		14·53 °C
Relative humidity:		71·70 %
Cloud cover:		15 %
Inversion layer Y/N:		N
Other (e.g. fog, drizzle etc.)		N

Gas Detection Air Sampling & Monitoring Environmental & Water Quality Monitoring
Air-Met Scientific Pty Ltd
ABN 73 006 849 949
Ph 1300 137 067

airmet

Sound Calibrator

Instrument **QC10**
Serial No. **QII070127**

Item	Test	Pass	Comments
Calibrator	Condition	✓	
	Battery	✓	
	1 VAC output	✓	
	Frequency	✓	
	Output	✓	
A weighting	Operation	✓	
C weighting	Operation	✓	

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Instrument	Frequency	dB	Certified	Calibration Equipment	Instrument Reading	
					Before	After
QC10	1 kHz	114	NATA	Sound Pro BLJ090020 & QC20 S/N:QF3070028	114.0 dB	114.0dB

Calibrated by: **Caitlin Tolsma**

Calibration date: **27-Jun-16**

Next calibration due: **28-Dec-16**

27/06/2016

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Sound Level Meter

Instrument **Sound Pro**
Serial No. **BLJ090020**

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Battery Holder	✓	
	Alkaline Battery	✓	
	Cover	✓	
	Output	✓	
Switch/Keypad	Operation	✓	
Display	Intensity	✓	
	Operation	✓	
Microphone	Type	✓	
	Socket	✓	
	Plug	✓	
PCB	Condition	✓	
Calibrator	Condition	✓	
	Battery Holder	✓	
	IVAC Output	✓	
	Frequency	✓	
A Weighting	Operation	✓	
C Weighting	Operation	✓	
Software	Version		
Datalogger	Operation	✓	
Download	Operation	✓	
Other Tests			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Frequency	Db	Volts AC	Certified	Calibration Equipment	Instrument Reading Before	Instrument Reading After
1Khz	114dB	1 Vac	NATA	QC20 - QF3070028	114dB	114dB

Calibrated by: Caitlin Tolsma

Calibration date: 27/06/2016

Next calibration due: 24/12/2016

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LOCATION ID: N6

NOISE LEVEL MONITORING FORM

Project details:

Date: 29.6.16 Time: 1.03Am	Project number: 1192	Project manager: SH
Client: W.C.C	Project location: Werribee	Monitored by: PM

Equipment details:

Calibrator make: Quest Tech	Model: QC-10	Serial Number: Q1070127
	Level: 114 dB	Frequency: 1000Hz
Wind speed meter make: TSi	Model: Vane anemometer	Serial Number: T572F1518002
Sound level meter: Quest Tech Sound Pro	Model: SLM TYPE 1	Serial Number: BLJ090020
	Meter settings (e.g. linear, exponential, weightings: a, b, c, fast, slow, impulsive): A-weighted w fast response time	
	Calibration reading pre monitoring (time and dB):	114.0dB
	Calibration reading post monitoring (time and dB):	

Location sampling details:

Description of location:	North of leachate pond
Distinctive noise sources:	- Dozer on live cell - wind.
GPS coordinates:	0288948E, 5798790N

Field measurements:

Monitoring interval:	30 mins		
Start time:	1.05Am	Finish time:	1.35Am
Noise field parameters dB(A):		Lmax	64.7 dB
		Lmin	–
		Leq	54.9dB
		L1	60.6dB
		L10	57.5dB
		L90	51.1dB
Height of meter (note: 1.2 minimum above ground level):		1.35m	
Noise character (e.g. broad band, impulsive, tonal):		Intermittent, audible.	

Weather conditions during monitoring:

Wind speed:	Maximum:	4.63 m/second
	Average:	2.79 m/second
	Approximate direction:	NNW
Ambient temperature:		10.44°C
Relative humidity:		87.40%
Cloud cover:		20 %
Inversion layer Y/N:		N
Other (e.g. fog, drizzle etc.)		N

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NOISE LEVEL MONITORING FORM

LOCATION ID: N2

Project details:

Date: 29.6.11	Time: 1.44Am	Project number: 1192	Project manager: SH
Client: W.C.C		Project location: werribee	Monitored by: pm

Equipment details:

Calibrator make: Quest Tech	Model: QC-10	Serial Number: QI1070127
	Level: 114 dB	Frequency: 1000 Hz
Wind speed meter make: TSi	Model: Vane anemometer	Serial Number: T572515-18002
Sound level meter: Quest Tech Sound pro	Model: SLM TYPE 1	Serial Number: BLJ090020
	Meter settings (e.g. linear, exponential, weightings: a, b, c, fast, slow, impulsive): A-weighted & fast response time	
	Calibration reading pre monitoring (time and dB):	114.0dB
	Calibration reading post monitoring (time and dB):	

Location sampling details:

Description of location:	Grass verge on west Rd.
Distinctive noise sources:	- wind, trees etc
GPS coordinates:	

Field measurements:

Monitoring interval: 30 mins		
Start time: 1.46Am	Finish time:	2.16Am
Noise field parameters dB(A):	Lmax	64.8dB
	Lmin	—
	Leq	48.3dB
	L1	56.5dB
	L10	50.9dB
	L90	44.0dB
Height of meter (note: 1.2 minimum above ground level):	1.35 m	
Noise character (e.g. broad band, impulsive, tonal):	Audible (for wind, trees)	

Weather conditions during monitoring:

Wind speed:	Maximum:	5.11 m/second
	Average:	3.01 m/second
	Approximate direction:	NNW
Ambient temperature:		10.44°C
Relative humidity:		87.40%
Cloud cover:		20 %
Inversion layer Y/N:		N
Other (e.g. fog, drizzle etc.)		N

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NOISE LEVEL MONITORING FORM

LOCATION ID: N1

Project details:

Date: 29·6·16	Time: 2.20Am	Project number: 1192	Project manager: SH
Client: W.C.C		Project location: Werribee	Monitored by: pm

Equipment details:

Calibrator make: Quest Tech	Model: QL-10	Serial Number: Q11070127
	Level: 114 dB	Frequency: 1000Hz
Wind speed meter make: TSi	Model: Vane anemometer	Serial Number: TS7251518002
Sound level meter: Quest Tech Sound pro	Model: SLM TYPE 1	Serial Number: BL109020
	Meter settings (e.g. linear, exponential, weightings: a, b, c, fast, slow, impulsive): A-weighted w̄ fast responce.	
	Calibration reading pre monitoring (time and dB):	114.0dB.
	Calibration reading post monitoring (time and dB):	

Location sampling details:

Description of location:	Grass Verge on Manor Rd.
Distinctive noise sources:	- Traffic on Browns Rd. - Infrequent & intermittent. - Wildlife - frogs, just audible
GPS coordinates:	

Field measurements:

Monitoring interval:	30 mins	
Start time:	2.23Am	Finish time: 2.53am
Noise field parameters dB(A):	Lmax	67·3dB
	Lmin	-
	Leq	45·4dB
	L1	54·0dB
	L10	45·0dB
	L90	41·9dB
Height of meter (note: 1.2 minimum above ground level):		1.35m
Noise character (e.g. broad band, impulsive, tonal):		Infrequent, intermittent, audible.

Weather conditions during monitoring:

Wind speed:	Maximum:	2·65 m/second
	Average:	1·47 m/second
	Approximate direction:	NNW
Ambient temperature:		10.44 °C
Relative humidity:		87·40%
Cloud cover:		20 %
Inversion layer Y/N:		N
Other (e.g. fog, drizzle etc.)		N

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NOISE LEVEL MONITORING FORM

LOCATION ID: N3

Project details:

Date: 29.6.16	Time: 3.00Am	Project number: 1192	Project manager: SH
Client: W.C.C		Project location: Wemblee	Monitored by: Vm

Equipment details:

Calibrator make: Quest Tech	Model: QC-10	Serial Number: Q1107012 7
	Level: 114 dB	Frequency: 1000Hz
Wind speed meter make: TSi	Model: Vane anemometer	Serial Number: T57251518002
Sound level meter: Quest Tech. Sound pro	Model: SLM TYPE 1	Serial Number: BLJ090020
	Meter settings (e.g. linear, exponential, weightings: a, b, c, fast, slow, impulsive): A-weighted w fast response time	
	Calibration reading pre monitoring (time and dB):	114.0dB.
	Calibration reading post monitoring (time and dB):	114.1dB

Location sampling details:

Description of location:	Lane off west Rd. Approx 25m from M1
Distinctive noise sources:	- Traffic from M1
GPS coordinates:	

Field measurements:

Monitoring interval:	30mins		
Start time:	3.02AM.	Finish time:	3.32Am
Noise field parameters dB(A):		Lmax	84.7 dB
		Lmin	–
		Leq	64.8 dB
		L1	76.4 dB
		L10	67.8 dB
		L90	49.1dB.
Height of meter (note: 1.2 minimum above ground level):		1.35m	
Noise character (e.g. broad band, impulsive, tonal):		Intermittent, audible	

Weather conditions during monitoring:

Wind speed:	Maximum:	2.03 m/second
	Average:	0.62 m/second
	Approximate direction:	NNW
Ambient temperature:		10.44 °C
Relative humidity:		87.40%
Cloud cover:		10 %
Inversion layer Y/N:		N
Other (e.g. fog, drizzle etc.)		N

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LOCATION ID: N4

NOISE LEVEL MONITORING FORM

Project details:

Date: 29.6.16	Time: 3.36Am	Project number: 1192	Project manager: SH
Client: W.C.C		Project location: Werribee	Monitored by: PM

Equipment details:

Calibrator make: Quest Tech	Model: QC-10	Serial Number: 01L070127
	Level: 114 dB	Frequency: 1000 Hz
Wind speed meter make: TSI	Model: Vane anemometer	Serial Number: T572515182002
Sound level meter: Quest Tech. Sound pro.	Model: SLM TYPE 1	Serial Number: BLJ090020
	Meter settings (e.g. linear, exponential, weightings: a, b, c, fast, slow, impulsive): A-weighted w̄ fast response time.	
	Calibration reading pre monitoring (time and dB):	114.0 dB
	Calibration reading post monitoring (time and dB):	114.1 dB

Location sampling details:

Description of location:	Driveway off West Rd.
Distinctive noise sources:	- Traffic from M1 - Traffic on West Rd.
GPS coordinates:	

Field measurements:

Monitoring interval:	30 mins		
Start time:	3.37Am	Finish time:	4.07Am
Noise field parameters dB(A):		Lmax	84.6dB
		Lmin	-
		Leq	64.0dB
		L1	72.5dB
		L10	66.8dB
		L90	54.1dB
Height of meter (note: 1.2 minimum above ground level):		1.35 m	
Noise character (e.g. broad band, impulsive, tonal):		Intermittent, audible	

Weather conditions during monitoring:

Wind speed:	Maximum:	1.71 m/second
	Average:	0.72 m/second
	Approximate direction:	NW
Ambient temperature:		9.83 °C
Relative humidity:		89.10 %
Cloud cover:		10 %
Inversion layer Y/N:		N
Other (e.g. fog, drizzle etc.)		N

4

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NOISE LEVEL MONITORING FORM

LOCATION ID:	N5

Project details:

Date: 29.5.16	Time: 4.12Am	Project number: 1192	Project manager: SH
Client: W.C.C		Project location: Werribee	Monitored by: Pm

Equipment details:

Calibrator make: Quest Tech.	Model: QC-10	Serial Number: Q11070127
	Level: 114 dB	Frequency: 1000Hz
Wind speed meter make: TSi	Model: Vane anemometer	Serial Number: T57251518002
Sound level meter: Quest Tech. Sound pro	Model: SLM TYPE 1	Serial Number: BL1090020
	Meter settings (e.g. linear, exponential, weightings: a, b, c, fast, slow, impulsive): A-weighted w̄ fast response.	
	Calibration reading pre monitoring (time and dB):	114.0dB
	Calibration reading post monitoring (time and dB):	

Location sampling details:

Description of location:	Grass Verge on Browns Rd.
Distinctive noise sources:	- Traffic from M1 - frogs.
GPS coordinates:	

Field measurements:

Monitoring interval:	30 mins	
Start time:	4.14Am	Finish time: 4.44Am
Noise field parameters dB(A):	Lmax	72.1dB
	Lmin	—
	Leq	55.9dB
	L1	63.7dB
	L10	58.1dB
	L90	52.2dB.
Height of meter (note: 1.2 minimum above ground level):		1.35 m
Noise character (e.g. broad band, impulsive, tonal):		Intermittent, Just audible.

Weather conditions during monitoring:

Wind speed:	Maximum:	2.38 m/second
	Average:	0.82 m/second
	Approximate direction:	NW
Ambient temperature:		9.83 °C
Relative humidity:		89.10 %
Cloud cover:		5 %
Inversion layer Y/N:		N
Other (e.g. fog, drizzle etc.)		N

Gas Detection Air Sampling & Monitoring Environmental & Water Quality Monitoring

Air-Met Scientific Pty Ltd

ABN 73 006 849 949

Ph 1300 137 067

Sound Calibrator

Instrument QC10
Serial No. QII070127

Item	Test	Pass	Comments
Calibrator	Condition	✓	
	Battery	✓	
	1 VAC output	✓	
	Frequency	✓	
	Output	✓	
A weighting	Operation	✓	
C weighting	Operation	✓	

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Instrument	Frequency	dB	Certified	Calibration Equipment	Instrument Reading Before	After
QC10	1 kHz	114	NATA	Sound Pro BLJ090020 & QC20 S/N:QF3070028	114.0 dB	114.0dB

Calibrated by: Caitlin Tolsma

Calibration date: 27-Jun-16

Next calibration due: 28-Dec-16

27/06/2016

airmet

Air-Met Scientific Pty Ltd
1300 137 067

Sound Level Meter

Instrument **Sound Pro**
Serial No. **BLJ090020**

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Battery Holder	✓	
	Alkaline Battery	✓	
	Cover	✓	
	Output	✓	
Switch/Keypad	Operation	✓	
Display	Intensity	✓	
	Operation	✓	
Microphone	Type	✓	
	Socket	✓	
	Plug	✓	
PCB	Condition	✓	
Calibrator	Condition	✓	
	Battery Holder	✓	
	IVAC Output	✓	
	Frequency	✓	
A Weighting	Operation	✓	
C Weighting	Operation	✓	
Software	Version		
Datalogger	Operation	✓	
Download	Operation	✓	
Other Tests			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Frequency	Db	Volts AC	Certified	Calibration Equipment	Instrument Reading Before	After
1Khz	114dB	.1 Vac	NATA	QC20 - QF3070028	114dB	114dB

Calibrated by: **Caitlin Tolsma**

Calibration date: **27/06/2016**

Next calibration due: **24/12/2016**

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measuring up

Anemometer Calibration Certificate

Certificate No: WT 204204

Calibration Date: 13/04/2016

Customer	Compass Environmental
Address:	Suite 6, 5 Rose St. Hawthorn East Vic 3123
Contact	Rosie Bartlelt

Customer Anemometer Details:

Name	TSI Vane Anemometer
Model	TSI5725
Serial No.	T57251518002
Probe Serial No.	n/a
Plant No.	n/a
Last Calibrated	n/a
Condition	Serviceable

Anemometer was adjusted per customer instruction see "As Found" and "As Left" results

Reference Anemometer Details:

Name	TSI Vane Anemometer
Model	TSI5725
Serial No.	T57251541007
Calibration Due Date	24/02/2017

Authorisation		**Signed**	**Date**
Tested by :	Wing Tse		13/04/2016
Signatory :	Bradley Thomas		13/04/2016

The results of tests, calibrations and/or measurements included in this document are traceable to Australian / National Standards. The results indicated relate only to the items tested or calibrated.

