



ENVIRONMENT PROTECTION ACT 1970

WORKS APPROVAL APPLICATION ASSESSMENT REPORT

Application No.	1002260
Applicant Name	Wyndham City Council
Address of Premises	470 Wests Road, Werribee, 3030
Proposal	Extension of landfill operations for disposal of putrescible and solid inert waste

CONTENTS

List of Tables	4
List of Figures	5
ABBREVIATIONS & GLOSSARY	6
Executive summary	12
1 BACKGROUND INFORMATION	20
LANDFILLING AND OTHER ACTIVITIES AT THE WESTS ROAD SITE	20
SITE LOCATION	20
SITE HISTORY	22
EXISTING LANDFILL & DISPOSAL ACTIVITIES	23
LAND USE & PLANNING	24
CURRENT REGULATORY REGIME	29
RELEVANT LEGISLATION, POLICY AND GUIDANCE	29
2 WORKS APPROVAL APPLICATION PROCESS OVERVIEW	34
ASSESSMENT METHODOLOGY	34
ASSESSMENT ACTIVITIES DECEMBER 2016 – MARCH 2017	34
ASSESSMENT ACTIVITIES APRIL 2017 – SEPTEMBER 2017	41
PEER REVIEW PROCESS	44
3 THE WORKS APPROVAL APPLICATION	53
DESCRIPTION OF THE PROPOSAL	53
WASTES TO BE DISPOSED	55
CONCEPT DESIGN	55
CONSTRUCTION OF LANDFILL CELLS & LICENCE AMENDMENT APPLICATIONS	58
PROPOSED DESIGN CONTAINMENT MEASURES	62
PROPOSED OPERATIONAL MEASURES	65
PROPOSED LANDFORM RESTORATION	68
PROPOSED CLOSURE AND AFTERCARE MANAGEMENT	71
4 CONSIDERATION OF KEY ISSUES	73
TRACK RECORD	73
AIR QUALITY	76
ODOUR	77
LANDFILL GAS	84
GROUNDWATER	87
SURFACE WATER	92
NOISE	95

	GREENHOUSE GAS EMISSIONS	98
	WATER RESOURCE USE	99
	CLIMATE CHANGE	100
	HEALTH	102
	COMPLIANCE WITH SECTION 50C OF THE EP ACT	103
	COMPLIANCE WITH THE LANDFILL WASTE MANAGEMENT POLICY & LANDFILL BEST PRACTICE ENVIRONMENTAL MANAGEMENT	107
	CONSIDERATION OF THE PRINCIPLES OF THE EP ACT	116
5	ASSESSMENT RECOMMENDATIONS AND PROPOSED WORKS APPROVAL CONDITIONS	121
	GENERAL WA CONDITIONS	121
	WORKS CONDITIONS	122
	REPORTING CONDITIONS	124
6	CONCLUSIONS	128
7	REPORT DATE	130
APPENDIX A	LIST OF APPLICATION DOCUMENTS	131
APPENDIX B	WESTERN RESOURCE ENVIRONMENT CENTRE SUBMISSION ERROR! BOOKMARK NOT DEFINED.	
APPENDIX C	REFERRAL RESPONSES RECEIVED IN RESPONSE TO CONSULTATION ERROR! BOOKMARK NOT DEFINED.	
APPENDIX D	FIRST SECTION 22 NOTICE REQUEST FOR FURTHER INFORMATION 19 JANUARY 2017 ERROR! BOOKMARK NOT DEFINED.	
APPENDIX E	SECTION 20B COMMUNITY CONFERENCE – CHAIRPERSONS INDEPENDENT REPORT ERROR! BOOKMARK NOT DEFINED.	
APPENDIX F	SECOND SECTION 22 NOTICE REQUEST FOR FURTHER INFORMATION 12 APRIL 2017 ERROR! BOOKMARK NOT DEFINED.	
APPENDIX G	THIRD SECTION 22 NOTICE REQUEST FOR FURTHER INFORMATION 18 AUGUST 2017 ERROR! BOOKMARK NOT DEFINED.	
APPENDIX H	EXTERNAL PEER REVIEW OF STORMWATER MANAGEMENT SYSTEM AND PLAN ERROR! BOOKMARK NOT DEFINED.	
APPENDIX I	INDEPENDENT LANDFILL EXPERT ADVISORY PANEL REVIEW ERROR! BOOKMARK NOT DEFINED.	

LIST OF TABLES

Table 1: Summary breakdown of submissions received	34
Table 2: Summary breakdown by issues raised of individual submissions received	35
Table 3: Summary Table of the Independent Landfill Expert Advisory Panel Findings and Recommendations and EPA response	48
Table 4: Indicative filling schedule	53
Table 5 Summary of Notices issued to WCC	74
Table 6: Groundwater Quality at the RDF as determined from monitoring bore S13	87
Table 7 Protected Beneficial Uses	88
Table 8: EPA Assessment of the WAA Compliance with the Landfill BPEM Buffer Siting Distance requirements for LFG migration, safety and amenity (including odour) impacts	110
Table 9: EPA Assessment of the WAA Compliance with Clause 13(2) of the Landfill WMP	112

LIST OF FIGURES

Figure 1: Regional location plan of the Wyndham Landfill	21
Figure 2: Site Location Plan of the Wyndham Landfill at 470 Wests Road, Werribee, Victoria, showing the Melbourne to Geelong railway line to the north.	22
Figure 3: Planning Scheme planning zones covering the site and surrounding area	26
Figure 4: West Growth Corridor Plan – The Wests Road RDF is in the South West corner of the Urban Growth Boundary as shown by the yellow cross hatched area (logical inclusion area) and large red arrow	27
Figure 5: Flood_Extent_100yr_Waterways' GIS layer – Magenta cloud indicates anomaly.	39
Figure 6: Site Layout and Associated and Ancillary Infrastructure	54
Figure 7: Revised Proposed Capping and Rehabilitation Schedule	57
Figure 8: Sub cell base liner and groundwater collection layer below the liner system	60
Figure 9: Sub-cell side wall liner	61
Figure 10: Proposed additional design measures underneath the leachate sump	63
Figure 11: location of future 26 ML leachate pond	64
Figure 12: Cross sectional Plan	69
Figure 13: Pre-settlement Top of Waste Contour Plan	70
Figure 14: Predicted Odour Impact – Case 1 650,000 tpa 900 m ² tip face	79
Figure 15: Odour distribution by distance – from EPA odour survey data 2017	80
Figure 16 Extent of medium risk (odour)	82
Figure 17: Metropolitan landfill Schedule Sequence of fill – reproduction of Table 11	106

ABBREVIATIONS & GLOSSARY

AHD	Australian Height Datum – sets the mean sea level as zero elevation.
AMRR	Accumulated Monthly Residual Rainfall
APS	Annual Performance Statement - EPA licence holder's annual report of their environmental performance against their licence requirements, including explanations of all non-compliance
AQA	Air Quality Assessment
Background levels	The level or range of levels (usually determined from a number of sites or a series of measurements from the same site) of an indicator measured in a manner and at a location specified by the Authority in waters outside the influence of any contaminant containing a measurable level of that indicator (Section 4, SEPP (GoV))
Beneficial uses	Uses and values of any segment (i.e. water, atmosphere and land) of the environment that government and communities want to protect both now and in the future
BPEM	Best Practice Environmental Management - The best combination of eco-efficient techniques, methods and processes or technology used in an industry sector or activity that demonstrably minimises the environmental impact of a generator of emissions in that industry sector or activity
Buffer	An area around a facility/premise maintained between sources of pollution or emission and sensitive land uses. This is an environmental control measure used to protect sensitive land uses from impacts resulting from a failure of landfill design or management or abnormal weather conditions. Under normal operating conditions in compliance with licence conditions, impacts should not occur within the buffer
Capping	Covering of solid waste, utilising a range of potential of materials, preventing the mobility of a contaminated material
CFA	Country Fire Authority
CO ₂	Carbon dioxide
Concentrate and contain	Process designed to concentrate a material into a smaller volume and then contain it
Contamination	The action or state of making or being made impure by polluting or poisoning

Construction Quality Assurance (CQA) Plan	A planned system of activities to provide demonstrable assurance that the landfill has been constructed to the approved design requirements (specifications, construction, installation and testing). CQA documentation is subsequently verified by an Environmental Auditor as part of auditing cell construction
CUN	Clean Up Notice
DELWP	Department of Environment, Land, Water and Planning
DHHS	Department of Health and Human Services
DTPLI	Department of Transport, Planning and Local Infrastructure noting this is no longer in existence and has been restructured into Department of Environment, Land, Water and Planning
EMP	Environmental Management Plan
EPA	Environment Protection Authority Victoria
EP Act	<i>Environment Protection Act 1970</i>
Environmental Audit	A total assessment of the nature and extent of any harm or detriment caused to, or the risk of any possible harm or detriment which may be caused to, any beneficial use made of any segment of the environment by any industrial process or activity, waste, substance (including any chemical substance) or noise.
Environmental Audit System	<p>EPA's role is to administer the environmental audit system in Victoria, which includes appointing environmental auditors and the review of audits undertaken.</p> <p>The <i>Environment Protection Act 1970</i> in Part IXD, particularly sections 53V and 53X establishes the types of audits that can be conducted and the outcomes of audits.</p> <p>Once finalised, environmental audits are published on EPAs website.</p>
Environmental Auditor	A person appointed under s. 53S of the EP Act as 'an environmental auditor for the purposes of the <i>Environment Protection Act 1970</i> .'
Environment protection principles	Eleven fundamental principles that form part of the environmental management and policy framework of the <i>Environment Protection Act 1970</i> and guide EPA's decision making for the benefit of the Victorian environment and community.
EPA Pollution Abatement Notice	Notice issued under section 31A (or section 31B for minor works) of the <i>Environment Protection Act 1970</i> , aimed to prevent further occurrence of pollution or potential environmental risk

ERR	Earth Resources Regulation, Victoria's resource and mining industry regulator and part of the Department of Economic Development, Jobs, Transport and the Resources
EES	Environmental Effects Statement
Evapotranspiration	The process by which water is transferred from the land to the atmosphere by evaporation from the soil and others surfaces and transpiration from plants
Financial Assurance (FA)	A requirement under the <i>Environment Protection Act 1970</i> for all licensed landfills. Financial Assurances are a mechanism by which a landfill operator provides a guarantee that the costs of site remediation, site closure and post-closure liabilities are not borne by the state or local government. Financial Assurances are held for the period during which a landfill poses a risk to the environment, and may be discharged by the Authority when monitoring and regular inspections demonstrate that the landfill does not pose a risk to the environment.
GCL	Geosynthetic Clay Liner
Geomembrane	Low permeability synthetic membrane liner or barrier used to control fluid or gas migration in a human-made project, structure or system
GHG	Greenhouse gases expressed as tonnes of CO ₂ equivalent, unless otherwise stated.
GMMP	Groundwater Monitoring and Management Plan
Intermediate cover	A layer of material or substance used to cover a specifically designated waste lift
ILEAP	Independent Landfill Expert Advisory Panel
kLpa	Kilolitres per annum
Landfill BPEM	<i>Siting, design, operation and rehabilitation of landfill Best Practice Environmental Management (August 2015) EPA Publication 788.3</i>
Landfill WMP	<i>Waste Management Policy (Siting, Design and Management of Landfills) No. S264, Gazette 14/12/2004</i>
Leachate	Liquid that has percolated through waste and leached out some of the constituents of the waste
LFG	Landfill Gas
LFN	Low Frequency Noise

Liner System	Barrier system to contain waste, leachate and landfill gas within a landfill waste body that can be designed with different configurations and materials to meet different design specifications.
MW	Melbourne Water
MWRRG	Metropolitan Waste and Resource Recovery Group
MWRRIP	Metropolitan Waste and Resource Recovery Implementation Plan
MWPAN	Minor Works Pollution Abatement Notice
MW pa	Megawatts per annum
OERA	Odour Environmental Risk Assessment
ORP	Oxidation reduction potential
OU	Odour Unit
PAN	Pollution Abatement Notice
PEM	Protocol for Environmental Management
PIN	Penalty Infringement Notice
PM _{2.5}	Particulate matter of a size of less than 2.5 micrometres i.e. 0.0025 mm
PM ₁₀	Particulate matter of a size of less than 10 micrometres i.e. 0.01 mm
PPA	Planning Permit Application
P&E Act	<i>Planning and Environment Act 1987</i>
PSA	Planning Scheme Amendment
PSP	Precinct Structure Plan
Phytocap	A cap designed with specific soils and vegetation designed to treat environmental problems without the need to excavate contaminant material and dispose of it elsewhere
Piggyback Cell	New landfill cells constructed on top of old landfill cells
Prescribed Industrial Waste (PIW)	Waste specified as prescribed industrial waste under the <i>Environment Protection Act 1970</i> and <i>Environment Protection (Industrial Waste Resource) Regulations 2009</i>
RDF	Refuse Disposal Facility