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ACCREDITED FOR TECHNICAL COMPETENCE

Accredited for compliance
with ISO/IEC 17025

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KF 702 rev J

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Anemometer Calibration Certificate

Certificate No: WT 204204

Verfification Date: 13/04/2016

Calibration Details:

Calibration Procedure	Kenelec Work Instruction WI714

Environmental Conditions (during as found):

Temperature (°C)	21 ± 3
Humidity (%RH)	53 ± 4
Barometric Pressure (hPa)	1010 ± 2
Time of Calibration	14:46

The above parameters are recorded for completeness and are not used in any calculations.

Verification Results:

Indicated Anemometer Windspeed (m/s)	True Windspeed (m/s)	Correction to be added (m/s)	Combined Uncertainty (m/s)*
5.10	5.00	-0.10	0.08
4.07	3.98	-0.09	0.07
3.07	2.98	-0.09	0.06
2.57	2.50	-0.07	0.05
2.06	2.01	-0.05	0.05
1.80	1.75	-0.05	0.05
1.56	1.52	-0.04	0.04
1.30	1.28	-0.02	0.07
1.00	0.99	-0.01	0.04
0.75	0.74	-0.01	0.03
0.49	0.50	0.01	0.03
0.28	0.31	0.03	0.03

Start Speed less than or equal to 0.3 m/s. Stall speed less than or equal to 0.3 m/s.

*Combined Uncertainties include uncertainties of the wind tunnel, the reference anemometer, and the stability of the anemometer under calibration. The results stated herein relate only to the items calibrated.

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Anemometer Calibration Certificate

Certificate No: WT 204204

Calibration Date: 13/04/2016

Environmental Conditions (during as left):

Temperature (°C)	22 ± 1
Humidity (%RH)	53 ± 1
Barometric Pressure (hPa)	1010 ± 1
Time of Calibration	15:29

The above parameters are recorded for completeness and are not used in any calculations.

Calibration Results:

Indicated Anemometer Windspeed (m/s)	True Windspeed (m/s)	Correction to be added (m/s)	Combined Uncertainty (m/s)*
5.00	5.00	0.00	0.08
4.00	3.98	-0.02	0.07
3.02	2.99	-0.03	0.06
2.53	2.49	-0.04	0.06
2.04	2.02	-0.02	0.05
1.78	1.76	-0.02	0.05
1.54	1.52	-0.02	0.04
1.29	1.27	-0.02	0.04
0.99	0.99	0.00	0.04
0.74	0.74	0.00	0.03
0.49	0.50	0.01	0.03
0.28	0.30	0.02	0.03

Start Speed less than or equal to 0.3 m/s. Stall speed less than or equal to 0.3 m/s.

Measurement Uncertainty

The estimated total uncertainty for wind speed is
+/- 1.12 % of indicated Airspeed + 0.03 m/s

The values of uncertainty stated in this report are at a confidence level of 95% with a coverage factor of K=2. Total uncertainty in the correction includes primary standard uncertainty and instrument resolution uncertainty. Uncertainties for individual airspeeds are included for completeness.

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measuring up

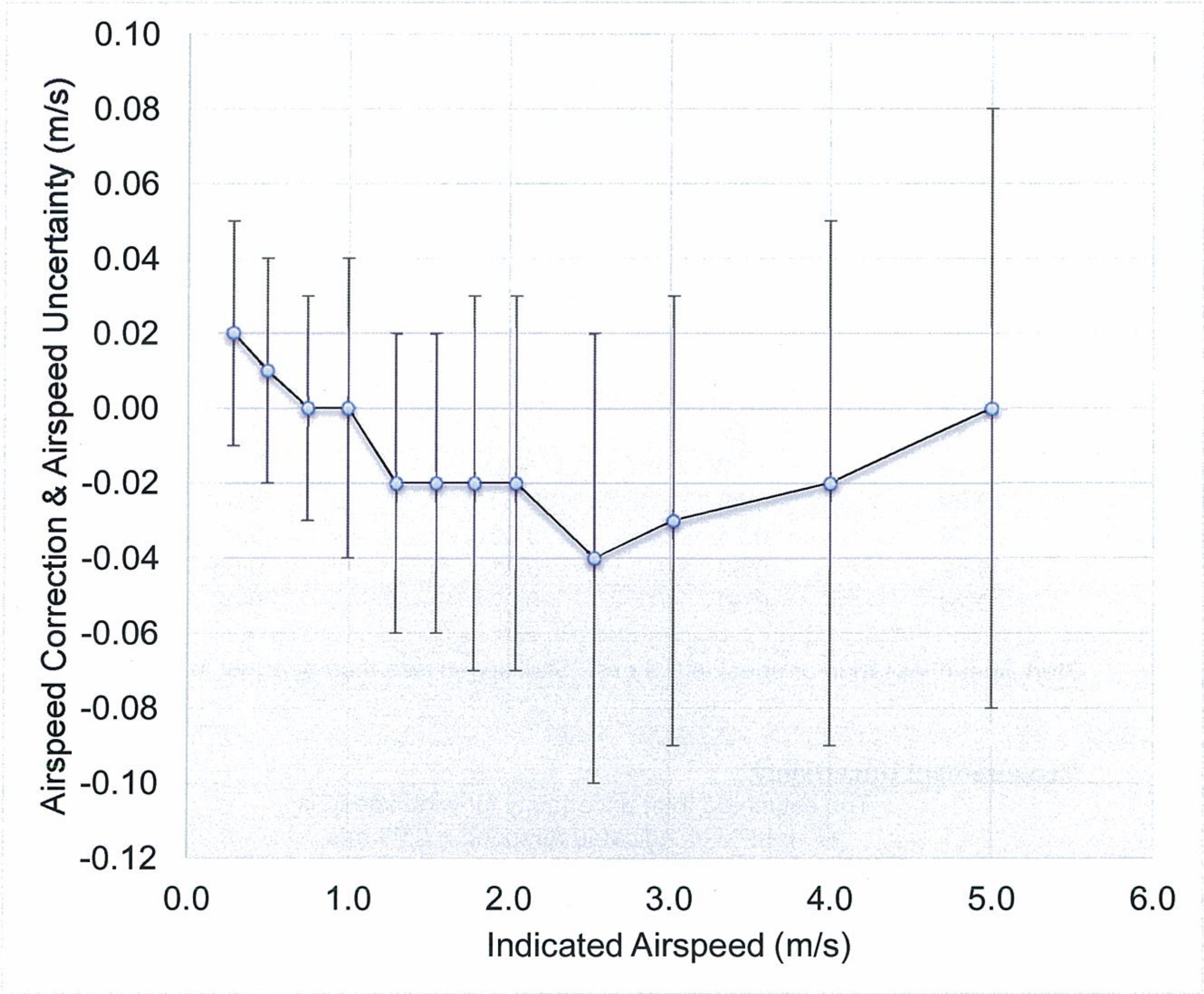
Anemometer Calibration Certificate

Certificate No: WT 204204

Calibration Date: 13/04/2016

Instrument Details

Name	TSI Vane Anemometer
Model	TSI5725
Serial No.	T57251518002



AS LEFT GRAPH
Airspeed Correction & Combined Airspeed Uncertainty vs Indicated Airspeed

Appendix K – Fire Management Plan

Fire Management Plan for the Wyndham Council Refuse Disposal Facility (RDF)

1 INTRODUCTION

Wyndham Council acknowledges that it has a legal obligation under the Vic OH&S Act 2014 to ensure the health and safety of employees, contractors and visitors who enters a Council property, including the Refuse Disposal Facility (RDF) situated in West Road, Wyndham. This also includes the health and safety of persons who may be affected by the occurrence of any fire incident that may occur at the RDF. This involves ensuring that fire prevention, protection and mitigation systems and procedures are properly maintained, and that suitable training requirements are undertaken to ensure that all RDF staff are reasonably aware of their fire safety responsibilities.

Fire is regarded as a fairly high risk within an organisation, such as the RDF that has an infrastructure of buildings and equipment as well as various types of potentially flammable fuel on its site. This Fire Safety Management Plan (FSMP) has been prepared so that Wyndham Council and the RDF can appropriately manage this risk.

2 OBJECTIVES

There are four main objectives of this FSMP which are to ensure that:

- A suitable fire risk management process is applied across the RDF to ensure a high level of safety for persons, property and the environment.
- Any fire incident that occurs is quickly and effectively contained and resolved.
- The RDF complies fully with its legal obligations in relation to fire safety.
- Appropriate training and information is provided on fire safety to the RDF staff, contractors and any other persons who may be affected.

3 SCOPE AND LIMITATIONS

The term ‘fire management’ refers to a range of characteristics including:

- The methods for carrying out fire safety risk audits.
- The design, installation and maintenance of fire safety systems to protect people, property equipment from the effects of fire.
- The provision of fire safety awareness, response and training.
- The establishment and maintenance of OH&S Representatives and Fire Wardens.

4 DESCRIPTION OF RDF AREAS

The RDF comprises four main disposal areas and other open space areas which are as follows. Each of these areas contains various levels of fire risks as well as being affected by different fire causation factors.

- Transfer station
- Green waste area
- Matrasses disposal and dismantling area
- The tip-face and landfill cells
- The open space areas
- Roads, weighbridge and the ticket office

5 FACTORS THAT COULD CAUSE A FIRE

The following are factors that could affect the occurrence and growth of a fire at the RDF:

- Chemicals in products in waste being disposed on the tip face or into the transfer station.
- Arson.
- Lighted cigarettes or matches being carelessly thrown onto the ground.
- Piles or stored quantities of carbonaceous materials on the RDF site.
- Equipment faults, such as electrical short circuit or fuel leak on a machine.

6 TYPES OF FIRES THAT COULD OCCUR

The types of combustible materials that could result in a fire at the RDF include:

- Flammable materials disposed of onto the tip face or into the transfer station area.
- Flammable chemicals, including fuel being stored at the RDF site.
- Timber from items such as dismantled matrasses.
- The large pile of old tyres.
- Fires arising from machinery malfunctions – such as due to fuel leaks or electrical faults and which could spread to other RDF areas.

7 FIRE RESPONSE PROCEDURE FOR RDF STAFF

The following policy and procedure is provided in the RDF OH&S Manual which applies to all RDF staff members.

7.1 Policy

Ensure that all persons at the RDF are safe from the risk of any fire emergency.

7.2 Definition

Fire emergency refers to any unexpected occurrence of a fire on or near the RDF site.

7.3 Procedure

7.3.1 Carry out regular fire risk assessment with a view to determining fire hazards and risk control measures at the RDF.

7.3.2 Adopt regular fire prevention actions to:

- Reduce fuel loads wherever possible, especially in areas where there is grass and around piles of carbonaceous substances such as piles of timber and tyres.
- Safely store all flammable chemicals required at the RDF.
- Adequately maintain all machinery and ensure that all hot work tasks are safely performed.

7.3.3 Adopt regular security arrangements to prevent intruders who may light fires.

7.3.4 Adopt a suitable smoking policy and procedures to reduce the risk of fire – including the use of designated smoking areas being the only place where smoking is allowed.

7.3.5 RDF staff must be alerted to the importance of remaining vigilant and on the lookout regarding the risk of a fire emergency at the RDF site, especially in the areas of the tip face and the transfer station.

7.3.6 Ensure that all fire control equipment (such as fire extinguishers and hoses) is regularly maintained and in proper working order.

7.3.7 Ensure that all water tanks (including mobile water tanks) are kept full, properly maintained and that the water is easily accessible.

7.3.8 If a fire is observed by a RDF staff member they should immediately do one or more of the following:

- As soon as possible inform the site manager or supervisor and get help.
- If the fire is still small and having developed within a short apace of time and only if it is safe to do so, attempt to extinguish the fire using a suitable and safe method (eg fire extinguisher, water supply or sand).
- Call the CFA on 000; however this should normally only be done as instructed by the RDF manager or supervisor.
- Evacuate the area if the fire begins to grow quickly.

7.3.9 The RDF manager or supervisor (or their designate) must call the CFA if the fire is not immediately completely extinguished.

7.3.10 All occurrences of fire emergencies must be reported and investigated.

7.3.11 The RDF Manager must report all fire emergencies that involve calling the CFA to WorkSafe.

7.3.12 During a fire emergency all contract or public vehicles must not be allowed to enter the RDF site and if necessary, the RDF manager (or their designate) or the CFA may order a complete evacuation of the site.

7.4 Responsibilities

- The RDF Manager must, in consultation with other RDF staff, determine and implement the procedures.
- All RDF staff and contractors must be aware of the available the above fire procedures.

See also the Fire Response Flow Chart

8 MAINTENANCE OF FIRE RESPONSE EQUIPMENT

The following equipment is provided for any fire response emergency:

- One concrete tank with a capacity of about 30, 000 litres of water, normally kept full with a continuous municipal water supply. This tank supplies water to the emergency fire hose connection located neat the transfer station.
- One polyethylene tank with a capacity of about 30,000 litres and being supplied with a continuous municipal water supply. The tank has a pump and to supply water for vehicle cleaning and to fill the water trucks. It also supplies water to a fire-hose located near the green waste dumping area.
- Two polyethylene tanks each with a capacity of about 30,000 litres of water being supplied from the transfer station roof and the roof cover over the battery, cylinder and oil disposal area respectively.
- One polyethylene tank with a capacity of about 10,000 litres located between the RDF office and second hand sales and storage shed.
- Two water trucks each containing about 10,000 litres and a trailer water tank containing about 5,000 litres. One of these trucks is permanently located on the tip face while the other truck is used for general purposes including tree watering and dust control.
- A number of fire extinguishers located within all the RDF buildings, offices and heavy plant machinery – see diagram of RDF layout.

9 TANK WATER SUPPLY AVAILABLE

In total assuming all tanks were full there should be approximately 150,000 litres of water available at the RDF that is capable of immediate use during any emergency.

The municipal water supply to the concrete and polyethylene tanks is via a supply pipe that is capable of filling these tanks at the rate of about 850 ml/s. This means that it would take about 10 hours to completely fill each of these tanks if they were completely empty.

It is assumed if the CFA (Country Fire Authority) were to attend a fire emergency, they would be able to provide additional amounts of water and other fire fighting resources.

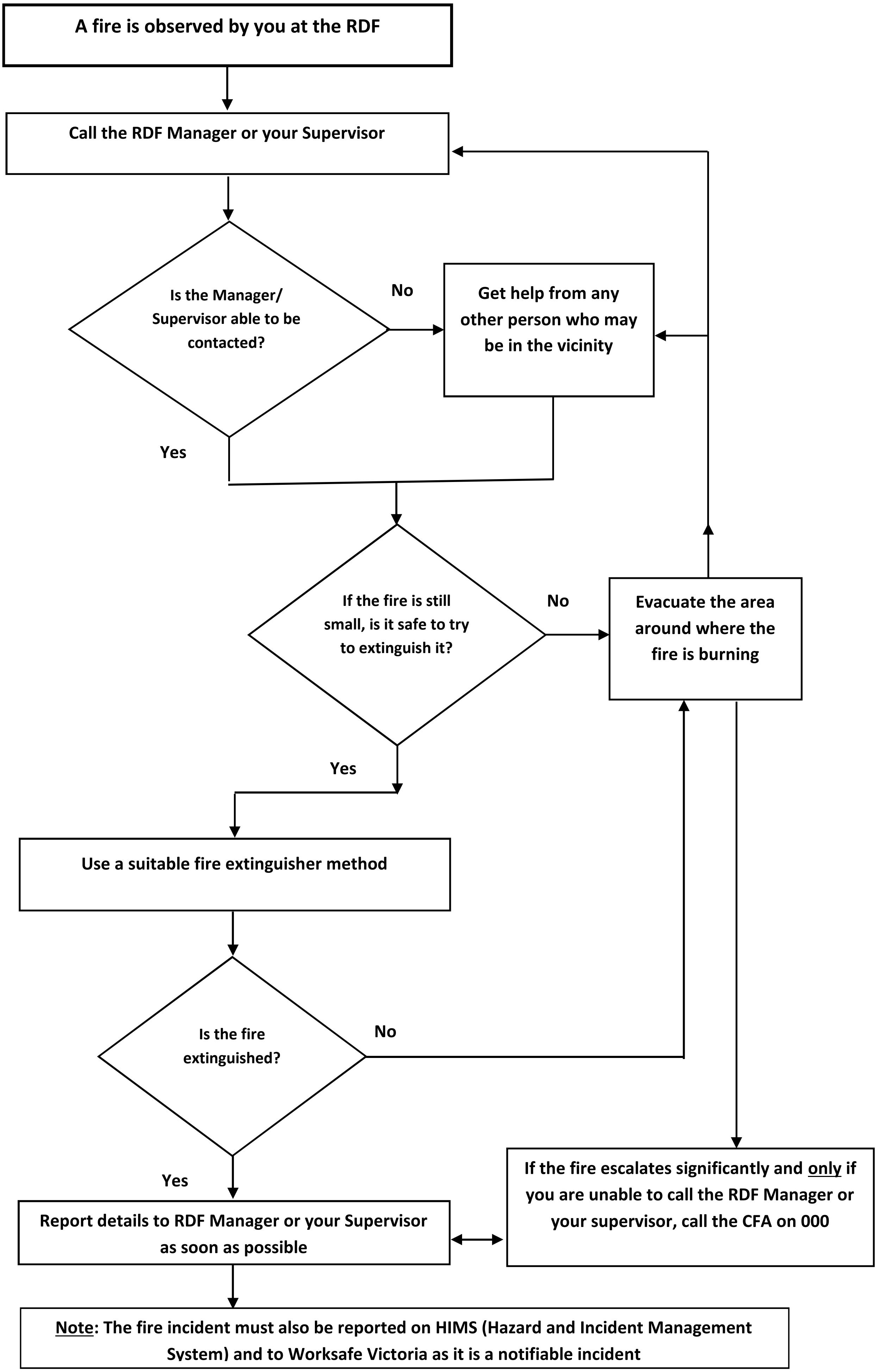
10 GENERAL FIRE PROTECTION PROCEDURES

The following fire protection measures are recommended for implementation at the tip face (landfill), transfer station and other surrounding open areas:

- Fires or burning of waste should not be permitted.
- A 4 m wide fire break should be constructed inside of and adjacent to the site perimeter fence and around stockpiles of any flammable materials being stored at the RDF.
- A mobile water tanker (with water tank always full) should always be located at the tip face are area, together with a reasonably large load of soil and the use of heavy earth moving and compacting machinery.
- The fire hydrants as well as the three water supply tanks located near the transfer station should be regularly maintained for fire-fighting purposes and water fill-points clearly marked.
- Access tracks within the tip face and other landfill areas should allow forward entry and exit of any fire-fighting vehicles that may need to enter the areas.
- Provision of fire extinguishers in selected site vehicles and buildings should be regularly maintained and checked.
- RDF staff should be aware of the location of fire extinguishers at the RDF (including vehicles and buildings), be suitably trained in general fire prevention principles and know how to safely extinguish a small fire.
- During particularly hot periods in the summer months, additional fire watch arrangements should be implemented during after-hours when the RDF is closed.

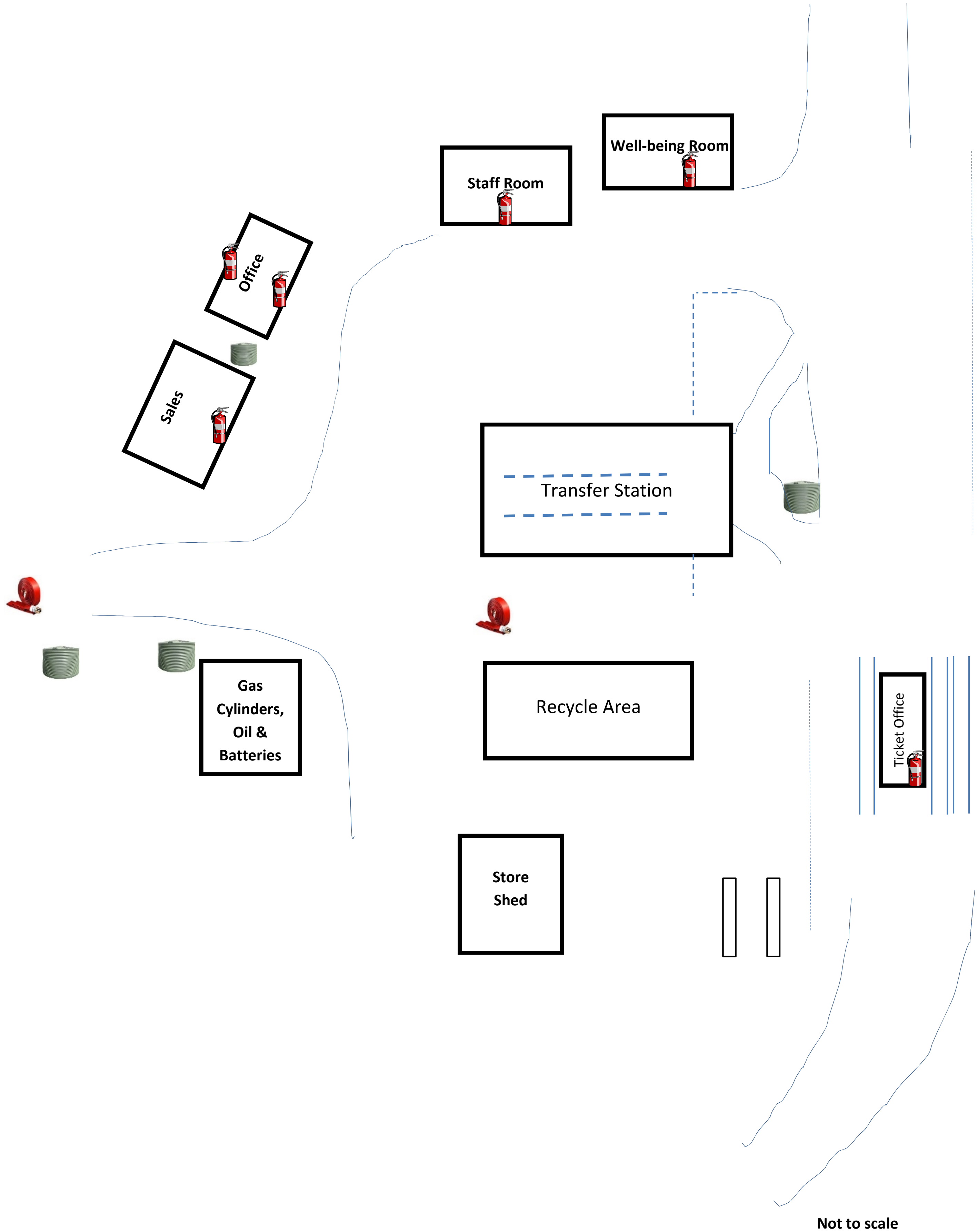
11 EMERGENCY ASSEMBLY AREAS

The emergency assembly area for the RDF site is currently located next to the entrance to the weigh bridge and ticket office. In the event that this assembly area is unsafe to use, the RDF manager or the Chief Fire Warden will inform all staff and other persons at the RDF about where else they should assemble.


A fire is observed by you at the RDF
Call the RDF Manager or your Supervisor
Is the Manager/ Supervisor able to be contacted?
No
Get help from any other person who may be in the vicinity
Yes
If the fire is still small, is it safe to try to extinguish it?
No
Evacuate the area around where the fire is burning
Yes
Use a suitable fire extinguisher method
Is the fire extinguished?
No
Yes
If the fire escalates significantly and only if you are unable to call the RDF Manager or your supervisor, call the CFA on 000
Report details to RDF Manager or your Supervisor as soon as possible
Note: The fire incident must also be reported on HIMS (Hazard and Incident Management System) and to Worksafe Victoria as it is a notifiable incident

Fire Control Equipment Layout at RDF

(Includes water tanks, fire hydrant and fire extinguishers)



Not to scale

Appendix L – Operations and Maintenance Procedure Manual

Wyndham City Council

Wests Road Refuse Disposal Facility, Werribee

Operations and Maintenance Procedures Manual

June 2016

Table of Contents

APPENDICES

ABBREVIATIONS

EIP	Environment Improvement Plan
EPA	Environment Protection Authority
H&S	Health and Safety
OH&S	Occupational Health and Safety
RDF	Refuse Disposal Facility
SEPP	State Environment Protection Policy
WMP	Waste Management Policy
BPEM	Best Practice Environmental Management, Siting, Design Operation and Rehabilitation of Landfills.

1. WEIGHBRIDGE OFFICE

1.1 Waste Inspection and Acceptance

1.1.1 Purpose

To ensure:

- only wastes permitted by the site EPA Licence and EIP are accepted at the RDF;
- waste disposed to landfill is minimised by the removal or diversion of recyclable or reusable materials;
- items deposited at the recycling and green waste areas are not contaminated with other wastes; and
- non conforming wastes are managed in accordance with EPA guidelines.

1.1.2 Scope

This procedure shall apply to all waste loads entering the RDF regardless of whether the waste is for disposal or not.

1.1.3 Responsibility

The RDF Manager shall have general responsibility for ensuring that site staff undertake the necessary actions and procedures, and receive appropriate training in the identification of prohibited wastes, and in particular hazardous wastes.

1.1.4 Equipment/Facilities

- signage
- waste inspection platform
- video surveillance cameras

1.1.5 Procedures

(a) Load Inspection

The Weighbridge Attendant shall determine the nature of each load by inspection and/or questioning of the customer and direct the waste to the appropriate service area (ie. the recycling area, green waste area, transfer station and/or the landfill).

The waste inspection platform and video surveillance cameras shall be used, as necessary, to assist in the detection of prohibited wastes or wastes suitable for recycling and/or reuse.

Random inspection of covered or concealed waste loads shall be performed as necessary.

Signage indicating which wastes are accepted for disposal or recycling/reuse and which wastes are prohibited shall be located in a prominent position near the entrance to the facility.

(b) Detection of Prohibited Wastes

Where prohibited wastes are detected, the Weighbridge Attendant shall immediately notify the customer that the waste cannot be accepted for disposal at the site and then provide him/her with a copy of the EPA information bulletin listing facilities which are licensed to accept such wastes (refer Appendix H).

Prohibited waste, if not immediately transported off-site, will be directed to a designated temporary storage area until such time it is taken off-site. EPA shall be immediately notified of any prescribed industrial or hazardous waste that is held in the temporary area. All efforts shall be made to have the waste removed within seven days.

(c) Detection of Recyclable Materials or Green Waste in Waste Loads for Disposal

Where recyclable materials (i.e. those materials which are accepted for recycling or reuse at the RDF) and/or green waste are detected in a waste load proposed for disposal, the Weighbridge Attendant shall politely inform the customer of the availability and location of the recycling facilities.

(d) Importation of soils

All soils being imported to the site (apart from small domestic loads) are required to comply with the Review and Acceptance of Imported Fill Material Guidelines, a copy is contained in Appendix R. Importation of soils has to be approved by an appropriately qualified environmental consultant, the appointed Environmental Auditor, and the RDF Manager.

A copy of the Imported Fill Guidelines must be maintained for each source site of soil and included in the material tracking system with an individual reference number. As a minimum the following information will be detailed:

- Reference or source site
- Date(s) of importation
- Volume of soil imported
- Fate or destination of soils onsite
- Material tracking system reference

1.1.6 Verification

Satisfactory performance of these procedures shall be evidenced by:

- continued implementation of the procedures described herein;
- a lack of prohibited wastes being accepted at the RDF;
- a lack of unnecessary disposal of recyclable or reusable items in the landfill;
- achievement of high levels of waste recovery at the site; and
- low levels of cross-contamination of materials deposited at the recycling and green waste areas.

1.2 Weighbridge Operations

1.2.1 Purpose

To ensure all weighbridge operations are performed in an efficient and courteous manner with minimal delay to customers.

1.2.2 Scope

This procedure shall apply to all waste loads entering the RDF regardless of whether the waste is for disposal or not.

1.2.3 Responsibility

The RDF Manager shall have general responsibility for ensuring that site staff undertake the necessary actions and procedures in an efficient and courteous manner.

1.2.4 Equipment/Facilities

- twin weighbridges
- safe
- computer and all associated information systems
- cash register
- signage
- video surveillance cameras

1.2.5 Procedures

(a) Assessment of Charges and Disposal Point

The Weighbridge Attendant shall initially assess the vehicle size, type and contents in order to determine whether:

- the waste is prohibited (refer to detailed procedures provided previously);
- waste disposal charges will apply;
- waste disposal charges will be based on a weighed or non-weighed basis; and
- the waste load is to be discharged at the transfer station or the landfill.

Charges shall apply to all waste and recycling loads with the possible exception of cleanfill - refer to the current schedule of tipping fees approved by Council.

In general, the Weighbridge Attendant will charge small vehicles on a non-weighed basis and bulk vehicles on a weighed basis.

EPA regulation excludes vehicles less than 1.6t tare from accessing the landfill working face – the Weighbridge Attendant shall direct such vehicles to the transfer station.

The Weighbridge Attendant shall generally direct all vehicles greater than 6t tare to the landfill working face and all vehicles less than 6t tare to the transfer station.

The Weighbridge Attendant may direct vehicles greater than 1.6t but less than 6t tare to the landfill working face if the driver is known to be familiar with tipping operations and safety requirements.

(b) Non-Weighed Loads

The Weighbridge Attendant shall refer to the current schedule of tipping fees approved by Council and charge the customer accordingly.

Approved methods of payment are presently cash, bank cheque, vouchers and Eftpos. The Weighbridge Attendant shall refuse to accept all other methods of payment.

The Weighbridge Attendant shall complete the transaction, including entering vehicle and waste details on the database and preparing and issuing an invoice, in accordance with the detailed procedures contained in Appendix C.

The Weighbridge Attendant shall then advise the customer as follows:

- whether the load is to be discharged at the transfer station or landfill and then provide directions to such;
- if necessary, provide directions to the recycling area and/or green waste area; and
- if necessary, explain Council's children out of cars policy.

(c) Weighed Loads

The Weighbridge Attendant shall initially establish, by questioning of the customer if necessary:

- whether the vehicle has ever been weighed; and
- whether payment is by cash or account.