Referral body	For the purpose of this Works Approval Application Assessment Report this is a government agency whom the Works Approval Application has been referred to under the <i>Environment Protection Act 1970</i>
Rehabilitation Bond	Financial security which must be provided by an operator prior to work commencing under Section 80 of the MRSD Act
Rehabilitation Management Plan	Plan submitted under the <i>Mineral Resources (Sustainable Development) Act 1990</i> , and Schedule 13 of the Mineral Resources Development Regulations 2002 (Appendix 1)
Responsible Authority	Government entity that will oversee and implement the planning permit application, in this case Melton City Council
s20B Conference	Section 20B Conference under the <i>Environment Protection Act 1970</i>
s22 Notice	Section 22 Notice under the <i>Environment Protection Act 1970</i> used to require further information
s50C	Section 50C under the <i>Environment Protection Act 1970</i> which gives to the Authority powers to refuse applications for certain [waste] facilities if Plans [State-wide and the Regional Waste Resource Recovery Implementation Plans] not observed
Scheduled Premises	Scheduled premises under the <i>Environment Protection Act 1970</i> and <i>Environment Protection (Scheduled Premises and Exemptions) Regulations 2007</i>
Scheduled Premises Regulations	<i>Environment Protection (Scheduled Premises and Exemptions) Regulations 2007</i>
SEPP	State Environment Protection Policies
Segment	Any portion or portions of the environment expressed in terms of volume, space, area, quantity, quality or time or any combination thereof
SPPF	State Planning Policy Framework
SV	Sustainability Victoria
SWMMP	Surface Water Monitoring and Management Plan
SWRRIP	State-wide Waste and Resource Recovery Infrastructure Plan
TDS	Total Dissolved Solids
WAA	Works Approval Application

WAAAR	Works Approval Application Assessment Report
Wastes Hierarchy	One of the eleven environment protection principles of the EP Act.
WCC	Wyndham City Council
WHO	World Health Organization
WMP	Waste Management Policy
Works Authority	Approval under the <i>Mineral Resources (Sustainable Development) Act 1990</i>
Work Plan	Work plan specified under the <i>Mineral Resources (Sustainable Development) Act 1990</i>
WREC	Western Region Environment Centre
WRRG	Waste and Resource Recovery Group

EXECUTIVE SUMMARY

BACKGROUND INFORMATION

Wyndham City Council (WCC) has applied for a Works Approval from Environment Protection Authority (EPA) to extend its existing landfill at the Wests Road Refuse Disposal Facility (RDF) at 470 Wests 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 municipal (Type 2) putrescible and solid inert waste using the void resulting from ongoing quarrying operations.

The site was originally commissioned as a landfill in 1976 with the quantities of waste deposited increasing as it began servicing various municipalities in both the east and west of the Melbourne metropolitan area and more recently municipalities in regional Victoria.

The existing landfill site allowed under planning permit covers an area of 212 hectares and allows the expansion of the existing RDF to area proposed in this Works Approval Application, to the maximum height not exceeding 44m AHD (top of cap).

WORKS APPROVAL APPLICATION PROCESS

Key stages of the Works Approval Application process and technical assessment included (in chronological order):

- between June and October 2016 pre-application discussions with WCC and referrals with Sustainability Victoria to check the proposals were consistent with the state waste management policy
- on 30 November 2016, EPA received final Works Approval Application
- on 8 December 2016, EPA formally accepted the Works Approval Application
- on 14 December 2016, Works Approval Application advertised for an extended 56 day consultation (with a advertisement on 17 January 2017), with statutory and non-statutory referrals sent to agencies for review. Approximately 170 submissions were received, 138 of which were a proforma template. The concerns raised in the submissions mainly relate to the appropriateness of landfill as a means of waste disposal, odour, site suitability, health impacts and proximity to local residential areas.
- on 19 January 2017, EPA issued a section 22 Notice request for further information from WCC
- on 14 March 2017, EPA held a section 20B Conference to provide stakeholders and the community to present their views on the Works Approval Application
- on 27 March 2017, EPA received a report from the independent chair of the section 20B Conference which included a number of recommendations
- on 12 April 2017, EPA issued a second section 22 Notice request for further information from WCC including responses to concerns raised at the section 20B conference
- between 29 June and 31 July 2017, EPA's Independent Landfill Expert Advisory Panel considered the Works Approval Application and EPA's assessment and provided an expert peer review

- on 10 July 2017, EPA received further information in response to the first and second section 22 Notice requests
- on 19 July 2017, EPA advertised the further information received for a 43 day consultation period with information sessions held on 1 and 23 August whereby stakeholders and the community could learn about the further information requested and received
- on 15 August 2017 received the independent peer review of the stormwater management plan
- on 18 August 2017, EPA issued a third section 22 Notice request for further information from WCC
- on 7 September 2017, EPA received and accepted the further information received in response to the third section 22 Notice
- September- October 2017, completion of technical assessments by EPA specialists of how the WAA meets the Environment Protection Act (EP Act), relevant policies and best practice guidelines for landfills.

It is noted that during the assessment of the WAA and in response to issues and Section 22 Notices raised WCC has amended their original proposal of 30 November 2016. For example, originally WCC were also proposing to fill over the top of previously filled existing Cells 1B,2 and 3, referred to as the 'piggy back' cells. On 5 May 2017, WCC withdrew this part of the proposal from the WAA. The withdrawal of the piggy back cells shortens the life of the proposal from about 2050 to 2043. This shorter time frame now sits within the planning timeframes of the MWRRIP (Metropolitan Waste and Resource Recovery Implementation Plan) and the SWRRIP (State-wide Waste and Resource Recovery Implementation Plan).

PROPOSED WORKS

The proposed activities subject to this Works Approval Application relate to the:

- extension of the existing landfill to areas north and then west within the bounds of the current site following progressive quarrying of the site by Holcim
- construction of 4 new landfill cells areas to create a total additional landfill airspace volume of 21.5 million cubic metres
- commencement of landfilling, operating seven days a week (except for public holidays), in the new cells in 2018 for a period of 26 years - based on current tonnages and applying an annual growth factor of 3%,
- continuing the acceptance of putrescible waste, non-putrescible waste (solid inert waste), pneumatic tyres shredded into pieces less than 250 millimetres. The RDF is not licensed to accept contaminated soil, asbestos or other prescribed industrial wastes and is not seeking any change to the waste types to be accepted.

The proposals for the Type 2 landfill have been designed to meet the Landfill Best Practice Environmental Management (BPEM) guidelines. This guidance sets out objectives, required outcomes and suggested measures for the construction, operation and rehabilitation of landfills based on internationally recognised best practice in the landfill sector. It is regularly reviewed and amended to ensure it is up to date with international best practice.

Key features of the proposals include:

- a liner and landfill cap system to contain the waste
- leachate collection system and leachate ponds
- a landfill gas collection system that will provide gas for combustion in gas engines (the engines themselves are not part of this Works Approval application)
- a separate stormwater management system
- litter fencing
- progressive sequencing of landfilling following quarry excavation.

Following the disposal phase, the landfill would be progressively rehabilitated in accordance with a Rehabilitation Plan to form a safe and stable landform. The proposed end use is public open space. In addition, it is expected, that parts of the site may remain in use for waste management activities post closure of the landfill (e.g. transfer station, resource recovery activities).

Prior to the disposal of any waste in the proposed cells, WCC will need to provide a Financial Assurance to the EPA. This guarantees that the costs of site remediation, site closure and post-closure liabilities will not be borne by the state.

CONSIDERATION OF KEY ISSUES

The Works Approval Application assessment process identified and considered the following key issues:

- Wyndham City Council's track record as a landfill operator
- air
- odour
- landfill gas
- groundwater
- surface water
- noise
- greenhouse gas emissions
- water use
- climate change
- soil resources
- land
- health
- consistency with the State-wide Waste and Resource Recovery Infrastructure Plan (SWRRIP) and Metropolitan Waste and Resource Recovery Implementation Plan (MWRRIP) and compliance with section 50C of the EP Act
- compliance with the Landfill Waste Management Policy (WMP) and Landfill BPEM
- the environmental protection principles of the EP Act.

Track Record

The Applicant has provided an accurate account of its landfill compliance track record. WCC's RDF has been issued with formal enforcement notices, but WCC have taken appropriate actions, which has resulted in the revocation of the notices. Further WCC have initiated landfill management improvements to resolve legacy issues increasing environmental performance at the RDF

Air

Landfills can pose a risk to air quality through landfill gas, odour and dust generation and transportation off-site. No significant impacts from dust are expected with the proposal considered to meet SEPP AQM and the Landfill BPEM and the proposed design and operational management practices are considered unlikely to cause any significant pollution or hazard to the air segment. Current dust controls are considered best practice and limited observations indicate they appear to be working. There is however no air monitoring or formal dust management plan, with it considered that a formal best practice comprehensive Dust Management Plan required.

Odour

The control and mitigation of odour emissions was identified as an area of particular importance due to their potential impact on the current and future sensitive receptors. EPA receives a relatively low number of pollution reports for a landfill of this size due in large part to its location which is well away from residential areas, large buffers and the operators keeping the tipping face as small as practicable.

Odour modelling has been undertaken by WCC and was reviewed by EPA who also considered its own monitoring survey data and odour reported. Given there is evidence of occasional odour detection in the area beyond 1.5 km this would indicate, that the SEPP (AQM) threshold is occasionally being exceeded. Consequently, EPA assessed the odour risk, and consider the risk of odour impacts is consistent with a low to medium risk as identified in the latest Odour Dispersion modelling report and EPA's own odour surveys carried out in 2017. The risk of odour impact is likely to decrease as the tipping face moves westwards further away from the affected receptors.

WCC adopt best practice odour controls and are proposing an Environmental Significance Overlay around the landfill, which would (if adopted) assist in safeguarding a suitable sized buffer zone. To manage odour, an Odour Management and Monitoring Plan would be developed and implemented.

Landfill gas

Landfill Gas (LFG) is produced through the degradation of waste materials in landfills and is odorous, an asphyxiant and potentially explosive when mixed with air. LFG is emitted to the atmosphere and can escape through the liner and move through geology and service structures around landfills. As such, LFG requires rigorous management and monitoring.

The proposed LFG management practices identified in the Works Approval application were considered to be best practice as noted in BPEM. These measures will reduce LFG risk and odour from an active cell, but not totally prevent it. Best practice LFG management and monitoring has been proposed in the Works Approval application and can be expected to be reinforced by EPA licence conditions.

Groundwater and surface water

The protection of the groundwater and surface water environment has been investigated throughout the Works Approval application process. Due to a lack of information on the long term undisturbed groundwater table additional design measures are required to comply with the waste

management policy. Acceptable measures have been proposed which now affords maximum protection to groundwater. As a result, no impacts are expected on groundwater or surface water from the construction and operation of the proposed new cells.

The old landfill cells and leachate ponds are a source of limited contamination of groundwater. Monitoring of the site shows that contamination is confined to the boundaries of the site. WCC is currently actively managing this risk, in accordance with recommendations from the environmental auditor, to reduce it further by addressing levels of excess leachate in the old cells and bringing forward the rehabilitation of the older cells.

Groundwater and surface water management and monitoring plans should be prepared, approved and implemented as required by appropriate conditions.

Noise

With the abatement proposed, the risk of noise impacts occurring is minimal, with operational noise meeting the permissible noise levels in SEPP(N-1). Some slight exceedances were measured by EPA at one receptor most affected by noise from the current operations. The noise modelling undertaken predicts compliance at this receptor location (just under the limits) and that noise levels will decrease in the future as operations move further away from the receptor.

A noise management and monitoring plan should be prepared and undertaken to confirm the assumptions and effectiveness of noise abatement are undertaken at each step in the landfill staging plan.

Greenhouse gases

Sources of greenhouse gas emissions have been considered and will be minimised through the adoption of 'best practice' mitigation measures. This includes the implementation of a framework to evaluate future equipment and fuel choices, and the capture, minimisation and combustion of landfill gas converting the more greenhouse intensive methane to carbon dioxide.

Water use

Groundwater extraction and rainwater is the primary source of water used on the site. The site is self-sufficient for water and only occasionally needs to truck in water from outside as such water usage rates are considered to have a negligible impact on water resources.

Climate Change

Taking into account the location of the site, EPA considered potential influences of climate change on the proposed landfill to be most likely limited to more extreme weather events.

The Works Approval application proposals include a landfill gas collection system to capture gas such that they can be burnt in gas engines to produce electricity. This capture and conversion minimising landfill gas emissions is considered by EPA to be best practice and will assist in reducing climate change impacts.

Soil Resources and Land

Prior to any landfilling, the soil resources and land at the site will have already been significantly altered by the Holcim quarrying operations such that the beneficial uses from soil resources and mineral resource will already have been extracted prior to landfilling commencing.

The proposals will create an authorised and licensed parcel of contaminated land, albeit in a suitable location with containment measures that meets best practice requirements.

Human health

EPA has considered the issue of potential effects on human health through the referral process with the Department of Health and Human Services (DHHS). Additionally, an updated independent literature review has been commissioned by EPA and DHHS to provide a current understanding of research on potential human-health impacts from air emissions from non-hazardous waste landfills. The key conclusion from this review showed that living near a non-hazardous waste landfill is not associated with any adverse health effects, but some gases and compounds may be odorous and may affect the wellbeing of the local community. DHHS did not object to the proposed landfill provided the EPA is satisfied that all relevant SEPPs and environmental guidelines are met.