The Weighbridge Attendant shall then complete the transaction, including entering vehicle and waste details on the database and preparing and issuing an invoice, in accordance with the detailed procedures contained in Appendix C.

The Weighbridge Attendant shall then advise the customer as follows:

- whether the load is to be discharged at the transfer station or landfill and, if necessary, provide directions to such;
- if necessary, provide directions to the recycling area and/or green waste area; and
- if necessary, explain Council's children out of cars policy.

(d) Miscellaneous Tasks

The following tasks shall be completed in accordance with the detailed procedures contained in Appendix C:

- Perform daily reconciliation and ensure float is correct – account, cash, bank cheque, vouchers and Eftpos;
- Convert transaction files, download to Civic Centre and then back up each Monday and on the last day of each month;
- Extract weekly and monthly reports;
- Ensure all invoices, receipts, dockets, cash breakdown sheets, reconciliation sheets etc. are packaged and forwarded to Civic Centre;
- Ensure all monies are deposited in safe; and
- Ensure all monies deposited in the safe are handed over to the security guards at the arranged time and day's of the week.

At the end of each day's operation, the Weighbridge Attendant shall lower the boom gate to prevent unauthorised entry to the site.

1.2.6 Verification

Satisfactory performance of these procedures shall be evidenced by:

- continued implementation of the procedures described herein;
- daily reconciliation is accurately performed;
- all necessary databases, files and documents are accurately prepared and forwarded to the Civic Centre; and
- a lack of complaints received from the public in relation to their dealings with site staff.

1.3 Dealing With Difficult Customers

1.3.1 Purpose

To ensure that all dealings with the public are conducted in a polite and courteous manner with conflict being avoided.

1.3.2 Scope

This procedure shall apply to all site staff and service areas.

1.3.3 Responsibility

The RDF Manager shall have general responsibility for ensuring that site staff undertake the necessary actions and procedures in an efficient and courteous manner.

1.3.4 Procedures

(a) General

All staff shall, as relevant, follow the detailed procedures for dealing with customer's complaints as provided in Wyndham City Council's Complaints Handling Policy and Procedure (refer Appendix I).

In general, all site staff should be polite and courteous but firm in dealing with the public. **Conflict shall be avoided at all times**.

If a customer refuses to accept the direction or advice given by a staff member then the matter shall be referred to the Team Leader RDF Services who will then take responsibility for attempting to resolve the matter with the customer.

If a customer threatens the Team Leader RDF Services, any other staff member or member of the public in any way or if the Team Leader RDF Services feels that the situation is getting out of hand, then he shall contact the police having first advised the customer concerned of his intentions.

All incidents which result in a member of the public being denied entry to or evicted from the site shall be reported in the operations log and brought to the attention of the RDF Manager as soon as practicable after the event.

(b) Customer Refuses Inspection of Load

In the event a customer refuses inspection of his/her load, then the following procedures shall be implemented as required:

- The Weighbridge Attendant shall advise the person why load inspection is performed and that it is a condition of entry to the site.
- If the customer still refuses inspection of his/her load, then the Weighbridge Attendant shall contact the Team Leader RDF Services who will also deal with the matter as described previously.
- If the matter still cannot be resolved then the Team Leader RDF Services will advise the customer that they cannot use the facility and arrange for the vehicle to be escorted from the site.

(c) Customer Disputes Fee

In the event the fee is disputed by the customer, then the following procedures shall be implemented as required:

- The Weighbridge Attendant shall provide the customer with a copy of the current schedule of tipping fees and then explain the method by which the fee for the particular vehicle/waste load concerned was calculated.
- If the fee is still disputed by the customer, then the Weighbridge Attendant shall contact the Team Leader RDF Services who will again explain the method of fee calculation.

- If the matter still cannot be resolved then the Team Leader RDF Services will advise the customer that they cannot use the facility and arrange for the vehicle to be escorted from the site.

1.3.5 Verification

Satisfactory performance of these procedures shall be evidenced by:

- continued implementation of the procedures described herein;
- a lack of incidents resulting in a member of the public being denied entry to or evicted from the site;
- a lack of incidents resulting in the police having to be brought to the site to resolve the matter; and
- a lack of complaints received from the public, both verbally and in writing, in relation to their dealings with site staff.

2. TRANSFER STATION

2.1 Supervision of Customers

2.1.1 Purpose

To ensure that all customers using the transfer station area are able to unload their waste, recyclables and/or green waste and then depart the area in a safe and efficient manner with minimal delay or risk of accident or injury to customers or staff.

2.1.2 Scope

This procedure shall apply to the transfer station, recycling area and green waste area.

2.1.3 Responsibility

The RDF Manager shall have general responsibility for ensuring that transfer station staff and recycling and mulching contractors undertake the necessary actions and procedures.

2.1.4 Equipment/Facilities

- personal protective gear
- brooms and shovels

2.1.5 Procedures

(a) Traffic Control and Customer Safety

Tipping bays on both sides of the transfer pit will only be used when required. When traffic volumes are low, the tipping bays on one side of the pit (possibly depending upon wind direction) will be temporarily barricaded and the Transfer Station Attendants will direct customers to the bays in use.

As far as practical, and as necessary, the Transfer Station Attendant(s) shall direct customers in reversing their vehicles up to the pit. Unless in an emergency situation or where it is felt that the safety of others is being threatened, attendants shall **never** drive a customer's vehicle, even if it is apparent that the customer is having difficulty in manouvering their vehicle.

Safety vests approved and issued by Wyndham City Council shall be worn at all times staff are working within the transfer station area.

Attendants shall visually and verbally inspect loads for prohibited wastes.

Attendants shall bring to the customer's attention, Council's "children out of cars" policy as appropriate.

(b) Waste Unloading

As far as practical, and as necessary, Transfer Station Attendants shall assist customers in unloading waste from their vehicles. Correct manual handling techniques shall be employed and protective gear, such as gloves and glasses, worn by attendants as necessary.

Tipping bays shall be swept throughout the day as required and at the end of each day's operation and the waste deposited into the transfer pit. The use of water to clean up the bays should generally be avoided but may be necessary to remove certain wastes.

(c) Detection of Prohibited Wastes

Detection Prior to Unloading

Where prohibited wastes are detected prior to unloading, the following procedures shall be immediately implemented.

1. Attendant to inform the customer that the waste cannot be accepted for disposal at the site.
2. Attendant to provide the customer with a copy of the EPA information bulletin listing facilities which are licensed to accept such wastes (refer Appendix H).
3. Attendant to assist the customer in unloading wastes which are permitted for disposal.

4. Attendant to monitor the movement of the vehicle out of the transfer station area and past the weighbridge office.

Detection During Unloading

Where prohibited wastes are detected during unloading, the following procedures shall be immediately implemented.

1. Attendant to inform the customer that the waste cannot be accepted for disposal at the site and request that they stop unloading the waste into the transfer pit.
2. Through both visual and verbal means, attendant shall attempt to establish whether the waste is hazardous.
3. If it can be reasonably concluded that the waste is either non-hazardous, or hazardous but so contained that it does not pose a threat or nuisance to staff or the public, then:
    a. Attendant to inform the Machine Operator of the incident who shall then retrieve the waste and clean-up the pit in accordance with the procedures described below;
    b. Attendant to provide the customer with a copy of the EPA information bulletin listing facilities which are licensed to accept such wastes (refer Appendix H);
    c. Attendant to assist the customer in unloading wastes which are permitted for disposal;
    d. Attendant to monitor the movement of the vehicle out of the transfer station area and past the weighbridge office.
4. If it is concluded that the waste is or may be hazardous and may pose a threat or nuisance to staff or the public then:
    a. Attendant shall inform the Team Leader RDF Services of the situation and then obtain customer's name and vehicle registration number. If the customer refuses to supply his or her name do not press the matter – **avoid conflict at all times**;
    b. Team Leader RDF Services shall inform all transfer station staff and then arrange for the area to be evacuated and then closed off completely to all customers by placing barricades and stands;
    c. Team Leader RDF Services shall contact emergency services if necessary;
    d. Team Leader RDF Services shall inform the Weighbridge Operator of the situation who will then direct **all** customers to the landfill;
    e. Team Leader RDF Services shall arrange for all Transfer Station Attendants to be redirected to the landfill to carry out traffic control;
    f. Team Leader RDF Services shall contact the RDF Manager who will seek professional advice, if necessary, on the retrieval of the waste, clean-up of the pit and any other actions required;
    g. Team Leader RDF Services shall make all necessary arrangements for the transfer station area to be re-opened as soon as practicable after the hazardous waste has been removed, pit cleaned up and the area declared safe;
    h. Team Leader RDF Services shall record the details of the incident in the operations log and within 48 hours supply a comprehensive written report to the RDF Manager for follow-up action if necessary.

(d) Detection of Recyclables or Green Waste

Where recyclable materials and/or green waste are detected prior to or during unloading, Transfer Station Attendants shall politely inform the customer of the availability and location of the recycling facilities. Attendants shall **not** take issue with customers who choose to ignore the advice given and deposit the entire waste load into the transfer pit.

(e) Recycling and Green Wastes Areas

Unloading of recyclables and green waste in the designated areas and loading of mulched green waste will generally be performed by the customers themselves, even though assistance may be provided by Transfer Station Attendants if traffic volumes permit.

At the end of each day's operation and on at least one other occasion during the day, a Transfer Station Attendant shall check the general condition of the recycling and green waste areas and undertake the following housekeeping of these areas:

- any recyclables which have been placed in the incorrect receptacle shall be relocated;
- any recyclables which have been placed outside the receptacle or are strewn around the areas shall be picked up and placed in the appropriate receptacle;
- any wastes which are strewn around the areas, or placed in the recycling receptacles or green waste stockpile shall be removed and disposed of as appropriate.

The removal of full recycling receptacles and replacement with empty ones shall be performed under contract. Transfer Station Attendants shall regularly monitor the filling of receptacles and inform the Team Leader RDF Services when receptacles are nearly full.

Similarly, the mulching of green waste shall be performed under contract. Transfer Station Attendants shall regularly monitor the filling of the green waste area and determine when the services of the mulching contractor are required.

2.1.6 Verification

Satisfactory performance of these procedures shall be evidenced by:

- continued implementation of the procedures described herein;
- a lack of unnecessary disposal of recyclables and green waste in the landfill;
- achievement of high levels of recycling at the site;
- a lack of contaminants present in items deposited at the recycling and green waste areas;
- a lack of incidents involving the deposition of prohibited wastes, and in particular hazardous wastes, into the transfer pit;
- a lack of incidents reported involving injury to customers or staff employed in the transfer station area or damage to customer's property; and
- maintenance of a clean and orderly operation.

2.2 Push Pit Operations

2.2.1 Purpose

To ensure that waste is transferred from the transfer pit to the landfill in a safe and efficient manner.

2.2.2 Scope

This procedure shall apply to the transfer station site only.

2.2.3 Responsibility

The RDF Manager shall have general responsibility for ensuring that transfer station staff and the waste transfer contractor undertake the necessary actions and procedures.

2.2.4 Equipment/Facilities

- front-end loader
- waste transfer truck
- personal protective gear
- brooms and shovels

2.2.5 Procedures

(a) Safety Procedure

The following tasks shall be performed on a daily basis prior to commencement of transfer station operations:

- the Machine Operator shall check that the flashing light and reversing buzzer of the front-end loader are in proper working order;
- the Team Leader RDF Services, or other staff member(s) under his direction, shall check that all attendants are wearing all necessary personal protective gear; and
- the Team Leader RDF Services, or other staff member(s) under his direction, shall inspect each safety rail to ensure they are in proper working order. All safety rails shall then be lifted into position and securely locked. If any safety rails are found to be defective or otherwise not in proper working order, then the tipping bay(s) they serve shall be temporarily barricaded until the defect(s) has been suitably rectified.

(b) Pushing Up and Removal of Waste From Pit

The Machine Operator shall use the front-end loader to regularly push up waste accumulating in the pit and then load the waste into the transfer truck. This task will be performed at the end of each day's operation so that no waste is retained overnight in the pit or truck.

The Machine Operator shall **never** operate the loader in the transfer pit when a person other than himself is working or otherwise present in the pit.

The Machine Operator shall not use the loader's tyres to crush waste and shall generally avoid operating the machine on waste. Crushing of waste is best achieved using the loader bucket while loading the waste into the transfer truck. Waste should be evenly spread on the transfer truck using the loader bucket.

In the case of machine breakdown, the Machine Operator shall immediately notify the Team Leader RDF Services when waste has been filled to within 300mm of the top level of the pit. The Team Leader RDF Services shall arrange for the transfer station to be closed until the machine has either been fixed or replaced and the waste removed. He shall then inform the Weighbridge Operator of the situation who will direct **all** customers to the landfill. The Team Leader RDF Services shall then arrange for all Transfer Station Attendants to be redirected to the landfill to carry out traffic control.

The transfer truck shall generally be filled to its capacity, however, overfilling shall be avoided.

(c) Detection of Prohibited Wastes

Where prohibited wastes are detected in the pit by the Machine Operator, the following procedures shall be immediately implemented.

1. The Machine Operator shall inform the Transfer Station Attendant(s) who shall then arrange for customers to stop discharging waste into the pit.
2. The Machine Operator shall attempt to establish whether the waste is hazardous.
3. If it can be reasonably concluded that the waste is either non-hazardous, or hazardous but so contained that it does not pose a threat or nuisance to staff or the public, then the Machine Operator will remove the waste and clean-up the pit in accordance with the procedures provided below.
4. If it is concluded that the waste is or may be hazardous and may pose a threat or nuisance to staff or the public then the Machine Operator shall inform the Team Leader RDF Services who shall then deal with the situation in the manner described in Section 2.1.

(d) Retrieval of Prohibited Wastes and Recyclables

Prohibited Non-Hazardous Waste and Recyclables

Entry into the transfer pit for the retrieval of prohibited non-hazardous wastes, recyclables or other items shall **only** be performed by the Machine Operator, or in his absence, other staff authorised by the Team Leader RDF Services to do so.

Prior to entry into the pit, the machine shall be switched off and all customers advised by the Transfer Station Attendants to stop discharging waste into the pit for the duration of the retrieval activity.

Correct personal protective clothing and equipment shall be worn by the Machine Operator. Prohibited wastes shall be appropriately contained (depending upon the nature of the waste concerned) and the pit floor cleaned using a shovel and broom if necessary. The contained waste shall then be temporarily stored in the designated area pending disposal to a suitable disposal facility.

Hazardous Waste

Entry into the transfer pit for the retrieval of hazardous waste will **not** under most circumstances be undertaken by RDF staff – this shall generally be the responsibility of emergency services or a suitably experienced and equipped contractor acting under professional advice.

RDF staff may assist the contractor where appropriate, approval to do so has first been obtained from the RDF Manager and the staff member(s) is suitably equipped and acting under the close and constant supervision of the contractor.

EPA will be notified that hazardous wastes have been deposited within the transfer station pit. Where possible, the vehicle that deposited the non complying waste will be identified and all efforts made to have the transporter or the waste generator remove the waste from the site.

If it is not possible to have the waste promptly removed, and it is safe to do so, then the waste will be transferred and secured in the designated temporary waste storage area and all efforts shall be made to have the waste removed within seven days.

(e) Waste Transfer

For non-hazardous waste, once the transfer truck has been filled, the load shall be covered with a net, tarpaulin or other suitable cover, and then carted to the landfill, via the weighbridge, for disposal.