Consistency with SWRRIP and MWRRIP and Compliance with section 50C of the EP Act

The EPA may refuse to consider an application for a Works Approval in relation to a waste management facility if the operations would be inconsistent with the SWRRIP and MWRRIP. The proposed facility is considered to be consistent with the SWRRIP and MWRRIP for the purposes of being able to consider the application. The proposed lifespan until 2043/44 is within the planning horizons of the SWRRIP (2015-2044) and MWRRIP (2016-2046).

Compliance with Landfill WMP and BPEM

The Works Approval application included several documents and investigations containing information to demonstrate compliance with Landfill WMP and the Landfill BPEM, including:

- The proposed landfill is listed in the landfill schedule of MWRRIP 2016, with an identified currency (subject to Works Approval) of 2016–2046.
- The proposed landfill siting complies with Landfill WMP requirements.
- Although the Works Approval application was not able to demonstrate the long term undisturbed groundwater levels and quality, additional design and management measures have been proposed to compensate for this, as required by the Landfill WMP.
- The landfill setting is considered to comply with the BPEM buffer requirements for groundwater, surface waters, buildings and structures and aerodromes. Optimising the separation/buffer distance between the landfill and potential sensitive receptors is critical to effectively manage the impact of residual odour emissions on local amenity into the future. EPA strongly recommends that WCC formalise their proposed amendment to the planning scheme to establish an Environmental Significance Overlay (ESO). The proposed ESO is to be based on the extent of medium odour risk as defined with the aid of odour modelling.
- The Works Approval application contains sufficient design features to comply with the Landfill BPEM but that further detailed design information should be provided prior to the start of landfill construction.

DECISION

EPA has assessed the Works Approval application and has issued Wyndham City Council with a Works Approval. In granting the Works Approval, EPA considered:

- the Works Approval Application
- referral responses
- public submissions
- the recommendations of the Chair of the section 20B conference

- the independent reviews conducted on behalf of EPA
- technical assessments undertaken by EPA in-house specialists.

In reaching its decision, EPA has considered government waste management plans (the SWRRIP and MWRRIP), which set out the need for the proposed landfill. These plans only identify a need to 2044 and 2046. The landfill as originally proposed in the Works Approval application would have extended 5 or more years past the identified need. During the assessment of the Works Approval Application, WCC amended the application by removing the 'piggy back' cells which had the effect of reducing the duration of the proposal landfill to 2043. The Works Approval thus sought falls within the planning timeframes of the SWRRIP and the MWRRIP.

Furthermore, EPA determined that the proposal:

- is identified in the 2016 MWRRIP landfill schedule
- is compliant with the Landfill BPEM, Landfill WMP. This means it has been assessed as meeting international best practice standards and is suitably located
- is compliant with SEPPs
- is consistent with SWRRIP
- is not expected to adversely affect the interests of any person other than the applicant
- is not expected to adversely affect the quality of any segment of the environment nor cause pollution or environmental hazard
- is compliant with the environment protection principles of the EP Act
- has not been objected to by DHHS

It is noted that the WCC have a valid planning permit for extension of the landfill into cells 5,6,7 and 8.

CONDITIONS & NEXT STEPS

The Works Approval issued is subject to a series of conditions, which help define the extent of the approval and requires specific activities to be undertaken – some prior to the commencement of construction, and others that will extend throughout the lifetime of its operation. The conditions include:

- possession of a valid planning permit
- installation of key containment and environment protection requirements
- reporting requirements
- the provision of a Financial Assurance to an amount agreed by EPA
- the provision of detailed design documents for written approval prior to commencement of any construction
- the inclusion of the identified additional design and management measures within the final designs
- the development and implementation of odour, groundwater, surface water and landfill gas monitoring and management plans

- engagement of an environmental auditor (appointed under the EP Act) to prepare an environmental audit report before the construction of each new landfill cell or the leachate collection pond.

Subject to the satisfactory completion of the conditions attached to the Works Approval, Wyndham City Council can commence construction of the landfill, if:

- design documents (plans, technical specifications and construction quality assurance documents) are submitted for the first cell and the leachate pond.
- design documents are assessed by an environmental auditor for EPA approval prior to construction of the first cell and the leachate pond.

This is to ensure that the detailed design documents comply with Landfill BPEM.

Should Wyndham City Council wish to construct subsequent cells or a leachate pond, the following steps must occur:

- Wyndham City Council must notify EPA, and submit detailed construction plans for that cell and demonstrate that it meets the Landfill BPEM (current at that time).
- EPA reviews the plans and ensures they meet best-practice requirements and that the designs meet any future landfill design improvements.
- the construction of each cell and/or leachate pond must be verified by an environmental auditor appointed by EPA under the *Environment Protection Act 1970* to verify that the construction of that cell or leachate pond complies with EPA approved design documents for that cell or leachate pond.
- on completion of construction, the operator then submits a licence amendment application. An EPA Auditor report must confirm that the cell's construction has been verified as complying with the approved plans.
- the landfill operator can only start filling the cell with waste after EPA grants a licence or licence amendment.

1 BACKGROUND INFORMATION

LANDFILLING AND OTHER ACTIVITIES AT THE WESTS ROAD SITE

- 1.1 Wyndham City Council (WCC) currently own and operate the Wests Road Refuse Disposal Facility (RDF) at 470 Wests Road Werribee. Landfilling follows quarrying activities at the site.
- 1.2 The quarrying activities are currently carried out by Holcim (Australia) Pty Ltd under a Works Authority (WA184) with Earth Resource Regulation (ERR).
- 1.3 When Holcim completes quarrying a portion of the Works Authority area, they apply to ERR to have the completed portion excised from the Works Authority. ERR approve the excision subject to the approval of an EPA licence or Works Approval that includes rehabilitation. Once the excision is approved Holcim hand back control of the excised area to WCC to be considered for landfilling.
- 1.4 The site was originally commissioned as a landfill in 1976 under EPA licence ES400. The quantities of waste deposited at the RDF have increased over the years as the facility began servicing municipalities on both the east and west sides of Melbourne and more recently municipalities in regional Victoria. The Wests Road RDF is now one of the four major Metropolitan regional waste facilities.
- 1.5 In addition to landfilling there is a transfer station at the site, a green waste processing facility and a renewable energy facility. The green waste facility (operated by Veolia) currently acts as a depot where green waste is brought in then loaded on to trucks and transported to Veolia's processing facility at Bulla. The renewable energy facility operated by LMS Energy is connected to the landfill gas (LFG) extraction system via a series of gas mains.
- 1.6 In June 2014 EPA granted Works Approval no. 104203 to allow construction of Cell 4C. This followed the Victorian Civil and Administrative Tribunal (VCAT) granting of planning permit WYP1221/07.03 for the use of the land and associated works for the expansion of the existing RDF into Cells 4 - 8 to the approved maximum height (top of cap) of 44 m AHD.
- 1.7 On 30 November 2016 EPA received an application from Wyndham City Council (initially submitted on 26 September 2016 but not accepted at that stage by EPA, the application that was accepted was submitted on 30 November 2016) to extend the landfill across the site into new cells 5, 6, 7 and 8 and the top of previously filled cells 1B, 2 and 3. On 9 May 2017 WCC informed EPA that they wanted to change the scope of the application in that they no longer wanted to extend landfilling activities across the top of the previously filled Cells 1B, 2 and 3.
- 1.8 The proposed landfill extension would continue using quarry voids created by quarrying operations and is considered part of long-term progressive rehabilitation of the quarry site.

SITE LOCATION

- 1.9 Wests Road RDF is approximately 30km south west of central Melbourne and 7km south west of Werribee as shown in Figure 1 overleaf.

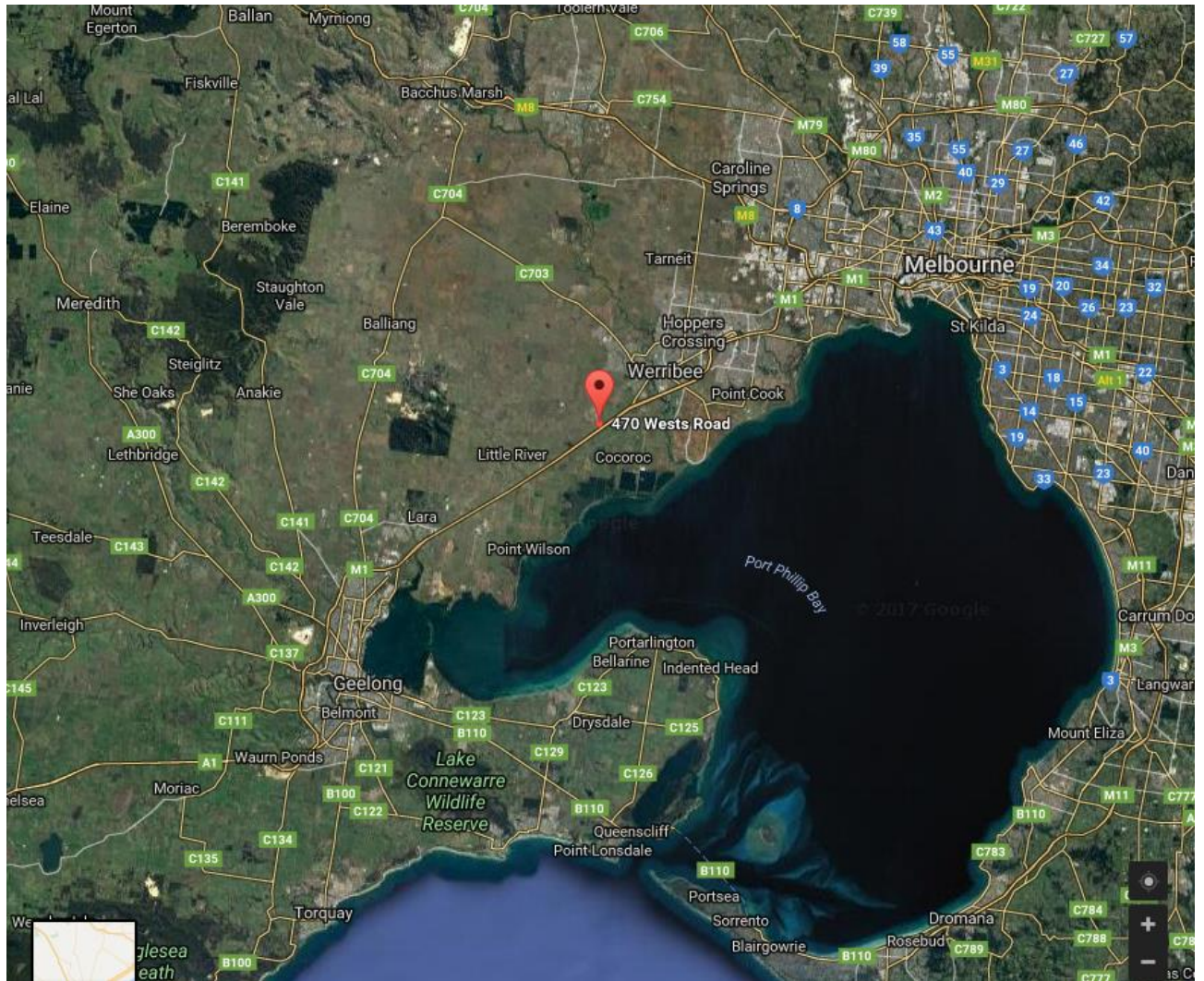


Figure 1: Regional location plan of the Wyndham Landfill

- 1.10 The Wests Road RDF, is bounded by Wests Road to the south and west of the site, the Melbourne-Geelong rail line to the north and farmland to the east as shown in Figure 2 overleaf. Further to the south runs the Princes Freeway (500m), with Melbourne Water's Western Treatment Plant located 3.5km to the SE (just off the figure to the south).
- 1.11 The 212 Ha licensed landfill site is located within the basalts of the Tertiary/Quaternary age newer Volcanics group that dominate the western region of Melbourne.
- 1.12 The site also includes landfill infrastructure such as surface water runoff ponds, leachate ponds, landfill gas (LFG) collection equipment, plus bunds and other land that would not be used for waste disposal.



Figure 2: Site Location Plan of the Wyndham Landfill at 470 Wests Road, Werribee, Victoria, showing the Melbourne to Geelong railway line to the north.

SITE HISTORY

- 1.13 The site started operating as a landfill in 1976 under EPA licence ES400.
- 1.14 In 2008 WCC as the relevant planning authority granted a permit to raise the landfill to 44m AHD about 24m above average ground level. They subsequently applied for a works approval which was approved later the same year.
- 1.15 In 2010 WCC granted a permit to raise the height of the landfill to 65m AHD and again in 2012 WCC changed this to 120m AHD. WCC applied to EPA for a works approval to increase the top of cap elevation to 120m AHD. EPA did not accept this proposal. A height of 65 m AHD was then proposed and that draft application for assessment was not considered further by EPA.
- 1.16 The issue of height was contentious with the community and the matter was ultimately settled in VCAT. VCAT Ref. P1794/2013 and P2540/2013 date of order 11 April 2014. In this order, the application for the planning permit was allowed and the order directed that the planning permit be amended and the maximum height of any completed cell in the landfill (top of waste) was set at 44m AHD.
- 1.17 On 19 February 2014 EPA accepted an application for a short-term extension of an existing landfill at Wests Rd, Werribee. The application was to build one new cell (4C) for municipal solid waste and the proposed height was 44 metres AHD. On 26 June 2014

EPA issued a works approval for the extension of the landfill into a new area cell 4C at 44m AHD.