The truck shall be emptied at the working face as directed by the tip face operators.

The truck loading area shall be swept throughout the day as required and at the end of each day’s operation and the waste deposited into the transfer pit or truck as appropriate. The use of water to clean up the area should generally be avoided but may be necessary to remove certain wastes.

The transfer truck shall be emptied at the end of each day’s operation so that no waste is retained overnight in the truck.

2.2.6 Verification

Satisfactory preformance of these procedures shall be evidenced by:

- continued implementation of the procedures described herein;
- maintenance of a clean and orderly operation;
- successful retrieval of prohibited wastes from the transfer pit through implementation of the procedures described herein; and
- a lack of incidents reported involving injury to customers or staff employed in the transfer station area or damage to customer’s property.

3. LANDFILL

3.1 Commencement of New Lift

3.1.1 Purpose

To ensure each new landfill lift is commenced and place in accordance with the requirements of the site EPA Licence, BPEM, Landfill Licensing Guidelines and the OMP and that these procedures are undertaken without disruption to landfilling operations.

3.1.2 Scope

This procedure shall apply to the commencement of new lifts within active cells and to the commencement of landfilling operations in a new cell.

3.1.3 Responsibility

The RDF Manager shall have general responsibility for ensuring that necessary actions and processes are carried out.

3.1.4 Equipment/Facilities

- all necessary earthmoving and haulage plant
- safety barriers
- litter screens
- video surveillance cameras

3.1.5 Procedures

(a) General

The following procedures shall be implemented prior to waste disposal operations commencing in a new lift:

- Haul roads and access pads constructed and signage erected as necessary to ensure all vehicles likely to access the working face can do so in a safe and efficient manner.
- Internal bunding and drains constructed as necessary to divert stormwater runoff and so minimise leachate generation.
- Safety barriers and litter screens erected adjacent to the initial working face.
- Sufficient cleanfill shall be stockpiled adjacent to the area being landfilled. The stockpile shall be sited on previously filled areas such that airspace is not consumed by its location and it does not interfere with landfilling operations and traffic movement. In general, all cleanfill stockpiles shall be located away from drainage lines and roadside drains unless adequately protected from erosion by diversion drains, bunds or similar works. As a guide, 1m^3 of cleanfill (measured in-situ ie. not loose) shall be stockpiled for every 4t of waste received.

(b) New Cell

The following additional procedures shall be implemented prior to waste disposal operations commencing in a new cell:

- Environmental auditor has prepared and issued to the EPA an environmental audit report confirming that the cell has been constructed in accordance with the requirements of the EPA Works Approval.
- The EPA has notified Council in writing that they have approved of the environmental audit report and that waste may be deposited in the new cell.
- Leachate collection pipes and sumps (only if new sump constructed as part of cell development) have been commissioned and written verification of such obtained.
- Video surveillance cameras have been installed and commissioned.

3.1.6 Verification

Satisfactory preformance of these procedures shall be evidenced by:

- continued implementation of the procedures described herein;
- all necessary works have been completed prior to landfilling operations commencing in a new lift;
- all necessary reports have been prepared and approvals issued prior to landfilling operations commencing in a new cell; and
- minimum disruption to waste disposal operations by the commencement of each new lift.

3.2 Landfilling

3.2.1 Purpose

To ensure waste unloading, spreading, compaction and covering is carried out in accordance with the requirements of the site EPA Licence and EIP, WMP, the BPEM and EPA's Landfill Licensing Guidelines.

3.2.2 Scope

This procedure shall apply to all landfilling operations conducted on site.

3.2.3 Responsibility

The RDF Manager shall have general responsibility for ensuring that necessary actions and processes are carried out.

3.2.4 Equipment/Facilities

- waste compactor
- traxcavator or similar
- tip truck
- litter screens
- any other plant required to spread and compact waste, win cover on site or load it from stockpile and transport it to the working face
- personal safety gear including safety vests, safety glasses, gloves and boots with steel plated soles

3.2.5 Procedures

(a) Staged Development and Operation

The site shall be developed and filled on a cell by cell (or stage by stage) basis. The sequence for filling the cells shall be in accordance with the EPA licence.

Waste disposal operations shall normally be undertaken in one cell at a time. Each cell shall be filled to the final tipping profile prior to waste disposal operations commencing in a new cell. Cell capping and other rehabilitation works shall then be undertaken on a filled cell while tipping is being undertaken in the new cell.

Deviation from this sequence of developing, filling and rehabilitating cells is **not** permitted without the prior approval of the Waste Management Engineer.

(b) Safety Procedure

Prior to landfilling operations commencing at the start of each day, the Plant Operator shall check that the flashing light and reversing buzzer of the landfill compactor, traxcavator and all other plant employed at the working face are in proper working order and that all landfill staff are wearing all necessary personal protective gear. All the staff transport vehicles must be parked at designated parking areas away from tip face (minimum 100 metres).

(c) Detection and Retrieval of Prohibited Wastes

The procedures described previously for the detection and retrieval of prohibited wastes in the transfer station area shall generally apply. If it is determined that the prohibited waste is also hazardous, then the following additional procedures shall apply:

1. Team Leader RDF Services shall arrange for the area to be barricaded and not disturbed by staff or plant. He shall then arrange for photos of the waste to be taken as evidence.
2. Plant Operator shall arrange an alternative working face and inform the Weighbridge Operator of the situation accordingly. The alternative working face shall be located not less than 50m upwind of the area in question and preferably greater.
3. EPA shall be notified that hazardous wastes have been deposited at the landfill.

An assessment will be made inolving RDF Manager, EPA and other advisers deemed appropriate by the RDF Manager as to the safest way to manage the waste. Where possible, the vehicle that deposited the non complying waste will be identified. If safe to do so, the transporter of the non compling waste or the waste generator will be required to remove the non complying waste from the site.

(d) Waste Placement and Spreading

All wastes shall be deposited within defined waste disposal cells. Exposed wastes shall be limited to the working face of the active tipping area.

The tipping location for the day shall be determined by the Plant Operator in consultation with the RDF Manager having regard to site and weather conditions. During periods of prolonged rainfall or when such conditions are forecast, low lying tipping areas shall generally be avoided. Where possible, areas which can be accessed by firm and graded access roads should be selected. Similarly, exposed areas shall be avoided when windy conditions are being experienced or are forecast.

Each cell shall be maintained in a dry condition throughout its operating life. Waste shall **never** be deposited into ponded water. After high intensity or prolonged rainfall events all water ponding on the surface of the cell shall be pumped to the leachate evaporation pond.

The length of the working face shall be restricted to the practical limits of the incoming quantity of waste, the number of vehicles accessing the face and the maintenance of safety distances between tipping vehicles and landfill machinery. To contain litter and to reduce the attraction to birds and other pests, the size of the active working face shall be kept as small as possible and generally no greater than 25m x 25m.

The procedures for insuring the active working face is maintained to a 25m x 25 m area includes:

- Regular checks throughout the day by the RDF Manager;
- Having sufficient cleanfill stockpiled, with areas covered as required throughout the day;
- If extra cleanfill is required the RDF Manager will organise to have extra material delivered from the adjacent quarry within two hours;
- A minimum of two compactors will be in operation on a daily basis; and
- Waste disposal operations will temporarily cease if the active working face is greater than 25m x 25m.

To maximise compaction, waste shall generally be placed at the base of the active working face and pushed up a graded ramp having a gradient of approximately 5H:1V. Waste layers up the ramp shall generally not be greater than 500-600mm thick even though a greater layer thickness may be possible for highly compressible waste such as packaging waste. Lift thickness shall never exceed 2m.

To maximise airspace consumption, open containers such as bathtubs or concrete troughs, etc. shall be placed at the base of a lift and then filled with waste. Bulky and/or crushable wastes such as furniture, crates, drums and tree trunks and limbs shall be thoroughly crushed prior to pushing up into the working face. Such items shall not be placed in the final 2m lift as settlement of the waste mass may lead to piercing of the final cap.

The gradient of any unconfined waste slopes shall generally not exceed 2H:1V as this may result in the face becoming unstable. Geotechnical advice shall be sought if face gradients greater than 2H:1V must be maintained for operational reasons.

(e) Waste Compaction

Each waste layer shall be evenly and properly compacted with the landfill compactor to achieve the following waste compaction targets:

- minimum: 0.9t/m^3
- typical: 1.3t/m^3

The number of machine passes required to optimise waste compaction is dependent upon the nature of the waste being handled, and in particular compressibility and moisture content, however, three to five passes is usually sufficient. Although additional passes will compact the waste to a greater extent, the return on the effort (ie. value of the airspace created in comparison to the additional plant and labour costs) generally diminishes beyond six passes.

(f) Waste Covering

The entire working face, including all flanks, shall be covered at the end of each day's operation with a 300mm thick layer of cleanfill. However, to ensure that the length and width of the working face is less than 25m, cover material shall be applied throughout the day. Continuous or progressive covering of the working face may also be required, particularly on windy days for litter control. A daily checklist of the tip face area will be completed at the end of each day by the on duty RDF manager, including photographic evidence taken. The checklist is to be appropraitely stored and provided as required to repsonsible authorities, the checklisk is contained in Appendix S.

If a separate working face is maintained for solid inert wastes, then a 150mm thick layer of cover shall be applied over this face at the end of the day's operation.

All putrescible wastes from non-domestic sources shall be covered immediately on deposition so that no wastes are exposed.

The soil cover layer shall be graded and lightly track-rolled in order to promote runoff rather than infiltration of stormwater.

(g) Cover Material Stockpile Management

Sufficient cleanfill shall be stockpiled adjacent to the area being landfilled. The stockpile shall be sited on previously filled areas such that airspace is not consumed by its location and it does not interfere with landfilling operations and traffic movement. As a guide, 1m^3 of cleanfill (measured in-situ – ie. not loose) shall be stockpiled for every 4t of waste received.

For reasons of sediment control, cover shall not be stockpiled adjacent to surface water drains.

During windy conditions, cover stockpiles shall be lightly watered to minimise dust generation.

(h) Tests and Surveys

Tests shall be conducted on a monthly basis to determine waste compaction densities achieved and cover material used. The tests shall involve the excavation of not less than three test pits at locations which are considered by the RDF Manager and the Team Leader RDF Services to be representative of the month's operation. The tests shall be conducted in accordance with EPA Publication 455, "Testing of Waste Compaction Density in Landfills (refer Appendix J), or as otherwise approved by the Waste Management Engineer.

The Waste Management Engineer shall gather land or aerial survey data every six (6) months to establish the amount of airspace consumed by waste disposed.

3.2.6 Verification

Satisfactory performance of this procedure shall be evidenced by:

- continued implementation of the procedures described herein;
- daily checklist completed of the cover;
- achievement of established waste compaction targets;
- lack of infringement notices issued by the EPA in relation to non-compliance with licence conditions; and
- lack of complaints from the community relating to environmental performance.

3.3 Leachate and Landfill Gas Management

3.3.1 Purpose

To mitigate the environmental effects of leachate and landfill gas escaping from the landfill through proper monitoring, recovery and disposal.

3.3.2 Scope

Procedures specified below for leachate control shall apply to both active and completed landfill cells.

Procedures specified below for landfill gas control shall apply to completed landfill cells only.

3.3.3 Responsibility

The Waste Management Engineer shall have responsibility for ensuring the landfill gas collection contractor completes all works and services forming part of the contract.

The RDF Manager shall have responsibility for day to day operations on the site such that they do not interfere with the works and services of the landfill gas collection contractor and for ensuring site staff undertake the procedures outlined below relating to leachate monitoring, recovery and disposal.

3.3.4 Equipment/Facilities

- leachate collection drains, sumps and pumps
- leachate evaporation pond
- all works provided and maintained by the landfill gas collection contractor
- other approved facilities

3.3.5 Procedures

(a) Leachate Monitoring

The Team Leader RDF Services shall ensure that each leachate sump is inspected and dipped as soon as practical after all major storm events (whether in intensity or duration) and not greater than weekly to ensure the build up of leachate on the landfill cell base liner is maintained at the minimum practical level and not greater than 300mm above the base liner.

For those cells that do not have a BPEM compliant liner, (Cells 1 to 3), the maximum leachate head shall be determined from a hydrogeological assessment.

Measurements showing the permissible depth of the leachate below a reference point shall be marked on each leachate sump.

(b) Leachate Recovery

Leachate sumps are a designated Hazardous Area and consequently shall **never** be entered by staff or contractors. For any works around the leachate sump an OH&S Procedure is included in the OH&S Manual with a special induction required. No persons shall complete works without being inducted to this procedure.

(c) Leachate Disposal

The leachate evaporation pond shall at all times be maintained and operated so that the banks are stable and not overtopped.

The pond shall be inspected weekly to ensure:

- there is no leakage through the banks; and
- a freeboard not less than one metre is maintained during periods of dry weather to ensure wet weather flows may be adequately stored.

The following maintenance works shall be performed on the pond at least once per year:

- removal of accumulated litter and sediment/sludge;

- trimming of overgrown vegetation; and
- stabilisation of eroded beds and banks.

Such works should preferably be scheduled during summer or other periods of dry weather. Care shall be exercised during the desludging operation to avoid liner or bank damage to the pond.

(d) New Leachate Pond

The following additional procedures shall be implemented prior to commissioning a new leachate pond:

- The leachate pond and associated infrastructure is subject to the same approval process as per new landfill cells so the plans and specifications for the new pond must be prepared and reviewed by an Environmental Auditor before submission to EPA for approval;
- EPA must approve the plans and specifications for the new pond and associated infrastructure before construction can commence;
- An Environmental Auditor must prepare an environmental audit report confirming that the pond has been constructed in accordance with the requirements of the EPA approved plans and specification; and
- EPA has notified Council in writing that it has approved the environmental audit report and that the pond may be commissioned.

(e) Landfill Gas Recovery

The contractor shall establish and maintain a system of collection pipes for the extraction of landfill gas and for conveying it to the power generation area where it is used as fuel for an electrical generator. In the event of a breakdown of the generator, the landfill gas shall be flared.

3.3.6 Verification

Satisfactory performance of these procedures shall be evidenced by:

- continued implementation of the procedures described herein;
- a lack of complaints from the public relating to odour generation from landfill gas and leachate management operations;
- leachate build up on the landfill cell base liner is less than 300mm at all times; and
- a freeboard not less than one metre is maintained in the leachate evaporation pond during periods of dry weather.

4. GENERAL SITE REQUIREMENTS

4.1 Environmental Compliance

4.1.1 Purpose

To ensure compliance with the site EPA licence and EIP, WMP, SEPPs, BPEM and all relevant environmental legislation, regulations, guidelines, codes of practice, etc.

To mitigate the environmental effects arising from site operations through their proper control.

4.1.2 Scope

This procedure applies to all service areas of the site and operational functions.

4.1.3 Responsibility

The RDF Manager shall have responsibility for ensuring that site staff are fully informed of and undertake the necessary actions and processes.

4.1.4 Procedures

The Team Leader RDF Services shall ensure that a copy of the EPA Licence (refer Appendix A) is kept at all times in the weighbridge office and staff amenities building.

Staff shall undertake not less than annual refresher training so they are completely familiar with the legal requirements of operating the site.

The RDF Manager and Team Leader RDF Services shall jointly conduct environmental compliance inspections of the site and complete the checklists provided in Appendix K.

All non-compliances recorded in the check lists shall be addressed immediately or as soon as practicable, depending upon the nature of the non-compliance.

4.1.5 Verification

Satisfactory performance of these procedures shall be evidenced by:

- continued implementation of the procedures described herein;
- lack of infringement notices issued by the EPA in relation to non-compliance with licence conditions;
- lack of complaints from the public relating to environmental performance; and
- regular completion of the relevant items on and submission of the checklists by the RDF Manager to the Waste Management Engineer.

4.2 Site Staffing

4.2.1 Purpose

To define procedures for the proper induction, training and supervision of all staff employed at the site to ensure all relevant functional, safety and environmental requirements are met.

To ensure the site is staffed and supervised at all times so that all necessary functions can be appropriately performed.

4.2.2 Scope

This procedure applies to all full-time permanent staff employed at the site. Procedures relating to casual staff are provided elsewhere in this document.

4.2.3 Responsibility

The RDF Manager shall have general responsibility for ensuring there is sufficient staff on site such that it can be adequately managed and all required functions performed.

4.2.4 Procedures

(a) Qualifications

The RDF Manager shall ensure that all operators and supervisors employed at the site have successfully completed a training course approved by the EPA on landfill management and operation and have the skills applicable to their respective roles and responsibilities.

The RDF Manager shall ensure that staff hold the professional, para-professional, trade or semi-skilled qualifications, credentials and/or accreditation appropriate to the duties and functions they perform.

(b) Induction

The Team Leader RDF Services shall be responsible for the induction of all new staff prior to them commencing work at the RDF. The induction shall be relevant to all duties and functions they will and may be expected to perform and, apart from general information relating to Wyndham City Council, shall include the following matters:

- conditions of employment;
- codes of conduct, dress and appearance;
- general information regarding key operational functions of the RDF;
- site operating hazards including the location of all designated hazardous areas (regardless of whether the person will be working in or near such areas);
- safe working procedures;
- emergency evacuation procedures;
- EPA licence and EIP requirements; and
- other relevant policies, procedures and rules.

(c) Development and Training

The RDF Manager shall be responsible for ensuring that the training and/or develomental needs of individual staff members are identified at least annually through Council's Performance and Development Review process and that these needs are accorded to as far as possible within the constraints of allocated training budgets.

(d) Conduct and Behaviour

The Team Leader RDF Services shall ensure that personnel conduct themselves in a manner that is consistent with the customs of the designated location, and the standards of courtesy, conduct and behaviour expected of Council staff.

(e) Dress and Appearance

The Team Leader RDF Services shall ensure that personnel are attired in a manner appropriate to the nature of the services being provided. This includes dress of a uniform colour and style which may include identification as a Council employee/contractor and/or name-tags.

(f) Staffing Levels

At no time other than early morning starts, shall the staff engaged and working at the RDF consist of less than the following persons:

- a weighbridge attendant;
- a transfer station attendant;
- a person capable of operating all plant and equipment on the site; and
- the Team Leader RDF Services. This person shall generally be in addition to those personnel listed above, however, it is recognised that the Team Leader RDF Services may need to temporarily perform the duties and functions of the personnel listed above until replacement staff can be arranged.

Apart from early morning starts, in the event that all of the above personnel are not present and working on site, the RDF Manager shall:

1. arrange for the service area or RDF, as appropriate, to be temporarily closed down;
2. arrange for suitably qualified and trained replacement staff;
3. notify the Waste Management Engineer; and
4. arrange for the service area or RDF to be reopened once suitably qualified and trained replacement staff have been mobilised.

4.2.5 Verification

Satisfactory performance of these procedures shall be evidenced by:

- continued implementation of the procedures described herein;
- ongoing efficient and effective operation of all service areas on site; and
- lack of complaints from the public regarding the conduct, behaviour, dress or appearance of site staff.

4.3 Induction of Casual Staff and Contractors

4.3.1 Purpose

To define procedures for handling casual staff and contractors at the RDF to ensure all safety, EPA Licence, WMP, SEPPs, BPEM and OPM requirements are met.

4.3.2 Scope

Direction, induction and rendering of assistance to casual staff and contractors for the entire time they are present on the site.

4.3.3 Responsibility

The Team Leader RDF Services shall have general responsibility for ensuring that casual staff and contractors undertake the necessary actions and procedures as directed.

4.3.4 Procedures

(a) Contractor Questionnaire

The Team Leader RDF Services shall ensure all contractors have completed the questionnaire provided in Appendix B prior to them commencing work on site.

(b) Health and Safety and Emergency Evacuation Procedures

Specific instructions (verbal and/or written as appropriate) shall be provided to casual employees or contractors concerning site operating hazards, safety regulations, safe working procedures and emergency evacuation procedures prior to the casual staff or contractors commencing work on site. No casual employee or contractor shall be permitted on site if, in the opinion of the Team Leader RDF Services, they are not capable of understanding the precautions or of reading any simple safety notices which may be issued to them.

The Team Leader RDF Services shall be responsible for ensuring that all safe working procedures and emergency evacuation procedures issued to casual employees or contractors are adhered to and observed by the casual employees or contractors for the entire time they are present on site.

If, in the opinion of the Team Leader RDF Services, any casual employee or contractor (including sub-contractor) persistently contravenes these safety regulations and precautions, the Team Leader RDF Services shall direct that such person(s) be removed from the site and shall not be employed again at the site without the written approval of the RDF Manager.

(c) Personal Protective Equipment

Contractors are required to provide appropriate personal protective equipment, including but not limited to safety vests, safety glasses, safety helmets, safety shoes, hearing protection and gloves. All equipment must comply with the requirements of the applicable Australian Standard. Casual employees shall be issued with such equipment where required.

Where required, such equipment shall be worn at all times.

(d) Treatment and Reporting of Injuries

While contractors are required to provide for the treatment of their sick or injured employees, the Team Leader RDF Services shall advise contractors that first-aid boxes are available for use at the weighbridge office and staff amenities building for the treatment of any sick or injured people on site.

Any accidents which result in a casual employee or contractor being taken to casualty rooms or hospital shall be immediately reported to the Team Leader RDF Services. In addition, any dangerous occurrences involving casual employees or contractors, such as but not limited to fires, explosions or emissions of gases or fumes, structural collapses or falling objects, shall be immediately reported to the Team Leader RDF Services.

(e) On-site Travel

Contractor's vehicles shall only be allowed on-site, other than in designated carparking areas, whilst actually engaged in loading and unloading of tools and/or materials, or where the vehicles form part of the contractor's activity.

Contractors are required to obey all warning and speed restriction signs.

4.3.5 Verification

Satisfactory performance of these procedures shall be evidenced by:

- continued implementation of the procedures described herein;
- completion of the contractor questionnaire; and
- proper reporting of all accidents or dangerous occurrences involving casual employees or contractors.

4.4 Health and Safety

4.4.1 Purpose

To ensure that the following is provided and maintained at all times at the RDF:

- safe plant and systems of work;
- written procedures and instructions to ensure safe systems of work;
- compliance with legislative requirements and current industry standards;
- information, instructions, training and supervision to employees, contractors and customers is available to ensure their safety; and
- the continued improvement of H&S performance.

4.4.2 Scope

This procedure shall apply to the entire site and all operational functions.

4.4.3 Responsibility

The Team Leader RDF Services shall have general responsibility for ensuring that all staff and contractors undertake the necessary actions and procedures.

The RDF Manager shall have responsibility for:

- the provision and maintenance of the site in a safe condition;
- involvement in the development, promotion and implementation of H&S policies and procedures;
- training employees in the safe performance of their assigned tasks;and
- the provision of resources to meet Council's H&S commitment.

4.4.4 Procedures

(a) General

Wyndham City Council has developed a H&S policy manual, action plan and procedures manual. Copies of these documents are provided in Appendix F. Staff shall, as relevant, follow all procedures, instructions and policy directions provided in these documents.

(b) Designated Hazardous Areas

Areas within the RDF presently considered designated hazardous areas are as follows:

- the waste transfer pit;
- the active landfill working face;
- all leachate sumps; and
- the leachate storage pond(s).

No staff, regardless of whether they are permanent or casual, contractors or visitors shall enter any of the designated hazardous areas unless they have received appropriate training on the specific hazards of working within these areas and relevant safety procedures, and are wearing all necessary personal protective gear.

(c) Personal Protective Equipment

All staff shall be provided with appropriate personal protective equipment, including but not limited to safety vests, safety glasses, safety helmets, safety shoes, hearing protection and gloves. All equipment must comply with the requirements of the applicable Australian Standard. Casual employees shall be issued with such equipment where required.

Where required, such equipment shall be worn at all times.

(d) First Aid

First aid boxes shall be provided and maintained in the weighbridge office and staff amenities building.

A detailed list of all medical supplies, both consumable or otherwise, to be included in the first aid boxes shall be provided and updated as necessary. The Team Leader RDF Services shall on a weekly basis check the contents of the first aid boxes against this list and arrange for any missing supplies to be replaced as soon as practicable.

A current register of first aid providers within Wyndham City Council is provided in Appendix P.

(e) Incident/Hazard Reporting

All accidents, dangerous occurrences, hazards or near misses involving, observed by or reported to site staff shall be reported as soon as practicable, if not immediately, to the Team Leader RDF Services in accordance with the detailed procedure contained in Appendix M. The accident, hazard, etc. shall be recorded in the Health and Safety Report Form contained in Appendix N.

(f) Injury/Accident Investigation Reporting

All injuries or accidents occurring at the site shall be investigated as soon as practicable by the Team Leader RDF Services and reported on the form contained in Appendix O. The form shall then be forwarded to the RDF Manager for follow up action if necessary.

(g) Hazard Management System

Hazards identified at the site and their control are contained in Appendix Q.

4.4.5 Verification

Satisfactory performance of these procedures will be evidenced by:

- continued implementation of the procedures described herein;
- provision of H&S information, instructions, training and supervision to employees, contractors and customers;
- staff wearing all personal safety gear relevant to the task(s) being performed; and
- proper investigation and reporting of all accidents, dangerous occurrences, hazards or near misses. Refer to accident book at RDF office.

4.5 Traffic Control

4.5.1 Purpose

To ensure that all customers can readily find the appropriate service areas and complete their business at the site in the minimum practicable time.

4.5.2 Scope

Provision of safe circular traffic patterns, access roads and deposition points within the site.

Provision of clear and easily interpreted direction and information signs.

4.5.3 Responsibility

The RDF Manager shall have general responsibility for ensuring that site staff undertake the necessary actions and procedures and ensuring service areas and interconnecting access roads are appropriately laid out and suitable signage provided and maintained.

4.5.4 Equipment/Facilities

- signs
- delineators
- road markings
- safety barriers
- guide fencing

4.5.5 Procedures

Traffic routes to the various facilities shall be delineated with appropriate signs, delineators, road markings, safety barriers and guide fencing. Color coding of traffic routes, if used, shall be consistent.

So far as is practicable, heavy vehicle routes, especially for transfer vehicles and other heavy vehicles operating in the vicinity of the transfer station, shall be separate from light vehicle access roads.

Signage clearly indicating the routes to various service points on the site shall be placed appropriately, beginning at or near the weighbridge office, and continuing to each termination, where subsets of the signage system shall clearly designate the various features at each point.

Safety barriers separating the public from operations shall be placed and relocated as is required as operating patterns change.

Sufficient area shall be provided at the landfill working face to facilitate safe and convenient vehicular movements.

Members of the public accessing the site shall be initally guided by the Weighbridge Attendant and then by the Transfer Station Attendants or by Plant Operators at the working face.

4.5.6 Verification

Satisfactory performance of these procedures shall be evidenced by:

- continued implementation of the procedures described herein;
- the continued safe and efficient flow of traffic; and
- lack of complaints from customers regarding poor signage or difficulty in finding service areas.

4.6 Security

4.6.1 Purpose

To ensure proper systems and procedures are established and maintained to guarantee the safey and security of all people within the site and prevent unauthorised access to and within the site.

4.6.2 Scope

This procedure applies to the entire site and all times, regardless of whether the RDF is open to the public.

4.6.3 Responsibility

The RDF Manager shall have responsibility for ensuring that site staff are fully informed of and undertake the necessary actions and processes.

4.6.4 Equipment/Facilities

- video surveillance cameras

4.6.5 Procedures

(a) Visitor Registration

For reasons of security and safety all visitors to the site, including contractors but excluding customers, must sign in at the weighbridge office upon arrival and departure. Each visitor is required to enter their name, company they represent, the date, time of entry and exit, and signature in the registration book provided.

Contractors are required to notify the Weighbridge Attendant of expected deliveries (eg. equipment or materials) to the site.

(b) Security During Operating Hours

Security at the RDF during operating hours will principally be maintained by ensuring the weighbridge office is attended at all times when open to the public by an authorised representative of Wyndham City Council. The Team Leader RDF Services shall be responsible for ensuring that staff are appropriately rostered to achieve such.

All facilities occupied and otherwise used by the RDF operations shall be secured when left unattended.

At the end of each day’s operation, the Team Leader RDF Services, or other staff member(s) under his direction, shall check each service area and the staff amenities building to ensure that no staff, contractors, customers or other visitors to the site remain on site. The only exception to this procedure is if permission to do so has been granted by the RDF Manager and arrangements to secure the site following the departure of the person(s) have been made.

(c) Video Surveillance

For the purposes of ensuring safety and security of all people on site and monitoring the movement of customers and visitors within the site, video surveillance cameras have been installed at various locations within the service areas of the RDF. These cameras shall operate 24 hours per day.

All information obtained from the surveillance system shall be retained for a period of not less than two years and be made available to the Waste Management Engineer or any authorised representative of Wyndham City Council upon request.

(d) Security Fencing and Gates

All fencing and gates shall be inspected not less than weekly to ensure they are in good repair at all times.

The Team Leader RDF Services, or other staff member(s) under his direction, shall at the end of each day’s operation check that all gates and other access points to the site have been suitably secured to prevent unauthorised entry. Spare locks and chains shall be maintained in the weighbridge office and/or staff amenities building for such.

4.6.6 Verification

Satisfactory performance of these procedures shall be evidenced by:

- continued implementation of the procedures described herein; and
- lack of unauthorised access to and within the site.

4.7 Litter Control

4.7.1 Purpose

To mitigate the environmental effects and loss of amenity in surrounding areas associated with litter arising from site operations through its proper control.

4.7.2 Scope

This procedure applies to all service areas of the site and operational functions.

4.7.3 Responsibility

The RDF Manager shall have responsibility for ensuring that site staff are fully informed of and undertake the necessary actions and processes.

4.7.4 Equipment/Facilities

- litter screens and perimeter fences
- plastic bags and sharps containers
- litter tongs, rakes and shovels
- personal safety gear including gloves and boots with steel plated soles

4.7.5 Procedures

(a) Litter Screens

Prior to waste disposal operations commencing in either a new cell or new lift, litter screens shall be erected adjacent to the initial working face. The litter screens shall be positioned and regularly relocated as the working face advances to maximise litter entrapment.

(b) Litter Collection Program

Litter screens, perimeter fences and gates, and surrounding areas where litter is known to accumulate shall be inspected daily for aggregation of litter and cleared as necessary. Damage to fencing observed during litter collection shall be reported as soon as practicable to the Team Leader RDF Services for repair, if necessary.

Additional inspections and collection beyond the perimeter fence shall be undertaken when required after periods of high wind. Additional staff shall be engaged, as necessary, to assist in the collection of such litter.