- 1.18 WCC currently hold EPA licence 12483 for the operation of the landfill and planning permit WYP1221/07/03.

EXISTING LANDFILL & DISPOSAL ACTIVITIES

- 1.19 The Wests Road RDF holds EPA licence 12483 for the disposal of putrescible and solid inert wastes. The RDF is not licensed to accept contaminated soil, asbestos or other prescribed industrial wastes and is not seeking any change to the waste types accepted in this application. The wastes currently receive at the RDF are:

- solid inert waste
- putrescible waste
- pneumatic tyres shredded into pieces less than 250 millimetres
- municipal Solid Waste
- commercial and Industrial Waste
- construction and Demolition Waste
- waste from private waste companies and industries.

- 1.20 In 2015/16, the total amount of waste disposed of in the landfill was 515,000 tonnes, with 13,250 tonnes coming from residents via the transfer station and the remainder from Wyndham's own kerbside collection, other councils and commercial waste collection companies. The 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 (City of Melbourne)

REHABILITATION

- 1.21 Rehabilitation of the existing landfill is in progress.
- 1.22 It is best practice that landfill cells get capped within two years of reaching approved capacity and top of waste elevation. Some areas are installed with an 'intermittent cover'

or temporary cap while a BPEM compliant final cap is designed and submitted to EPA for approval.

LEACHATE

- 1.23 Leachate is collected at the existing RDF facility; however the current collection system is inadequate such that the facility has a legacy leachate management issue within the old cells. This matter is being addressed by the construction of a new leachate pond which is due to be commissioned in 2017 along with, trucking the leachate off-site. During the period December 2016 to June 2017, approximately 900,000 L of leachate had been removed offsite for treatment/disposal.
- 1.24 WCC are tendering for offsite removal/treatment of up to 10 ML of leachate over a six-month period as this will assist in freeing up on site storage capacity and allow extraction of more legacy leachate from the old cells. Whilst the tenders are being assessed they are currently (August 2017) trucking leachate off-site at the rate of 100-150 KI per week.

LANDFILL GAS

- 1.25 The existing LFG extraction system comprises vertical gas extraction wells installed in Cells 1A,1B, 2A, 2B, 3, 4A and 4B. The wells are connected to a series of manifolds and then to the waste to energy facility by a series of gas mains.
- 1.26 The waste to energy facility (referred to in the WAA as a renewable energy facility) is owned and operated by LMS Energy Pty Ltd (EPA Licence Number 81008) under contract to WCC and has 1.8 MW of installed capacity. The connection to the electricity grid is rated at 2 MW and there are plans to upgrade this to 4 MW – noting that those plans are not a part of this WAA. The facility collects gases (mainly methane) that otherwise would be emitted to the atmosphere from completed and operational landfill cells. The gases are then combusted in gas engines that converts it to carbon dioxide and water and recovers some of the energy released as electricity.
- 1.27 Three flares operate at the facility with a maximum flaring capacity of approximately 220% of current gas volumes being generated. The flaring consumes gas that cannot be used in the energy plant converting the methane to carbon dioxide and water.
- 1.28 The gas extraction system is installed progressively as landfilling progresses.

LAND USE & PLANNING

ZONES

- 1.29 Special Use Zones (SUZ) provide for the use and development of land for specific purposes. Schedule 6 to the SUZ (SUZ6) of the WCC planning scheme provides for the use and development of land for earth and energy resources industry. The schedule encourages interim use of the land compatible with nearby land uses and development and management practices and rehabilitation that minimises adverse impacts on nearby land uses and development. Use of the land for refuse disposal requires a permit under section 2 of the schedule.
- 1.30 As shown on the map below, the site of the Wyndham RDF and Quarry is predominantly zoned Special Use Zone 6 (SUZ6), with a small area of Farm Zone (FZ) at the entrance. It is surrounded by the following current land use zones:

- To the north (across the Melbourne Geelong Rail line) by Farm Zone (FZ2), Special Use Zone (SUZ6 – Earth and Energy Resources Industry) and a portion of Urban Growth Zone (UGZ) that is also proposed for future employment land under the West Growth Corridor Plan;
- To the east by Farm Zone (FZ) up to the edge of the Alfred Road PSP Area
- To the south by Special Use Zone 6 (SUZ6 – Earth and Energy Resources Industry) and Farm Zone (FZ)
- To the west by Public Use Zone (PUZ1 - Service and Utility – Melbourne Water Western Treatment Plant)

1.31 The rural areas are largely grassland except for taller vegetation confined to roadsides, fence lines and boundaries, watercourses and wind breaks.

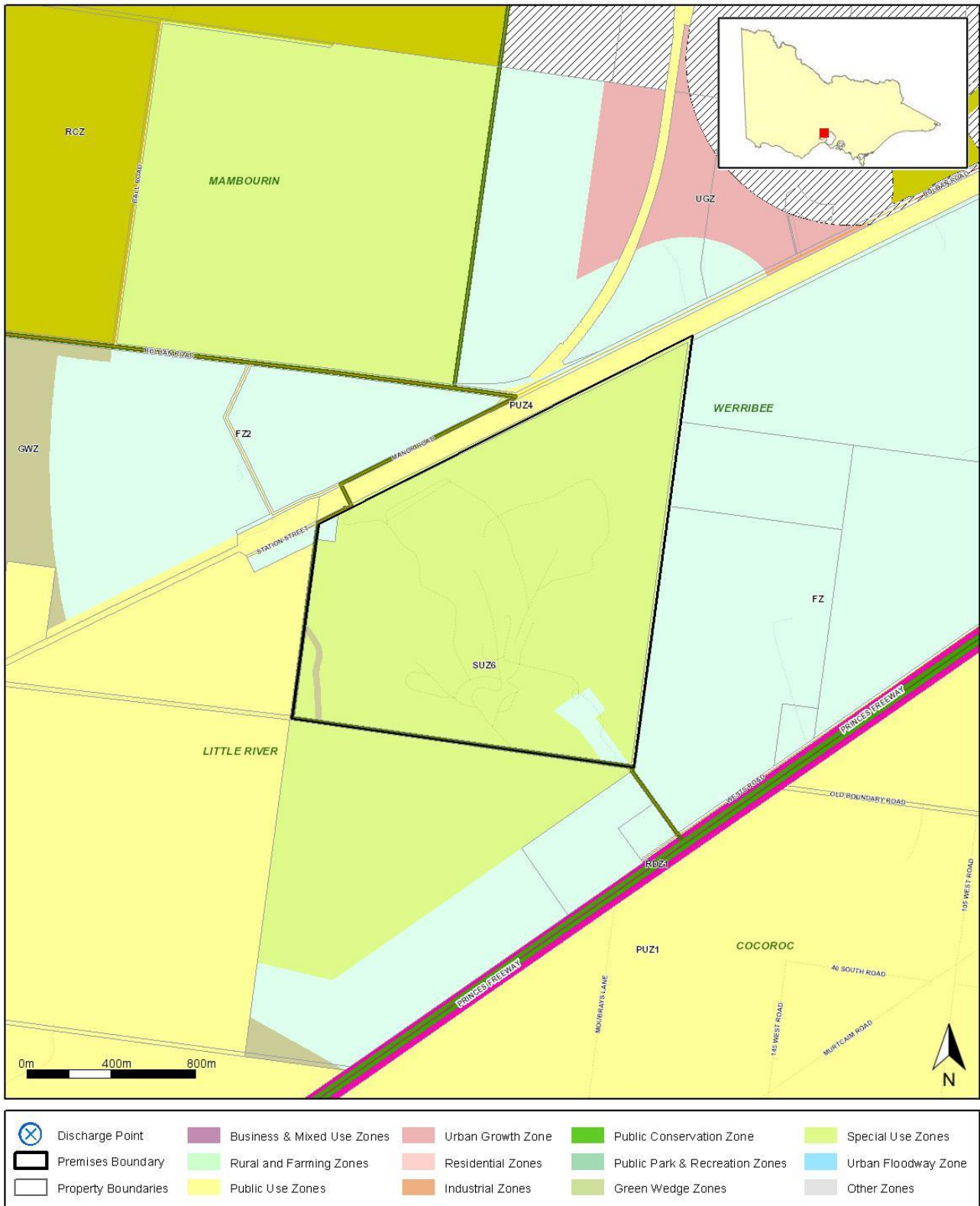


Figure 3: Planning Scheme planning zones covering the site and surrounding area

1.32 The area is undergoing change and will be significantly altered in the future with the proposed West Growth Corridor Plan. The site is at the south west edge of the Urban Growth Boundary (Figure 4) and it is understood WCC's intention is to make this site and surrounds a resource recovery precinct.

1.33 The Precinct Structure Plan (PSP) is at least two years away from being finalised. WCC will be seeking that the future PSP plans for Werribee Junction (PSP 1208), Mambourin East (PSP 1093.2) and Bayview (PSP 1093.1) adopt the employment-industrial zones contained in the West Growth Corridor Plan (Figure 4) and recommended by the Logical Inclusions Advisory Committee.

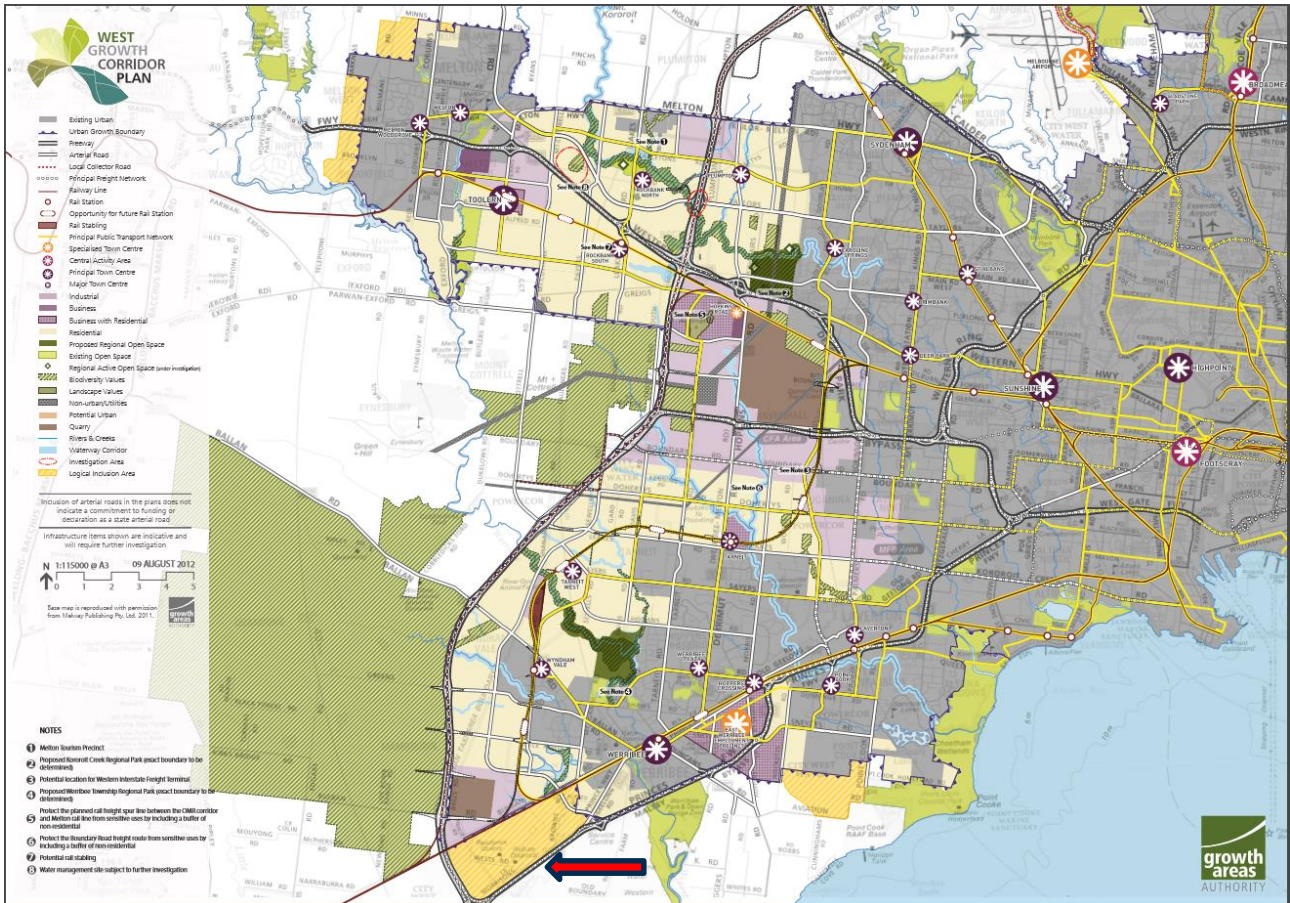


Figure 4: West Growth Corridor Plan – The Wests Road RDF is in the South West corner of the Urban Growth Boundary as shown by the yellow cross hatched area (logical inclusion area) and large red arrow

1.34 Until the PSP (Precinct Structure Plan) process determines future zones, the Wyndham RDF is to some extent already protected from future urban encroachment by the current zones, the Municipal Strategic Statement, and overlays that prevent urban scale residential development. Protection from encroachment is also afforded by the Waste Management Objective under Clause 21.04-2 of Council’s Municipal Strategic Statement, as follows:

“21.04-2 Waste Management

The Wyndham Refuse Disposal Facility (Wyndham RDF) is identified within the Metropolitan Waste and Resource Recovery Strategic Plan: March 2009 as a regionally significant landfill site. It receives municipal, commercial and industrial waste (both solid inert and putrescible) from across Metropolitan Melbourne and the wider regional area. It is expected to continue for more than 60 years.