The Team Leader RDF Services, in consultation with the RDF Manager, shall in extreme events which result in gross litter management problems develop a contingency plan to control the sources of litter and provide for its collection. Temporarily suspending landfilling and/or waste transfer operations and immediately covering the active working face may be necessary under such extreme events.

Staff involved in litter collection shall be ever vigilant for the presence of snakes especially during the warmer months of the year.

(c) Litter Management Procedures During Extreme Windy Conditions

The RDF manager (or designate) must determine the number of RDF staff members required to collect litter that may have either fallen or been blown on to areas on or nearby the RDF site, and during extreme windy conditions at least six persons should be available to help collect litter.

The RDF manager (or designate) should take note of any inclement weather conditions, especially concerning extreme wind and determine any prior preparation, including the stockpile of additional soil or other material aggregate required to effectively deal with the expected conditions.

The RDF staff responsible for litter collection during extreme windy conditions must:

- Check the permanent litter nets and the RDF boundary fences regularly during the day.
- Determine the placement of any temporary screens or cages and check them regularly.

- Be aware of any litter items such as corrugated iron and fibreboard sheets that could constitute a serious hazard if it were to become airborne during extreme windy conditions and ensure that these items are suitably constrained.
- Collect the litter as quickly as possible and keep it suitably contained.
- Be particularly on the lookout for any litter that may be blown beyond the boundaries of the RDF, especially along West Road and arrange as soon as possible to collect this litter.
- Respond positively to any external reports of litter being blown out of the RDF property and ensure that this litter is immediately collected.
- Comply with all relevant OH&S policies and procedures contained in the RDF OH&S Manual, especially concerning conditions of inclement weather.
- Report any OH&S issue, incident or hazard(s) of particular concern that occurs in the course of collecting litter, especially during extreme windy conditions.

(d) Litter Collection Procedure

Staff involved in litter collection shall wear all appropriate personal safety gear including gloves and boots with steel plated soles. Tongs, rakes, plastic bags, sharps containers and other equipment shall be provided and used as necessary. The use of bare hands for litter collection shall be avoided at all times. All collected litter shall be disposed of at the transfer station or landfill as appropriate.

If syringes or other medical sharps are detected during litter collection, the detailed procedures for their removal and disposal, as contained in Appendix E, shall be strictly implemented.

If other hazardous wastes are detected during litter collection then the Team Leader RDF Services shall be notified as soon as practicable (depending upon the type of hazardous waste involved and risk it presents) and the procedures described elsewhere in this document for the retrieval of such waste shall be implemented.

4.7.6 Verification

Satisfactory performance of these procedures shall be evidenced by:

- continued implementation of the procedures described herein;
- lack of infringement notices issued by the EPA in relation to non-compliance with licence conditions; and
- lack of complaints from the public regarding litter at or from the site (refer to complaint book.)

4.8 Dust and Sediment Control

4.8.1 Purpose

To mitigate the environmental effects and loss of amenity in surrounding areas associated with dust and sediment arising from site operations through their proper control.

4.8.2 Scope

This procedure applies to all service areas of the site and operational functions.

4.8.3 Responsibility

The RDF Manager shall have responsibility for ensuring that site staff are fully informed of and undertake the necessary actions and processes.

4.8.4 Equipment/Facilities

- water tanker
- streetsweeper
- mechanical plant to desludge drains (eg. backhoe)

4.8.5 Procedures

(a) Dust Control

To minimise the impact of dust beyond the boundary of the site the following measures shall be implemented as necessary:

- on days when high winds are expected:
  - unsealed access roads, cleanfill stockpiles, landfill areas awaiting revegetation and other on-site sources of dust generation shall be lightly watered using a water tanker equipped with spray bars; and
  - dusty waste loads such as cleanfill and building and demolition waste shall not be accepted and the Weighbridge Attendant shall be informed to refuse entry to vehicles carrying such;
- landfill areas finished to final contours shall be vegetated as soon as practicable; and
- if cleanfill stockpiles are to remain in place for more than about six months, consideration shall be given to either vegetating them or covering them with tarpaulins or a mulch such as green waste or paper mache.

(b) Sediment Control

To minimise the amount of mud deposited along Wests Road, both the internal access road and the road leading to the site shall be routinely cleaned using a streetsweeper or other suitable equipment.

In general, all cleanfill stockpiles shall be located away from drainage lines and roadside drains unless adequately protected from erosion by diversion drains, bunds or similar works.

To minimise risk of downstream sediment (and litter) pollution, sediment traps shall be installed and maintained along drainage lines discharging off-site subject to moderate - severe erosion. Suitable sediment traps include staked hay bales, cement stabilised sand bags or filter cloth fences.

All stormwater drains shall be regularly inspected and, if necessary, cleared of sediment.

4.8.6 Verification

Satisfactory performance of these procedures shall be evidenced by:

- continued implementation of the procedures described herein;
- lack of infringement notices issued by the EPA in relation to non-compliance with licence conditions; and

- lack of complaints from the public regarding dust or sediment at or from the site.

4.9 Noxious Weeds, Pest and Vermin Control

4.9.1 Purpose

To mitigate potential public health effects and loss of amenity in surrounding areas associated with noxious weeds, pests and vermin arising from site operations through their proper control.

4.9.2 Scope

This procedure applies to all service areas of the site and operational functions but in particular to waste transfer and landfilling operations.

4.9.3 Responsibility

The RDF Manager shall have responsibility for ensuring that site staff are fully informed of and undertake the necessary actions and processes.

4.9.4 Equipment/Facilities

As required.

4.9.5 Procedures

(a) General

Measures shall be taken to ensure that all surfaces at the site are adequately drained to prevent water ponding for lengthy periods of time. After high intensity or prolonged rainfall events, all water ponding on the surface of the landfill cell or elsewhere at the site shall be pumped using portable pumps to the leachate evaporation pond.

Open water bodies that are not required for fire, sediment or leachate control shall be avoided where possible.

(b) Waste Transfer Operations

To ensure no waste remains exposed at the end of each day’s operation, all waste shall be cleared from the push pit and deposited in the landfill.

(c) Landfilling Operations

Proper landfilling techniques, as described elsewhere in this document, will minimise potential problems associated with noxious weeds, pests and vermin. These include proper compaction of waste and covering of the working face such that no wastes are exposed at the end of each day’s operation. However, if problem infestations of pests and vermin arise, then the services of a professional pest exterminator shall be used.

If problems persist, a detailed plan to manage the particular pest or vermin shall be developed in consultation with the professional pest exterminator. Where birds are concerned, the use of scare devices and traps, including nets, mono-filament wires, anti-perch strips, predator decoys and acoustic bird scaring devices should be considered.

Where a control program involves spraying or baiting, only chemicals approved for use in Victoria shall be employed. The program shall be conducted so that no chemicals leave the site boundary, whether by drift or runoff. This may require spraying programs to be suspended during certain weather conditions including high winds and during heavy or persistent rainfall.

If an infestation of noxious weeds is noted on an area of the site nanaged by the council, then appropriate weed control techniques as determined by advice from Facilitaties and Recreation staff within the council will be implemented.

4.9.6 Verification

Satisfactory performance of these procedures shall be evidenced by:

- continued implementation of the procedures described herein;

- the absence of pests or vermin in sufficient numbers to pose a public health risk or loss of amenity in surrounding areas;
- lack of infringement notices issued by the EPA in relation to non-compliance with licence conditions; and
- lack of complaints from the public regarding pests or vermin at or from the site.

4.10 Inspection and Maintenance of Plant, Equipment and Infrastructure

4.10.1 Purpose

To ensure:

- all plant, equipment and infrastructure provided at the RDF is regularly inspected and serviced so that they are in proper working order.
- continuing efficient and effective operation of all service areas in case of breakdown of major plant and equipment items.

4.10.2 Scope

This procedure applies to all plant, equipment and infrastructure used in the operation of the RDF which is owned by Council. It does not include plant or equipment provided under contract (presently only front-end loader used at the transfer station). It is the responsibility of the contractor(s) to inspect, service, repair and replace such items under the terms of the plant hire contract(s).

4.10.3 Responsibility

The RDF Manager shall have general responsibility for ensuring that site staff undertake the necessary actions and processes and give timely notification of problems with plant, equipment and infrastructure.

4.10.4 Equipment/Facilities

As required, including external contractors for scheduled maintenance or repair work or hire of replacement plant in case of breakdown of permanent plant.

4.10.5 Procedures

(a) Inspection and Maintenance of Major Plant

For the purpose of this procedure, the following items shall be considered major plant:

Transfer Station

- waste transfer truck

Landfill

- landfill compactor
- traxcavator or similar plant to push up waste and spread cover at the landfill working face
- tip truck for hauling cover from stockpile to the landfill working face (also used for litter collection)

All major plant shall be inspected and maintained on a daily basis in accordance with the detailed checklists provided in Appendix D.

All major plant shall be serviced and overhauled in accordance with manufacturer's requirements and records of such maintained.

Any defects with major plant shall be reported immediately or as soon as practicable - depending upon the nature of the defect – to the Team Leader RDF Services for follow up action if necessary.

(b) Breakdown of Major Plant

In the event of breakdown of major plant (including front-end loader or similar used at the transfer station and presently provided under plant hire contract), the following procedures shall be implemented:

1. Team Leader RDF Services to be notified immediately who will then assess whether the defect can be repaired in less than one hour.
2. If the defect cannot be rapidly repaired, the Team Leader RDF Services shall determine whether suitable alternative plant is available on site.

3. If suitable alternative plant is not available on site, the Team Leader RDF Services shall immediately arrange delivery of replacement plant (Council owned or supplied under plant hire contract as necessary) to the site.
4. If delivery of the replacement plant is estimated to take longer than two hours, the Team Leader RDF Services shall immediately contact the RDF Manager who will then determine whether the relevant service area(s) shall be temporarily closed until the arrival of the replacement plant. This decision will take into account safety considerations and whether compliance with the EPA licence, EIP, SEPP and any other relevant regulatory requirements can be maintained at all times.
5. If a decision is taken to temporarily close the relevant service area then the RDF Manager shall inform staff accordingly who will then undertake all necessary arrangements (including either diverting all traffic to the landfill or denying entry to the site vehicles which directly access the working face). The RDF Manager shall then notify the Waste Management Engineer.

(c) Inspection and Maintenance of Other Plant and Equipment, and Infrastructure

All other plant and equipment used at the site and infrastructure shall be inspected and serviced in accordance with the detailed checklists provided in Appendix D.

At the start of each day declared by the Country Fire Authority to be a Day of Total Fire Ban for the Central Region and on a weekly basis otherwise, the fire response trailer shall be inspected in accordance with the detailed checklists provided in Appendix D and operated to ensure it is in proper working order.

(d) Resource List

A resource list with details of location and availability of alternative plant items and critical spare parts shall be maintained at the site.

(e) Plant and Vehicle Cleaning

The exterior, including undercarriage, of all plant and vehicles used at the site shall be regularly cleaned using high pressure cleaning equipment. The cabins of all plant and vehicles shall be kept clean and free of litter.

(f) Garaging of Plant and Vehicles

As far as practicable, all plant and vehicles permanently retained at the site shall be garaged overnight either in plant sheds or fenced compounds.

4.10.6 Verification

Satisfactory performance of these procedures shall be evidenced by:

- ongoing satisfactory operation of all plant, equipment and infrastructure on site and the service areas they support;
- rapid repair or replacement of critical plant and equipment items if breakdowns occur; and
- completion of the relevant items on, and submission of the checklists by the RDF Manager to the Waste Management Engineer.

4.11 Odour Management

4.11.1 Purpose

To mitigate the environmental effects and loss of amenity in surrounding areas associated with offensive odours arising from site operations through their proper control.

4.11.2 Scope

This procedure applies to all areas of the site and operational functions.

4.11.3 Responsibility

The RDF Manager shall have responsibility for ensuring that site staff are fully informed of and undertake the necessary actions and processes.

4.11.4 Equipment/Facilities

- water tanker
- stockpiled soil

4.11.5 Procedures

To minimise the impact of offensive odours beyond the boundary of the site the following measures shall be implemented as necessary:

- to ensure that the length and width of the working face is less than 25 m, cover material shall be applied throughout the day. Continuous or progressive covering of the working face may also be required, particularly on windy days.
- all leachate sumps, gas extraction infrastructure and automated pumping system connections shall be appropriately sealed to avoid odours. Any leaks need to be immediately repaired.
- any damage to the capping of completed landfill cells to be repaired.
- the landfill gas extraction system is to be maintened to reduce build up of landfill gases.
- when excavation works within landfill cells are required:
  - excavation works to be planned to be completed during period of low to moderate winds;
  - works to cease during periods of high winds;
  - stockpiled soils to be stored adjacent the excavation works and covered, if odour complaints are received to the RDF manager the area is to be backfiled immediately;
  - any excavated waste to be watered down or chemically sprayed to reduce odours;
  - the excavated areas to be backfilled at the end of each day.
  - daily checks for odour to be completed along each site boundary during excavation works.
- Odour monitoring to be undertaken along site boundaries as per the requirements of the Auditor approved Monitoring Plan.

4.11.6 Verification

Satisfactory performance of these procedures shall be evidenced by:

- continued implementation of the procedures described herein;
- lack of infringement notices issued by the EPA in relation to non-compliance with licence conditions; and
- lack of complaints from the public regarding offensive odours from the site.

4.12 Reporting and Communication

4.12.1 Purpose

To ensure that all data and reports required by EPA, other statutory authorities and Council, is collected, recorded, prepared and submitted in a professional and timely manner.

4.12.2 Scope

This procedure applies to all service areas of the site and operational functions.

4.12.3 Responsibility

The RDF Manager shall have general responsibility for ensuring that all data is collected and recorded and reports prepared and submitted in a professional and timely manner.

4.12.4 Procedures

(a) General Records

The following records shall be prepared/maintained:

- visitor register;
- daily production records;
- copies of weighbridge invoices, receipts, dockets, cash breakdown sheets, reconciliation sheets;
- weekly and monthly weighbridge reports;
- plant and infrastructure inspection and maintenance checklists and records;
- monthly waste compaction density and cover material consumption test results;
- staff training records;
- operations log; and
- complaints record, with a written report provided to the EPA every 2 months with an aggregate of all community complaint. (Note: the two monthly period includes January-February, March-April, May-June, July-August, September-October, and November-December, with a reported issued to the EPA 14 days after the monitoirng period).

The operations log shall be maintained on site and be made available for inspection by any authorised officer under the Environment Protection Act 1970 or officer of Wyndham City Council. The log shall include the following information:

- environmental compliance inspection reports;
- the date and time any vehicles were refused entry to the site because they did not comply with all of the waste inspection and acceptance procedures, the reasons entry was denied and any follow up action taken;
- the date, time and details of incidents involving the discharge and recovery of hazardous waste;
- the date and details of any plant/equipment breakdown or malfunction which resulted in waste not being compacted or covered in accordance with the EIP;
- dates and times of spraying and baiting;
- the date and time of any fires on the site and the actions taken to extinguish them;
- the date and details of any significant waste spillages (ie. >1m^3) on internal access roads, including the volume of waste spilled, and the procedures undertaken to ensure its complete clean-up;
- records of the quantity of leachate pumped to the evaporation pond;
- dates and times of leachate recirculation or irrigation;

- records of the quantity of cover used at the landfill, including imported cover from all sources;
- the dates, times and nature of any deviations from the site EPA licence or EIP; and
- plant operating records, including downtime and provision of replacement machinery.