Key issues:

- *Acknowledging that appropriately sited, designed and managed landfills play a critical role in protecting public health and the environment.*
- *Ensuring the long-term security of well sited landfills such as the Refuse Disposal Facility from conflicting land uses.*

Objective 4:

To provide for the ongoing and long term functional operation of the Wyndham RDF.

Strategies:

4.1 Ensure use and development of land around the Wyndham RDF is compatible with site operations.

4.2 Regulate the establishment and siting of amenity susceptible uses within proximity to Wyndham RDF.

4.3 Ensure that the adverse amenity impacts from Wyndham RDF are minimised.”

- 1.35 In the interim WCC proposes to implement an Environmental Significance Overlay (ESO) as an appropriate tool to manage both use and development within the buffer areas. The effect of the ESO will be to trigger a planning permit requirement for development associated with a sensitive use and address the issue of adequate buffer zones around the RDF identified in GHD’s Wyndhamvale Buffer Study – Environmental Audit Report (CARMS 69507-1, February 2015).
- 1.36 As the introduction of the bespoke landfill and quarry buffer planning tools proposed under Plan Melbourne is still some time away, it is WCC’s intention to seek authorisation from the Minister for Planning to introduce a Planning Scheme Amendment based on the model of the Environmental Significance Overlay that will seek to introduce separation buffers as follows:
- Basalt Quarry Buffer – 500m as currently prescribed by EPA Policy Guidelines
 - Landfill Gas Management Buffer - 500m as currently prescribed by EPA Policy Guidelines
 - Landfill Primary and Secondary amenity odour buffers – directional buffers to be determined upon the completion of updated modelling.
- 1.37 Since the conduct of the original Wyndham Vale Buffer Study, Council has reviewed the upper range of the throughput capacity of the landfill from 1,000,000 tonnes per annum to 850,000 tonnes per annum. EPA has also since transitioned from AUSPLUME to AERMOD as the preferred model for modelling odour emissions. Accordingly, further modelling has been commissioned to calculate the extent of the primary and secondary directional buffers. Once the results of this further modelling are available and authorisation is obtained to proceed from Council and the Minister, WCC’s Urban Futures Department will be in a position to move ahead with the proposed planning scheme amendment.
- 1.38 Further information on odour and the ESO are provided in paragraphs 4.20-4.28.

Topography & Land Use

- 1.39 The site is located within the Volcanic Plains of Victoria. The landscape around the site is predominantly flat.

- 1.40 The broader geology of the area consists of olivine basalt plains with minor interbedded silty sands and clays. Quarrying activities have focused on the uppermost basalt layer. The natural surface water flow is in a north to south direction.

CURRENT REGULATORY REGIME

- 1.41 The Energy and Earth Resources Division (ERR) of the Department of Economic Development, Jobs, Transport and Resources regulates quarrying activities at the site under the *Mineral Resources (Sustainable Development) Act 1990*. Holcim holds Works Authority No. 184 under that regulatory scheme.
- 1.42 The existing landfill site allowed under EPA licence 12483 for the operation of the landfill and planning permit WYP1221/07/ covers an area of 212 hectares. Landfill works approval covers the life of the landfill and do not expire until final capping. The current approved facility has approximately 1 year of capacity remaining under its current approvals and EPA licence.
- 1.43 The waste to energy facility was constructed in accordance with Works Approval number WA77937 in 2013 and has been operating under licence number 81008 since 2013.
- 1.44 The licences and the Works Authority set out specific conditions and working practices that the three companies must adhere to. These include, requirements for:
- Holcim’s quarrying activities to comply with any specifications of Works Authority No. 184 (approved by ERR)
 - WCC to comply with agreed disposal and final cap design, progressive rehabilitation and revegetation specifications
 - Holcim, WCC and LMS Energy to undertake a range of environmental monitoring
 - report the findings of the monitoring to EPA for the landfill and waste to energy licences and ERR for the quarry Works Authority.

RELEVANT LEGISLATION, POLICY AND GUIDANCE

- 1.45 The WAA is required to comply with the *Environment Protection Act 1970* (EP Act) and relevant subordinate legislation, which regulate waste disposal activities such as that proposed. Other related legislation that also needs to be considered – such as the *Climate Change Act 2010* and the *Planning and Environment Act 1987*.

Environment Protection Act 1970

- 1.46 Key sections of the Act, relevant to consideration of this WAA are set out below:
- Section 1 - which sets out the principles for environmental protection, in particular:
 - 1B: Principle of integration of economic, social and environmental considerations;
 - 1C: The precautionary principle;
 - 1D: Principle of intergenerational equity;
 - 1I: Principle of wastes hierarchy;
 - 1L: Principle of accountability.

- Section 19A – Scheduled premises
- Section 19B – Works approval
- Section 19CA – Duration of works approval
- Section 20 – Licensing of certain premises
- Section 20B – Conferences
- Section 20C – Consideration of Policy
- Section 21 - Special conditions
- Section 22 - Power of Authority to require further information
- Sections 38 & 39 - Discharges etc to comply with policy, Pollution of Water
- Sections 40 & 41 – Discharges etc to comply with policy, Pollution of atmosphere
- Sections 44 & 45 – Discharge or deposit of waste onto land to comply with policy, Pollution of Land Pollution
- Section 49 – Resource Efficiency
- Section 50 - Victorian Waste and Resource Recovery Infrastructure Planning Framework (described further in paragraphs 1.51-54 below) and in particular Section 50C(1) and 50C(2)
- Section 67B – Financial assurances.

Climate Change Act 2010

- 1.47 The Climate Change Act 2010 (CC Act) was passed by the Victorian Parliament in September 2010 and came into effect on 1 July 2011. Under the requirements of section 14 of the CC Act, EPA must consider climate change in WA and licensing decisions, as well as when recommending new or amended SEPPs and waste management policies.
- 1.48 The duty does not alter EPA’s existing powers and obligations as set out in the EP Act. Rather, it requires the consideration of additional matters when making the relevant decisions. When making decisions relating to works approvals and licences, EPA must consider climate change in the following two ways in accordance with the requirements of section 14 of the CC Act.
- a) potential impacts of climate change
 - b) potential contribution the application will have to greenhouse gas emissions
- 1.49 It is noted that the Climate Change Act 2017, which will repeal and replace the CC Act received royal assent on 28 February 2017, however this is not in force at the time of this WAA assessment.

State Environment Protection Policies

- 1.50 The EPA considers that the following State Environment Protection Policies (SEPPs) and Protocols for Environmental Management (PEMs) are of particular relevance for this proposal:
- SEPP (Waters of Victoria) (SEPP (WoV))

- SEPP (Groundwaters of Victoria) (SEPP (GoV))
- SEPP (Prevention and Management of Contamination of Land) (SEPP (PMCL))
- SEPP (Air Quality Management) (SEPP (AQM))
- The Protocol for Environmental Management: Greenhouse Gas Emissions and Energy Efficiency in Industry Publication 824
- Protocol for Environmental Management for Mining and Extractive Industries Publication 1191
- SEPP (Control of Noise from Commerce, Industry and Trade No- N1)

Victorian Waste & Resource Recovery Infrastructure Planning Framework

- 1.51 The EP Act, regulations, waste management policies, and SEPPs, establish a framework to ensure that landfills are appropriately located, designed, constructed, operated and managed to minimise risks to the environment and public health.
- 1.52 The Act establishes the strategic framework for landfill needs through the establishment of regional waste management group framework and through the preparation of regional waste management plans. This is to ensure that appropriate waste management strategies are planned and implemented in line with accepted and approved waste management principles for the State of Victoria. One of the main goals is that waste that goes to landfill is only the residual waste and the landfill space is minimised and optimised.
- 1.53 In 2015, the Victorian Government launched the 30-year State-wide Waste and Resource Recovery Infrastructure Plan (SWRRIP) for the State. The vision of the SWRRIP is to develop an integrated state-wide waste and recovery system that continues to provide an essential community service by protecting the environment and public health, maximising the productive value of resources and minimising the cost to the Victorian community. Based on the SWRRIP, the waste and resource recovery groups (WRRGs) develop regional waste and resource recovery implementation plans (RWRRIPs) to assess infrastructure needs in specific regions, including landfills. New landfill needs are outlined in the infrastructure schedules that will be developed as part of the RWRRIPs.
- 1.54 In 2016, amendments to the SWRRIP were proposed to incorporate key information identified throughout development of the regional plans. The draft amendments recently underwent community consultation, with public submissions closing on 14 September 2017. Accordingly, whilst a draft SWRRIP is under preparation, the WAA has been made and should be assessed against the current (2015) SWRRIP. It is acknowledged that during the lifetime of the proposed landfill extension, the SWRRIP will undergo several revisions.

The Waste Management Policy (the Landfill WMP)

- 1.55 The most relevant policy for landfills is the Waste Management Policy (Siting, Design and Management of Landfills) No. S264, Gazette 14/12/2004 (the 'Landfill WMP'). In line with community expectations, the Landfill WMP seeks to protect people and the environment, including local amenity, from the inherent risks posed by the disposal of waste to landfill. This is achieved by providing a framework and tools to implement the waste hierarchy consistent with the broader objective of ecologically sustainable development.

- 1.56 The Landfill WMP specifies certain requirements for landfill sites, in particular siting with regard to sensitive beneficial use areas (i.e. water supply catchments, groundwater protection zones), groundwater table, compliance with SEPPs and the Landfill BPEM.

Landfill BPEM EPA Publication 788.3 – Best Practice Environmental Management: Siting, design, operation and rehabilitation of landfills

- 1.57 A key element of the waste & resource recovery infrastructure planning framework is the implementation of best practice. EPA Victoria's (EPA Publication 788.3) Best Practice Environmental Management: Siting, design, operation and rehabilitation of landfills 2016 (the 'Landfill BPEM') is the source document for best practice environmental management measures for landfills.
- 1.58 The Landfill BPEM gives direction on the best-practice siting, design, operation, performance and rehabilitation standards for landfills in Victoria, taking into account the risk they pose to the environment, and it provides a guide for the measures required to meet legislative objectives.
- 1.59 Landfill owners and operators must have regard to this document in the planning for works approval or licensing of future landfill sites and design of new landfill cells. The Landfill WMP requires the objectives and required outcomes set out in this document to be met. The suggested measures should be used and are the default means of achieving the required outcomes.
- 1.60 The first and most important consideration in the prevention of environmental impacts from landfill is selection of an appropriate landfill site. Once an appropriate site has been selected, landfill operators must adopt best practice in:
- the assessment of landfill design and its effect on the environment
 - construction quality assurance systems
 - landfill management
 - landfill rehabilitation.
- 1.61 It is highlighted that the design and operation of landfills has evolved over time and will continue to do so in line with best practice standards and to keep up with emerging new technologies and materials (i.e. new geosynthetic materials) nationally and internationally. Best practice landfill requirements have been progressively introduced to Victorian landfills since the introduction of the BPEM in 2001. The Landfill BPEM was revised in 2010 to address LFG monitoring and management requirements as a result of the Cranbourne LFG migration issue. With input from world leading national and international practitioners when the BPEM was revised in 2010, the EPA included more clarifications around landfill liner quality, testing requirements, construction quality assurance and construction quality control requirements for design and construction of landfills. The application of geosynthetic liners for landfills was strengthened in the 2010 revision of the Landfill BPEM. At the same time, with the introduction of Landfill Licensing Guideline (EPA Publication 1323.3), the EPA increased the reliance on environmental auditors for design and construction verification of landfills. Subsequent revisions were also made in 2015 and 2016 to strengthen the Landfill Gas management requirements.
- 1.62 The Landfill BPEM requirements have been consistently applied to all landfills in Victoria since 2010, with continuous improvements and significant involvement of environmental auditors.

- 1.63 The Landfill BPEM is a legislatively incorporated document under the Waste Management Policy (Siting, Design and Management of Landfills) 2004, which itself is declared under section 16A of the EP Act, and as such, its requirements must be complied with. This reinforces the importance and need for both landfill operators and any future surrounding development to comply with the requirements contained within the Landfill BPEM.

EPA's Draft Guide – Assessing planning proposals near landfills (2016)

- 1.64 EPA has prepared a draft guideline for assessing planning proposals near landfills. The guideline is intended to provide further information and advice on assessing planning permit applications and planning scheme amendments that are within proximity to operating or closed landfills. More specifically, it provides advice on what level of assessment a planning or responsible authority should require to inform its decision. The advice in this guideline is consistent with, and builds on the advice to responsible authorities in the Landfill BPEM.

Other Relevant Guidance

- 1.65 Other guidance of relevance which EPA has had regard to in its assessment are:
- *EPA Publication 1565 – Application of environment protection principles to EPA's approvals process (2014)*
 - *EPA Publication 1518 – Recommended separation distances for industrial residual air emissions (2013)*
 - *EPA Publication 1517 – Demonstrating Best Practice (2013);*
 - *EPA Publication 1323.3 – Landfill Licensing Guidelines (2016);*
 - *EPA Publication 1254 - Noise Control Guidelines (2008);*
 - *EPA Publication 668 – Hydrogeological assessment (groundwater quality) guidelines (2006);*
 - *EPA Publication 669 – Groundwater sampling guidelines (2000);*
 - *EPA Publication 480 - Environmental Guidelines for Major Construction Sites (1996);*
 - *IWRG 701 – Sampling and analysis of waters, wastewaters, soils and wastes (2009);*
and
 - *IWRG621 – Soil hazard categorisation and management (2009).*

2 WORKS APPROVAL APPLICATION PROCESS OVERVIEW

ASSESSMENT METHODOLOGY

2.1 The key stages of the technical assessment of the WAA are described below.

ASSESSMENT ACTIVITIES DECEMBER 2016 – MARCH 2017

2.2 Following formal acceptance of the WAA, the EPA led consultation with the community and referred the WAA to relevant stakeholders and referral bodies as described below.

Community engagement

2.3 The WAA was advertised in the *Herald Sun*; and *Wyndham Star Weekly* newspapers on 14 December 2016 for an extended consultation period until 7 February 2017. This extended period was considered necessary because of the timing of the application over the Christmas/ New Year and summer school holiday periods. The application was re-advertised on 18 January 2017. Throughout this period the application was advertised on-line through banner ads which appeared on visited web sites. Submissions could be made on-line or by email or hard mail.

2.4 168 submissions from stakeholders were received.

2.5 The submissions were made available for viewing on EPA’s web page for the Wyndham application. A summary breakdown of the types and source of submissions is provided in Table 1 below.

Table 1: Summary breakdown of submissions received

Total submissions	168
Individual submissions	22
Proforma submissions	141
Organisation submissions	5

2.6 In total 168 submissions were received. Five were from organisations (including the Western Resource Environment Centre (WREC)). 141 used a standard proforma letter with identical submissions, with 22 individual ‘unique’ submissions. All submissions have been given equal consideration by the EPA and EPA’s primary consideration is on the technical nature of the issues raised in submissions, as opposed to the number of submissions.

2.7 Issues raised in the individual submissions can be broadly categorised and are provided in Table 2.

Table 2: Summary breakdown by issues raised of individual submissions received

% of submissions raising the issue	Issue	% of submissions raising the Issue	Issue
50	Odour	14	Airborne litter
50	Visual amenity	14	Landfill gas
50	Landfilling obsolete practice	14	Land impacts
45	Human Health impacts	14	Too close to housing currently
36	Stigma	9	Dust
36	Too close to future residential areas	9	Fires
36	Council is driven by the dollar	9	Negative impact on Land values
23	Poor track record	5	Quality of life
18	Groundwater	5	Increased traffic
18	Surface water	0	Noise
18	Approval period too long		

2.8 The WREC submission and proforma letter listed a similar range of issues and concerns but also had strong emphasis on concerns about the duration of the approval. With respects to the duration of the approval the following points were made. The issues and concerns were considered in EPA's technical assessment of the WAA and are discussed in 2.32 to 2.41.

- No 30-year+ expansion;
- No Exclusion of community from decision-making as would occur if EPA approves the Application;
- Recognition that there is no established “need” for providing such a long-term approval when there are proven more sustainable Resource Recovery processes instead of landfill which EPA should recognise as the real need;
- Effective and early community involvement in the decision-making process – which is given lip-service but no substance in the case of this landfill;
- Full transparency and accountability (also given lip-service but no substance);
- Rapid reduction in landfilling and a rapid phase-out of above-ground landfills, especially within the Urban Growth Area
- Government commitment (at all levels) to substantially expedite alternatives to landfill e.g. Waste to Energy, composting and other forms of recycling and recovery.

Referrals of the Application

2.9 Statutory referrals of the WAA were made to Sustainability Victoria (SV), the planning department of Wyndham City Council (WCC) and Department of Health and Human Services (DHHS). Additionally non-statutory referrals of the WAA were made to the

Metropolitan Wates and Resource Recovery Group (MWRRG), Earth Resources Regulation (ERR) and Melbourne Water (MW). Summaries of the responses are provided in the following subsections, with the full responses provided in Appendix C.

Sustainability Victoria

- 2.10 Prior to formal acceptance of the WAA, SV were consulted to ensure the draft WAA was consistent with the SWRRIP and passed the section 50C threshold test. In their response of 4 July 16 (see Appendix C.1) SV state that they consider *“that the works approval application is broadly consistent with the directions of the State Infrastructure Plan and should not be refused by the EPA under Section 50C. SV notes that:*
- a. If the application is accepted, SV requests that the EPA refers the application to SV for review.*
 - b. SV advocates optimal resource recovery and the transition towards an integrated waste and resource recovery system – whereby landfills will only receive and treat waste streams from which all materials that can be viably recovered have been extracted. It would be desirable for the proponent to further articulate how it will maximise resource recovery from residual waste and take into account activities that support implementation of the State Infrastructure Plan.*
 - c. If the application is accepted for consideration by EPA, SV looks forward to assisting the EPA consider potential licence conditions to help progress the Victorian Government’s waste and resource recovery agenda”.*
- 2.11 On 26 September 2016 after submission of updated draft WAA EPA referred the document to SV for further comment. In SV’s response received on 11 October 2016 it was stated that *“Overall, SV considers this proposal to be consistent with the State-wide Waste and Resource Recovery Infrastructure Plan. The continued operation of this landfill has been identified as important to the management of residual waste from the metropolitan region, and potentially other Victorian waste regions.”*
- 2.12 A summary of SV’s response is as follows (full response in Appendix C.2) Specifically, the expansion of the wests Road RDF is consistent with the SWRRIP for the following reasons:
- Infrastructure hub of state importance - this site provides long-term disposal security to an Infrastructure hub of state importance.
 - It is listed on the Metropolitan Waste and Resource Recovery Implementation Plan’s Infrastructure schedule – the purpose of the schedule is to ensure that Melbourne has adequate landfill capacity to safely manage residual waste, while also ensuring that the development and use of landfills is limited to that required.
 - Protection of strategically important infrastructure in the land use planning system – SV applauds Wyndham City Council’s intentions to better define the Wests Road RDF’s buffers by amending the Wyndham Planning Scheme.
 - Resource recovery – SV acknowledges Wyndham City Council’s commitment to increasing the recovery of resources throughout the municipality, noting the goal to establish the Wests Road RDF as a precinct focused on resource recovery, with only residual waste being landfilled.
- 2.13 SV had no further comments on the final application.

Department of Health and Human Services

- 2.14 DHHS provided its response on 6 January 2017 (see Appendix C.3). DHHS does not object to the WAA on public health grounds provided EPA is satisfied all relevant SEPPs and guidelines are met with particular emphasis on the management of off-site odour, landfill gas emissions and groundwater.

Wyndham City Council Planning Department

- 2.15 The full response provided by WCC planning department is provided in Appendix C.4. The main points in the response are listed below.

- We are not currently considering an application for permit or an application to amend a permit under the Planning and Environment Act 1987 for the proposed works. Accordingly, land use development at the site is authorised by Planning Permit WYP1221/07.03. This was issued at the direction of VCAT (reference - P1794/2013 and P2540/2013) on 18 June 2014 for '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.'
- Inconsistencies of this Planning Permit with the WAA:
 - This permit does not relate to Cells 1B, 2, or 3 as the permit preamble states that the permit relates to Cells 4, 5, 6, 7 and 8.
 - The location and orientation of Cells 4, 5, 6, 7, and 8 as shown on 'Figure 8 Landfill Development Plan' on page 74 of the GHD report is not generally in accordance with plans endorsed under WYP1221/07.03 (Amended).
 - The WAA proposes 'Piggyback Cells A and B'. These cells are not shown on the plans endorsed under WYP1221/07.03 (Amended). Piggyback Cells A and B are shown at the location of Cells 1B, 2A, 2B and 3.
 - The WAA proposes Stage 4C to be further split into 'Active Cell 4C Stage 1' and Active Cell 4C Stage 2'. This is not shown on the endorsed plans.
 - Figure 8 nominates 'Possible new leachate pond locations'. These are not shown on the plans endorsed under WYP1221/07.03 (Amended).
- The works are not prohibited by the Planning Scheme.

- 2.16 EPA notes that the scope of the WAA has been changed to remove the 'piggy back' cells from the WAA and has been informed that an application to amend the permit to address the remaining concerns is currently being prepared.

Metropolitan Waste and Resource Recovery Group

- 2.17 MWRRG provided a response on 6 February 2017 (see Appendix C.5) which in summary included the following comments:

- The [West Road RDF] "Werribee Landfill" is a strategically significant waste and resource recovery infrastructure site for the Metropolitan Region. MWRRG considers that this WAA would contribute to meeting metropolitan waste disposal needs and provides for scheduled disposal capacity at the Werribee landfill. The WAA is consistent with the landfill schedule of the Metropolitan Implementation Plan.

- The infrastructure schedule of the Metropolitan Implementation Plan is the Victorian Government’s principal tool to plan for the waste and resource recovery infrastructure that is needed to meet the needs of metropolitan Melbourne.
- The site has been planned as a long-term facility and is scheduled until 2046 with a likely closure date beyond 2046.
- The broader site is listed on the State Infrastructure Plan as an active hub of state importance and has potential 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.
- A reduction of the planned capacity of hubs of state significance (such as that at Werribee) would be expected to impact on available waste capacity and resource recovery network serving metropolitan Melbourne and if the Werribee site were to close early there would be a need to find another large site capable of accepting large amounts of waste well into the future. MWRRG observes that it is difficult to quickly replace lost capacity in the network.
- Approximately 73% of all waste in Metropolitan Melbourne is currently recovered and not landfilled. MWRRG seeks to reduce Melbourne’s reliance on landfill through new resource recovery infrastructure and through removing organic waste from landfill. In this context while landfills are expected to progressively manage less waste they importantly will still be needed.

Melbourne Water

- 2.18 Advice was sought from Melbourne Water (MW) concerning the flood risk and an apparent anomaly in the 1:100 flood overlay for the region which showed that the North-East corner of the site would be subject to flooding.
- 2.19 The full response received on 14 August 2017 is provided in Appendix C.6. In summary MW advised that there was an anomaly in the flood mapping as follows:
- *“In updating the ‘Flood_Extent_100yr_Waterways’ GIS layer with the latest mapping work, please ensure that the original flood extent adjacent to the eastern boundary of the Wests Rd Refuse Disposal & Recycling site (surrounded by magenta cloud in below plan [see Figure 5]) is removed as it was an anomaly in the original flood mapping. There is another small section of waterway flood extent cutting across the southwest corner of the site which is still valid and should remain.”*