The complaints record shall be maintained on site and be made available for inspection by any authorised officer under the Environment Protection Act 1970 or officer of Wyndham City Council, with a written record update provided to the EPA every two months. The record shall include the following information:

- the name and address of the complainant;
- the date and time of the complaint;
- location from which the complaint arose;
- general description of the nature of the complaint;
- approximate wind direction and temperature at the time of the complaint (where relevant eg. odours);
- the likely source of the cause of the complaint;
- details of investigations carried out;
- details of any action taken to rectify the cause of substantiated complaints;

A plan shall be prepared to resolve the cause of the complaint and actions shall be implemented immediately accordingly. The complainant shall be kept informed during the process.

Templates/pro-formas of the above reports and records, where available, are provided in Appendix L..

(b) Safety Records

The following safety records shall be prepared/maintained:

- induction checklists;
- health and safety report;
- injury/incident investigation report;
- hazard identification and assessment of risk register;
- safety monitoring checklists.

Templates/pro-formas of the above reports and records, where available, are provided in Appendix L..

(c) Environmental Records

The following environmental records shall be prepared/maintained:

- Environmental Aspects and Control registers;
- groundwater and leachate monitoring records as per EPA licence requirements;
- monitoring and measurement checklists.

The results of environmental monitoring shall be retained on site and be made available for inspection by any authorised officer under the Environment Protection Act 1970 or officer of Wyndham City Council.

Templates/pro-formas of the above reports and records, where available, are provided in Appendix L..

4.12.5 Verification

Satisfactory performance of these procedures shall be evidenced by:

- continued implementation of the procedures described herein; and
- timely submission and acceptance of the data, records, reports and checklists by the Waste Management Engineer, EPA and other statutory authorities.

4.13 Environmental Emergency Preparedness and Response

4.13.1 Purpose

To ensure that all staff maintain awareness of and understand the required procedures for managing environmental emergencies that may arise in relation to operations at the site.

4.13.2 Scope

This procedure shall apply to all service areas of the site and operational functions but in particular to waste transfer and landfilling operations (including both active and closed landfill cells) and leachate management.

4.13.3 Responsibility

The RDF Manager shall have general responsibility for ensuring that site staff are fully informed of and undertake the necessary actions and processes.

4.13.4 Equipment/Facilities

All site resources.

4.13.5 Procedures

(a) Emergency Response

The RDF Manager shall be immediately notified of an environmental emergency or threat thereof. He shall then determine the most appropriate response and coordinate its implementation until the arrival of the emergency services if assistance from such services has been requested.

Where the emergency threatens to have a significant environmental impact, such as the discharge of an environmentally hazardous waste in the transfer pit or landfill, the escape of leachate into the stormwater drainage system or a breach of a cell liner, the EPA shall be immediately notified.

The procedures shall, where practicable, be periodically tested. At least once per year, a “table-top” simulation exercise shall be conducted that may extend to actual activation of some elements.

(b) Emergency Contacts

Organisation	Business Hours	After Hours
Waste Engineer	8734 1409	
RDF Manager	9742 0895	0401 712 076
Site supervisor	9742 6665	0419 558 107
EPA	9695 2777	1300 372 842
Country Fire Authority	9742 7009	000
State Emergency Services	9684 6651 / 9741 3117	000

(c) Fires

In the event of a fire occurring at the site, the detailed procedures contained in Section 14 of this document shall be implemented.

(d) Plant and Equipment Beakdown

In the event of plant or equipment failure occurring at the site, the detailed procedures contained in Section 10 of this document shall be implemented.

(e) Retrieval of Prohibited Wastes

Retieval of prohibited wastes from the transfer pit and landfill shall be conducted in accordance with the detailed procedures contained in Sections 2.2 and 3.2 respectively.

(f) Off-site Discharge of Leachate

In the event of an off-site leachate discharge being detected, actions shall be immediately implemented to first contain the discharge and then clean up the effects of such. Actions shall then be taken to identify the cause of the incident so methods can be devised to prevent a reoccurrence of the incident.

(g) Reporting

Within 14 days of an environmental emergency event, a written report of the incident shall be prepared by the RDF Manager for follow-up action if necessary. The report shall include the date, time, location and nature of the incident, procedures employed and whether these varied from the procedures contained herein, and any recommended changes to this document.

4.13.6 Verification

Satisfactory performance of these procedures shall be evidenced by:

- successful management of emergencies that may occur through application of the procedures laid down herein;
- conduct of “table-top” simulation exercises at least annually; and
- preparation of a written report after every emergency event and submission of such to the Waste Management Engineer.

4.14 Emergency Evacuation

4.14.1 Purpose

To provide the emergency control which will prevent injury to site personnel, visitors and neighboring communities in the event of an emergency.

4.14.2 Scope

This procedure shall apply to the entire site.

4.14.3 Responsibility

The Team Leader RDF Services shall have responsibility for coordinating the emergency situation until the arrival of the emergency services.

4.14.4 Procedures

(a) Response

Once the Team Leader RDF Services has first confirmed the nature and extent of the emergency incident and decided that evacuation of all people present on the site is the most appropriate course of action, the following procedures shall be immediately implemented:

1. Team Leader RDF Services shall contact the emergency services and then sound the emergency alarm.
2. Weighbridge Attendant shall close the boom gate, check the visitor registration book and advise the Team Leader RDF Services of all contractors, visitors etc. present on the site, and then arrange clear access for emergency services vehicles.
3. Staff shall shut down all plant and equipment.
4. Each nominated Service Area Evacuation Supervisor (ie. landfill, transfer station area and weighbridge office) shall advise all people present in their service area of the need to evacuate the site, assemble these people in an appropriate location within the service area and then wait for instructions from the Team Leader RDF Services.
5. Team Leader RDF Services shall contact each of the Service Area Evacuation Supervisors and advise them of the nature of the incident and the best route for exiting the site.
6. Each Service Area Evacuation Supervisor shall ensure that all people in their service area exit the site as directed by the Team Leader RDF Services and then proceed to the designated assembly point as shown in Appendix G.
7. Team Leader RDF Services shall ensure all contractors and other visitors to the site have been accounted for and if not make arrangements for them to be alerted and to proceed to the designated assembly point as shown in Appendix G.
8. Upon arrival of the emergency services, the Team Leader RDF Services shall ensure that all site staff, customers and any other people present at the site strictly observe and adhere to all instructions issued by the services.
9. Once the site has been declared safe again by the emergency services, the Team Leader RDF Services shall then arrange for people to proceed back to the site and operations to recommence.

(b) Reporting

Within 14 days of an incident resulting in evacuation of the site, a written report of the incident shall be prepared by the Team Leader RDF Services and supplied to the RDF Manager for follow-up action if necessary. The report shall include the date, time, location and nature of the incident, the emergency evacuation procedures employed and whether these varied from the procedures contained herein, and any recommended changes to these procedures.

4.14.5 Verification

Satisfactory performance of these procedures shall be evidenced by:

- acceptance of the emergency evacuation procedures by the emergency services inspecting officer;
- continued implementation of the procedures described herein; and
- preparation of a written report after every evacuation event and submission of such to the Waste Management Engineer.

4.15 Fire Prevention and Fire Fighting

4.15.1 Purpose

To ensure that fire prevention and fire fighting equipment, procedures and systems on the site are provided and maintained to the requirements of the EPA and the Country Fire Authority.

4.15.2 Scope

This procedure shall apply to the entire site.

4.15.3 Responsibility

The RDF Manager shall have general responsibility for ensuring the fire preparedness of the site in accordance with the procedures outlined herein.

The Team Leader RDF Services is responsible for coordinating the fire response in accordance with the procedures outlined herein until the arrival of the emergency services.

4.15.4 Equipment/Facilities

- water supply systems
- fire response trailer including fire hoses and pumps
- water tanker
- fire extinguishers
- signage

4.15.5 Procedures

(a) Preparedness

Prior to the commencement of each fire season:

- the Country Fire Authority shall be contacted and arrangements made for them to inspect and test the fire systems on site; and
- staff shall be provided with refresher training on the location and use of fire fighting equipment.

A firebreak shall be constructed and maintained around the perimeter of the site in accordance with the requirements of the Country Fire Authority.

Signage indicating that fires must not be lit on site shall be provided in a prominent position near the entrance to the RDF.

(b) Fire Response

In the event of a fire occurring at the site the following procedures shall be immediately implemented:

1. The staff member spotting the fire shall initially make sure that any members of the public present are clear of and not endangered by the fire and then notify the Team Leader RDF Services of the incident.
2. The Team Leader RDF Services shall initially contact the emergency services and EPA and then notify all site staff, contractors and visitors of the location and nature of the fire and action to be taken until the arrival of the emergency services. This could include evacuation of all people at the site or deployment of the on-site fire service. In the event of an underground fire, then the former decision will be implemented. If the decision is taken to evacuate the site, then procedures provided elsewhere in this document shall be implemented.
3. The Weighbridge Attendant shall, as required, stop further customers from entering the site by closing the boom gate and arrange clear access for emergency services' vehicles.

4. Upon arrival of the emergency services, the Team Leader RDF Services shall ensure that all site staff, customers and any other people present at the site strictly observe and adhere to all instructions issued by the services.
5. Where a subsurface fire is suspected, the following measures will be considered in assessing the extent of the fire:
    a. Presence of smoke and odours on the site;
    b. Detection of gases, (carbon monoxide at levels > 100 ppm) in the landfill gas extraction system indicating a fire in that area of the landfill;
    c. Thermal imaging of the suspected area.
6. When a subsurface fire is suspcted, the following range of actions will be consired:
    a. Engaging advice from an expert on suitable means of combating the fire;
    b. Eliminating potential sources of air ingress into the landfill by:
        i. ensuring good coverage of cover soil extends over and well beyond the affected area;
        ii. reduce the gas extraction from gas extraction wells within the affected area,
        iii. ensure all penetrations such as wells, sumps and pipes are sealed;
    c. Introduce water, leachate or an inert gas into the affected area;
    d. Conduct more intensive dedicated monitoring to guage the effectiveness of the fire control measures before instigating normal landfill gas extraction practices in the area.

(c) Reporting

Within 7 days of a fire, a written report of the incident shall be prepared by the Team Leader RDF Services and supplied to the RDF Manager for follow-up action if necessary. The report shall include the date, time, location and suspected cause of the fire, when the fire was extinguished, the response employed and whether these varied from the procedures outlined above, and whether any future preventative measures or changes to these procedures are necessary.

The RDF Manager shall forward a report of the fire to EPA outlining how the fire was extinguish or is being controlled, including additional monitoring that has or will be undertaken and timeframe for any proposed actions to control the fire,

4.15.6 Verification

Satisfactory performance of these procedures shall be evidenced by:

- acceptance of fire prevention and readiness procedures by the Country Fire Authority inspecting officer;
- continued implementation of the procedures described herein; and
- preparation of a written report after every fire and submission of such to the Waste Management Engineer.

4.16 Environmental Monitoring, Auditing and Review

4.16.1 Purpose

To create, implement and maintain environmental management systems in order to mitigate potential environmental effects and loss of amenity in surrounding areas arising from site operations.

4.16.2 Scope

This procedure applies to all service aresa of the site and operational functions.

4.16.3 Responsibility

The RDF Manager shall have general responsibility for ensuring that all environmental monitoring, auditing and review activities are performed and submitted in a professional and timely manner.

4.16.4 Procedures

(a) Monitoring and Measurement

The RDF Manager shall ensure that documented procedures to monitor and measure the key characteristics of RDF operations and activities that can have a significant impact on the environment are implemented. These shall include procedures for evaluating compliance with relevant environmental legislation and regulations and the recording of information to track performance, relevant operational controls and conformance with Council's environmental objectives and targets.

(b) Non-Conformance and Corrective and Preventive Action

The RDF Manager shall ensure that procedures for defining responsibility and authority for handling and investigating non-conformance, for taking action to mitigate any impacts caused and for initiating and completing corrective and preventative action are implemented.

Changes in the documented procedures resulting from corrective and preventative action shall be recorded.

The following basic elements shall be included in establishing and maintaining procedures for investigating and correcting non-conformance:

- identifying the cause of the non-conformance;
- identifying and implementing the necessary corrective action;
- implementing or modifying controls necessary to avoid repitition of the non-conformance; and
- recording any changes in written procedures resulting from the corrective action.

(c) Records

The RDF Manager shall ensure that procedures for the identification, maintenance and disposition of environmental records are implemented. These records include training records and the results of the audits and reviews.

Environmental records shall be legible, identifiable and traceable to the activity involved. Environmental records shall be stored and maintained in such a way that they are readily retrievable and protected against damage, deterioration or loss. Their retention times shall be established and recorded.

(d) Environment Improvement Plan Audit

The RDF Manager shall ensure that annual EIP audits are undertaken in order to:

- ensure that the EIP conforms to the planned arrangements and has been properly implemented and maintained; and
- provide information on the results of audits to management.

The audit program shall be based on the environmental importance of the activity concerned and have regard to results of previous audits. Audit procedures shall cover the audit scope, frequency and methodologies, as well as the responsibilities and requirements for conducting audits and reporting results.

The audit program and procedures shall cover:

- the activities and areas to be considered in audits;
- the frequency of the audits;
- the responsibilities associated with managing and conducting audits;
- the communication of audit results;
- auditor competence; and
- how audits will be conducted.

Audits may be performed by Council personel and/or by external persons. In either case, the persons conducting the audit should be in a position to do so impartially and objectively. Consideration should be given to using an EPA appointed Environmental Auditor (Industrial Facilities) for this audit.

(e) Management Review

To ensure continual improvement, suitability and effectiveness of the EIP, and thereby ensure its performance, the RDF Manager shall ensure that the EIP is reviewed and evaluated at least once each year. The scope of the review is comprehensive, though not all elements of an EIP may be reviewed at once.

Reviews shall take account of:

- results from audits;
- the extent to which objectives and targets have been met;
- the continuing suitability of the EIP in relation to changing conditions and information;
- concerns of relevant interested parties; and
- comments from the EPA.

Observations, conclusions and recommendations shall be documented for necessary action.

4.16.5 Verification

Satisfactory performance of these procedures shall be evidenced by the successful completion of the annual management review of the EIP and the subsequent incorporation of resulting changes.

Appendix A

EPA Licence

Appendix B

Contractor Questionnaire

Appendix C

Detailed Weighbridge Operations Procedure

Appendix D

Plant and Infrastructure Inspection & Maintenance Checklists

Appendix E

Sharps Removal and Disposal Procedure

Appendix F

Health and Safety Documents

Appendix G

Designated Evacuation Assembly Point

Appendix H

List of Treatment & Disposal Facilities for Prescribed Waste

Appendix I

Complaints Handling Policy and Procedure

Appendix J

Waste Compaction Density Test Method

Appendix K

Environmental Compliance Check Lists

Appendix L

Record and Report Templates / Pro-formas

Appendix M

Hazard Reporting Procedure

Appendix N

Health and Safety Report Form

Appendix O

Injury/Incident Investigation Report

Appendix P

First Aider Register

Appendix Q

Hazard Identification and Control

Appendix R

Review and Acceptance of Imported Fill Guidelines

Appendix S

Daily Checklist

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