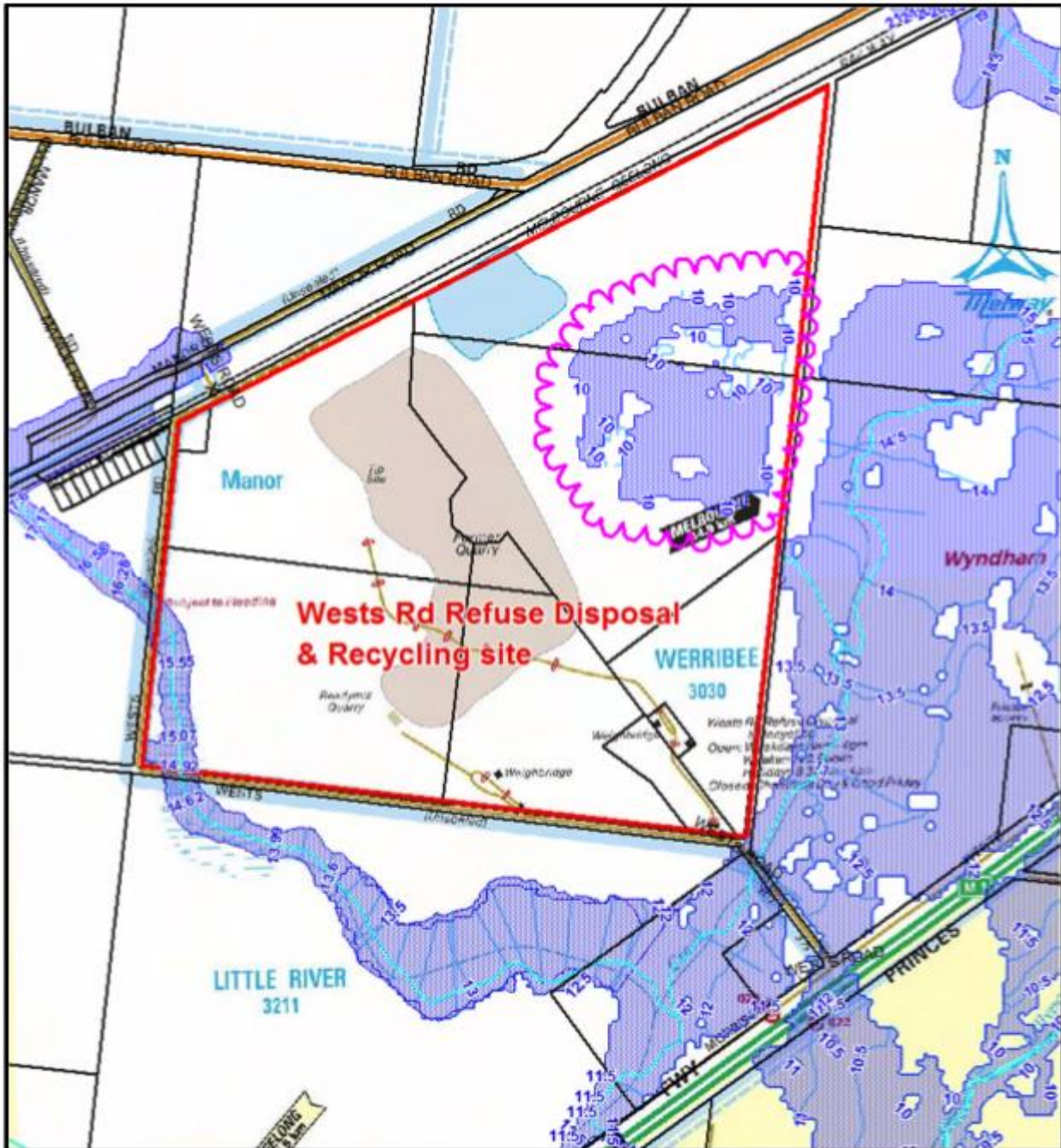


Figure 5: Flood_Extent_100yr_Waterways' GIS layer – Magenta cloud indicates anomaly.

Earth Resource Regulation (ERR)

2.20 ERR provided their response on 13 July 2017, see Appendix C.7. ERR did not express any concerns with the application, in summary they made the following points:

- ERR requires that the surface of the land be stable and rehabilitated to an acceptable standard before any excision of the Works Authority can be approved.
- as it is proposed that the excised area is to become a landfill, ERR would approve the excision subject to the approval of an EPA licence and Works Approval over the area excised [on the basis that the WA and Licence would include requirements for a stable and rehabilitated landform and a financial assurance].

Request for Further Information

- 2.21 EPA reviewed the referral responses, submissions received and technical advice from EPA's in-house specialists. Following the reviews, EPA considered that further information was needed from WCC to enable a robust technical assessment to be completed.
- 2.22 Accordingly, EPA issued a formal notice on 19 January 2017 under section 22(1) of the EP Act to WCC (see Appendix D). The notice identified the further information EPA considered necessary and relevant to enable it to determine the WAA. The further information requested can be categorised into four areas:
- groundwater quality and long term undisturbed groundwater levels
 - additional design and management measures if clause 16(2) (a) of the WMP could not be met
 - leachate management
 - stormwater management
- 2.23 Responses to this section 22 Notice were received on 10 July 2017.

Community (20B) Conference

- 2.24 Following a review of the 169 submissions received EPA decided to hold a community conference under section 20B of the Act on 14 March 2017 at Werribee Park Mansion. The purpose of the conference was to give members of the community opportunity to raise concerns and elaborate on concerns raised in their submissions. Invitations were sent to all persons who made a submission on the application and the conference was advertised in local papers. The conference was chaired by an independent facilitator and Chairperson engaged by EPA. The conference included brief presentations from EPA and Wyndham City Council and two members of the community.
- 2.25 Approximately 27 people attended the conference representing community members, key stakeholders along with WCC (as the Applicant), EPA staff, representatives from the Metropolitan Waste, Resource Recovery Group and Sustainability Victoria.
- 2.26 Following the conference the independent facilitator prepared a report (see Appendix E). In accordance with section 20B (4) of the EP Act, the discussions, resolutions and recommendations from the conference have been considered by the EPA in its assessment. The recommendations are listed below:
- EPA and WCC need to consider the technical feasibility of the landfill height of 44m AHD and consider lower height options.
 - EPA needs to assess the adequacy of the rehabilitation and landscape plans including what level of landscaping can begin immediately.
 - EPA needs to consider concerns regarding the odour modelling and risk assessment provided as part of the application.
 - WCC need to consider options for allowing the community to -easily raise odour and noise issues or complaints.
 - EPA needs to review and consider internal community consultation and notification processes and adopt improvements.

- WCC needs to ensure the Community Reference Group is adequately resourced.
- EPA needs to consider licence conditions requiring community consultation by the landfill operator.
- EPA needs to consider the need for additional hydrological assessments to address concerns around potential surface water inundation and impacts to surface waters.
- WCC needs to consider operational and risk management at the site including improvement to noise and odour management.
- WCC needs to clearly outline the site's independent auditing, monitoring and reporting systems.
- EPA needs to consider more frequent compliance checks.
- WCC needs to develop improved community communication about waste minimisation strategies and resource recovery options.
- EPA needs to request MWRRG and SV to consider and clarify the incentives and flexibility for landfill operators to transition to alternative options and technologies before 2020.
- EPA and WCC need to consider the length of approval time frames and whether shorter periods (7 - 10 years) provide greater certainty for planning.
- EPA and WCC should ensure future waste technologies are considered for the site with adequate community consultation.
- WCC needs to develop and clearly communicate the long-term plan and vision for the site.
- EPA and WCC need to clarify adequate buffer zones for gas, odour, and noise issues and how those distances are determined on this site.

ASSESSMENT ACTIVITIES APRIL 2017 – SEPTEMBER 2017

Second Request for Further Information

- 2.27 Following the receipt of the s20B independent facilitator's report, a second s22 notice was issued to WCC on 12 April 2017. There were three main parts to the notice (see Appendix F):
- information needs arising from the 20B conference report, such as facility height; site landscaping, progressive capping and rehabilitation; odour and noise; communication and engagement with the community; the facility's operation and risk management; compliance standard monitoring and track record of the applicant; current and future waste management strategies for the area; planning and buffer zones
 - concerns of the inclusion the 'piggy back' cells and amendments arising from their removal
 - additional outstanding information needs concerning financial assurance, air quality modelling and requiring a response to issues raised in submissions.

Reconsultation and Information Sessions

- 2.28 Following the receipt of further information from WCC in response to the second s22 notice, EPA conducted a further consultation process with the local community.
- 2.29 EPA hosted two information sessions on 1st and 23rd of August 2017. The purpose of the sessions, held at Eagle Park Stadium in Werribee, was to inform community members about the responses to the s22 notices EPA issued to WCC that were received by EPA on 10 July 2017. The sessions also informed people on how to make a submission on the responses. The information sessions were advertised in local papers and invitations were sent to all submitters and attendees at the s20B conference.

Third Section 22 Notice

- 2.30 Following assessment of the responses to the first two s22 notices and concerns raised by ILEAP, EPA drew together the outstanding requirements for completion of the assessment and newly identified concerns and information gaps such as concerns on the final contour plan, progressive capping and rehabilitation schedule, landfill and batter stability issues, stormwater management and need for a revised premises plan. The notice also required a response to issues raised in the WREC submission (Appendix B) in a third s22 notice on 18 August 2017.
- 2.31 On 7 September 2017, WCC provided a satisfactory response to the third s22 notice. Accordingly it is highlighted that the final WAA comprises a number of documents as identified in Appendix G and that some of the further information provided in response to the s22 notices revises and replaces that contained in the original WAA. The final WAA, assessed which is reported on in this WAAAR is described in Section 3 of this WAAAR.

Response to the Public Submissions

- 2.32 EPA requested through the second and third s22 notices that WCC prepare responses to all submissions including the detailed submission from WREC. WCC provided responses on 10 July and 7 September 2017. EPA has considered the WCC responses and notes that they are sufficiently detailed, however EPA does have some additional comments in relation to the main issues raised by WREC and most of the respondents. These major issues are:
- the need for the landfill;
 - the duration of the proposal; and
 - the height of the proposed landfill mound.

The need for the landfill.

- 2.33 The WREC submission and many of the submissions, including the proforma letter, questioned that there was a genuine need for the landfill raising such points as there are better alternatives to landfilling such as greater resource recovery and waste to energy.
- 2.34 The EP Act sets out a framework for waste and resource recovery infrastructure planning in Victoria. Under this framework, Sustainability Victoria and regional waste and resource recovery groups (including MWRRG) are primarily responsible for assessing the need for landfills in the near and long term at a state and regional level. EPA is limited in its ability to take into account need for future landfills outside of the waste and resource recovery

planning framework, and must have regard primarily to the SWRRIP and MWRRIP (including the landfill schedule) in assessing the WAA.

- 2.35 The EPA raised the question of need with MWRRG when referring the application to MWRRG and when asking MWRRG to respond to the WREC submission. MWRRG response to the latter request was received on 20 June 2017 and is included in Appendix C.5. The additional points raised by MWRRG in Appendix C.5 over their original referral response are:
- 2.36 The Infrastructure Schedule of the Metropolitan Implementation Plan is the Victorian Governments principal tool to plan for the waste and resource recovery infrastructure that is needed to meet the needs of metropolitan Melbourne. The purpose of the schedule is to holistically plan for the management of waste, and where viable make infrastructure decisions that prioritise resource recovery over landfilling.
- 2.37 The proposed landfill expansion will contribute to meeting metropolitan waste disposal needs and provides for scheduled disposal capacity at the Werribee landfill.
- 2.38 The MWRRIP identifies that if any of the Werribee landfill, MRL Ravenhall, Hanson Wollert, SUEZ Hallam and SUEZ Lyndhurst landfill do not operate in accordance with the landfill schedule sequence table, the metropolitan Melbourne region will not have sufficient landfill capacity.
- 2.39 Further consideration on this issue is given in the subsection on 'Compliance with s50C of the EP Act of this WAAA Assessment Report (paragraphs 4.132-4.139).

Duration of the proposal

- 2.40 Issues and concerns raised on the duration of the proposal are discussed below:
- **No 30+ year expansion.** In this regard it is noted that there are no provisions in the EP Act which prevents EPA from granting a WA which may continue over 30 years, if the threshold tests in s50C of the EP Act are met (see paragraphs 4.132-4.139). It is noted that although the original proposal extended beyond the planning horizons of the SWRRIP and the MWRRIP the proposal has been modified by removing the 'Piggy back' component of the WAA. This shortens the proposed landfill to 2043 which is within the planning horizons of those documents with the MWRRIP identify this landfill as potentially operating to 2046.

It is further noted that landfill operators must apply for and seek approval for each new cell, these cell approvals would be assessed against the latest standards that apply at the time ensuring that as standards are revised and improved that they will be applied to future cells.

- **Locks the community out of participating in decision making for a long time.** It is noted that the community has opportunity for input through the RDF Community Reference Group which has been operating since 2012.

Further it is highlighted that the SWRRIP and MWRRIP which schedule waste facilities are reviewed every five years and involve an extensive public consultation phase. This would include a review of the need for landfills and it is conceivable that a landfill could be removed from the schedule in a future review. If this were to happen, EPA could (pursuant to s50C (1)(a) of the Act) refuse to consider a future application to amend the licence for the landfill that would have the effect of enabling the operation of a new cell where such operation would be inconsistent with the SWRRIP or the MWRRIP.

- **Locks in landfilling as the main means of dealing with waste and discourages more innovative approaches.** Associated with this point is the view that EPA should only grant short term approvals or approvals for individual cells. EPA notes that a WA is simply a permission for certain activities to occur in the future, it does not require a proponent to actually carry out the activities nor does it provide any guarantee that the activities will occur. The decision to actually build the works applied for is a commercial decision for the holder of the works approval. It is quite conceivable that EPA could receive a WAA for an alternative means of waste disposal and grant WA even though that proposal could be competing with other landfills or facilities for access to waste streams. Having a WA does not guarantee access to a waste stream although it may be a prerequisite.

Should a more viable and/or sustainable way of dealing waste be developed in the future it is likely that such technologies will supplant the need for and likely replace landfills.

Height of the landfill

- 2.41 In response to concerns from the community on height, as highlighted above WCC were asked through the second and third s22 notices to provide further information on height. Additionally, as described below in paragraphs 2.46-2.58 the EPA's Independent Landfill Expert Advisory Panel were also asked to consider the height and stability issues. EPA's assessment of the height proposed and stability of the proposed landfill is described further in paragraphs 4.159 and 4.160.

PEER REVIEW PROCESS

Internal EPA Assessment and Peer Review

- 2.42 The WA Assessment and this Assessment Report has been undertaken by EPA Development Assessment Unit staff (Project Manager, Works Approvals), with support from EPA's Applied Science Group, Specialist Regulatory Services and Metropolitan Region:
- Senior Applied Scientist – Land & Groundwater / Principal Expert – Land & Groundwater
 - Senior Applied Scientist – Air & Odour / Principal Expert – Air
 - Senior Applied Scientist – Air Emissions Management
 - Specialist Applied Scientist – Air & Noise
 - Specialist Applied Scientist – Noise Management
 - Environment Protection Officer / Principal Expert – Odour
 - Senior Applied Scientist – Landfills
 - Senior Field Specialist – Landfills / Principal Expert – Landfill
 - Regional Manager – Metropolitan Region.
- 2.43 Internal Peer Reviews have been undertaken by Team Leader, Works Approvals and the Manager of Development Assessments Unit.

- 2.44 Additionally, to support the hydrological assessment work, EPA commissioned external peer review advice from Stormy Water Solutions on the stormwater modelling and management plan (see Appendix H).
- 2.45 Comments received from the peer review process have been considered in finalising this report.

Independent Landfill Expert Advisory Panel

- 2.46 In response to the Recommendation 3 of the Victorian Ombudsman’s 2009 report, ‘Brookland Greens Estate– Investigation into methane gas leaks’, an Independent Landfill Expert Advisory Panel (ILEAP) was established by the EPA.
- 2.47 The purpose of the Panel is to enable EPA to access expert peer review advice to assist the EPA in making decisions on complex landfill operations.
- 2.48 EPA sought and obtained peer review advice from the Panel on 29 June 2017. The Panel’s brief, which set out the scope of the peer review, is provided in Appendix I.1. Their report containing their findings and recommendations is presented in Appendix I.2. In referring the WAA to the ILEAP, the EPA requested they consider the three matters in the bullets below. It is highlighted that the EPA is not obliged or required to adopt any of the findings and recommendations made by the Panel. However, the findings and recommendations have been fully considered by EPA in its consideration of the WAA.
- Does the Panel agree with the findings of the height risk assessment provided by the Applicant?
 - In this case, does the Panel consider that the proposed height of the landfill and the proposed controls are acceptably low risk?
 - Are there any further control measures that the Panel considers are needed?
- 2.49 In response to these questions, the Panel made four recommendations. A discussion of each of the recommendations is detailed below:

Recommendation 1

“The Panel does not agree with all of the findings of the height risk assessment provided by the Applicant. The Panel recommends that the Applicant provide the EPA with a revised Height Risk Assessment which appropriately addresses the revised proposed pre-settlement contour plan, impacts of height on wind movement identified in GHD’s Odour Modelling Report and the residual risks associated with interim cover and capping stability associated with the proposed 1 in 5 batters.”

- 2.50 In considering the Panel’s recommendation EPA notes that the Panel were concerned with two issues under this recommendation. Firstly, that the revised risk assessment did not adequately deal with the implications of additional height with regard to air movement and odour modelling and secondly, the residual risks associated with interim cover and capping stability due to the 1 in 5 batter. EPAs’ consideration of these issues is set out in the bullets below:
- With regard to the first issue, the EPA odour expert considers that current air dispersion modelling is not well suited to modelling differences in height as that proposed (between 32m to 44m AHD) in the context of landforms such as waste emplacement. For

example, if the current model is adjusted to factor a height change of the proposed emplacement of 12m, the results may indicate a reduced odour impact, however the results could not be relied upon, being likely to represent an unrealistic outcome. Notwithstanding this, the EPA has comprehensively considered the likely odour impacts of the WAA. If a WA were to be issued, appropriate conditions would ensure that it is unlikely it would adversely affect the quality of any segment of the environment and or the interests of any person other than the applicant. This matter is also discussed in paragraphs 4.19-4.44 below.

- With regard to the second issue, where it was considered by the Panel that the height risk assessment did not adequately consider the residual risks associated with the stability of the proposed emplacement (with regard to stormwater management) due to the proposed batter slopes, this issue was dealt with under the third s22 notice. WCC were requested to provide details regarding the approach to deal with the identified stability issues by the Panel in the detailed design phase.
- As described in additional information provided by the WCC on 27 August 2017, the WCC has committed to undertaking both a waste mass slope stability modelling and veneer cap assessment at the detailed design phases.
- As a minimum these studies will require consideration of: rainfall runoff modelling; stormwater swale drain design; stormwater ponds; and, erosion management, as it relates to the design of the proposed emplacement.
- It is considered that if a WA is issued, this matter can be adequately resolved at the detailed design phase of the development, secured through an appropriately worded WA condition.
- It is considered, the proposal is unlikely to adversely affect the quality of any segment of the environment and or the interests of any person other than the WCC. This matter is also discussed in paragraphs 3.32-3.3.46 at section 3 "Proposed Design Containment Measures" of this report.

Recommendation 2

“The Panel does not consider that the proposed height of the landfill and the proposed controls are acceptably low risk as further design detail and documentation of operational procedures are required to be enacted to reduce risks to an acceptably low level. While the proposal appears to conform to the requirements of EPA Publication 788.3 BPEM Siting, Design, Operation and Rehabilitation of Landfills, there are significant risks of licence condition non-conformance associated with operation of the tipping face at elevations significantly higher than surrounding landform. The panel recommends that the s53V operational audit (expected to be a requirement of the Licence) requires the compilation of documented procedures to address the odour, litter, landfill gas, dust and batter stability issues identified in this report.”

- 2.51 In considering the Panels recommendation EPA notes that they identified that the proposal appears to comply with the requirements of the BEPM, however it is concerned that there may be a future risk of non-conformance with regard to odour, litter, landfill gas, dust, and batter stability. EPA considers that if the WA were to be issued for the proposed extension, conditions attached to any WA and the future EPA licence conditions, would provide adequate environment protections during the operational phases of the landfill.

- 2.52 With regard to the Panel’s recommendation for the inclusion of a condition relating to the need for an operation audit on the licence under s53V of the Act, an EPA licence would be required to operate the proposed new landfill cell. It is considered that this matter can be resolved at the licencing phase of the landfill.
- 2.53 This matter is further discussed at paragraphs 3.16-3.24 section 3 "Construction of Landfill and Licence Amendment Applications" and "Proposed Operation Measures" sections of this report.

Recommendation 3

“In response to community concerns about the amenity impacts of the continued development of the landfill at its current maximum elevation and the current extent of capping, site rehabilitation and amenity improvements to site boundaries, the panel recommends the EPA develop within its Work Approval, conditions for future cell approval linked to progress milestones for design and installation of cell capping. Similarly, section 53V operational audits should include progress reports on implementation of the proposed boundary plantings and site rehabilitation works referenced in the works approval application.”

- 2.54 In considering the Panel’s recommendation, the EPA notes that plans to rehabilitate the old cell areas and the proposal were submitted by WCC in response to the third s22 notice. As described in the additional information provided by WCC on 27 August 2017, WCC has committed to progressively rehabilitating the completed and capped landfill cells. The supporting information provided by the WCC also details milestones for cell capping and rehabilitation and a commitment to using an Auditor to verify the capping design and construction works. This matter is also discussed further in paragraphs 3.64-3.67 at section 3 "Proposed Closure and Aftercare Management" section of this report.
- 2.55 It is considered that the issues raised by the Panel can be adequately resolved through the imposition of conditions on any WA issued requiring progressing rehabilitation.

Recommendation 4

“The existing 1 in 5 uncapped batters pose challenges to maintain the integrity of the interim soil cover during heavy rainfall incidents due to the length of the slope and fluctuations in surface contours. As significant batter areas at 1 in 5 grades are proposed for the new cells, the Panel recommends that adequate site specific design for the future capping should be prepared as part of each cell design, Auditor review of the design (as normally required for each landfill cell).”

- 2.56 In considering the Panel’s recommendation, the EPA requested WCC provide further information on their approach to stormwater management and erosion. Further EPA notes that standard conditions attached to any WA issued for landfills require the submission of plans and technical specifications of the design and a construction quality assurance plan for each cell design. These are assessed by a EPA appointed auditor, in accordance with the procedures outline in the EPA Guideline, Publication 1323.3 (Landfill Licencing Guidelines). The plans and technical specifications are provided to the EPA prior to commencing construction for each landfill cell. Further, the final capping design is considered at this stage with the design for each cell.

2.57 Accordingly, it is considered that the issues raised by the Panel can be adequately resolved through the provision of approval conditions.

Height Risk Assessment

2.58 Matters raised by the Panel on the height risk assessment are also discussed in Table 3 below.

Table 3: Summary Table of the Independent Landfill Expert Advisory Panel Findings and Recommendations and EPA response

Issue	Panel Comments	EPA response
<p>Dust Suppression</p>	<p>The Panel queries the justification that one additional water cart alone can suppress dust on roads. This was discussed with the Landfill Manager during the site visit and it was identified that WCC was allocating an additional employee with access to plant including another water cart to carry out maintenance away from the tipping face. The Council is proposing to apply dust suppression compounds to haul roads and carry out additional grading, watering and compacting works and maintenance to interim soil cover.</p> <p>Given the height of the landfill above its flat surrounds, the Panel recommends that the WA be conditional on an agreed program of stringent dust controls.</p>	<p>Air quality including dust generation and controls was fully considered during assessment of the WAA (see paragraphs 4.14-4.18).</p> <p>A dust management condition has been recommended, see WA_R4 (c).</p>

<p>2. Odour</p>	<p>The Panel noted the effects of tipping face on the risk of the one odour unit threshold being exceeded at the site boundary and that it would be important to ensure that the size of the tipping face is controlled to maintain a lower OERA risk rating.</p>	<p>With regard to odour impacts associated with management of the active tipping face, this matter was taken into consideration during assessment of the application (see paragraphs 3.49, 4.34 and 4.191).</p>
<p>3. Odour</p>	<p>The Panel noted that the odour management plan identifies the use of horizontal gas collection wells to mitigate the odour risks and this has not been present during previous operations.</p>	<p>The EPA is satisfied with the proposal in this regard. The installation of sacrificial horizontal gas wells in newly covered areas is considered to be best practice.</p>
<p>4. Odour</p>	<p>The Panel noted that some of the odour reports registered in last three years have been associated with exposing decaying waste due to police investigations, re-constructing cell batters and drilling wells within closed cells.</p>	<p>Odour reports and the sources of odours from within the existing landfill have been considered in the assessment of odour presented in Section 4 of this WAA Assessment Report.</p>
<p>5. Noise</p>	<p>The Panel noted that when filling above the lip of the quarry pit, it would be important to create successive earthen edge bunds to contain noise, litter and water, as far as practicable. This is considered good practice to minimise amenity impacts for landfills when raised above surrounding ground surface.</p>	<p>This matter was taken into consideration during assessment of the WAA, see paragraphs 4.95 to 4.105.</p>
<p>6.Noise</p>	<p>The Panel noted that relocatable noise barriers are listed in the risk management mitigation measures. The site visit revealed that these are predominately needed to prevent noise reaching one specific property. The Panel noted that a substantial hay bale wall was to be placed as a trial and more dense barriers using shipping containers were being considered.</p>	<p>This matter was taken into consideration during assessment of the WAA, see paragraphs 4.95-4.105.</p> <p>If a WA is issued, conditions of approval would be imposed to manage operational noise. See WA_W8 (h) and WA_R4 (h)</p>
<p>7.Noise</p>	<p>The Panel noted that night-time operation is the critical noise concern (given past history of complaints) and how operation arrangements are modified for after-hours activities. While the reversing alarms of heavy equipment have been replaced by inaudible alarms, the noise of swinging tailgates or noisy tracked dozers may need specific controls.</p>	<p>This matter was taken into consideration during assessment of the WAA, see paragraphs 4.95-4.105.</p> <p>If a WA is issued, conditions of approval would be imposed to manage operational noise.</p>

<p>8.Litter</p>	<p>The Panel noted that their site visit confirmed that the reference to additional height perimeter fences refers to the relocatable litter nets currently installed near boundaries which are to be increased in height from 6m to 10-12m and that rigid litter frames are used at the tipping face to catch windblown litter.</p> <p>The Panel further noted that the risk control measure to place additional litter nets at the tipping face would need to happen as the rigid cages are of limited height (approx. 3metres) and cannot surround the whole tipping face.</p>	<p>This matter was taken into consideration during assessment of the WAA in paragraphs 3.57 and 3.58.</p>
<p>9.Litter</p>	<p>The Panel noted that the mitigation action of closure during high wind conditions is potentially difficult to apply. (How would WCC manage customers under contractual obligations, what are the parameters for closure?).</p>	<p>It is noted that the Council has successfully closed the landfill on two occasions during 2016 due to high wind conditions.</p> <p>The site was closed to reduce the incidence of windblown litter.</p> <p>This management measure is a commitment of the Council.</p>
<p>10.Amenity</p>	<p>The Panel notes that WCC's previous commitments and delayed actions on post cell filling rehabilitation have resulted in community concerns about the visual amenity.</p> <p>The Panel considered that it is important that rehabilitation and landscaping is carried out diligently and within 2-3 years of filling each cell.</p> <p>As a measure of commitment to best practice, WCC should commence rehabilitation works on closed cells with some urgency.</p>	<p>Appropriate and timely rehabilitation is a aspect of the Landfill BPEM and concern for the EPA on all landfills within the state. This WAA is supported by a Rehabilitation Management Plan.</p> <p>If a WA is issued, conditions of approval would require progressive rehabilitation and landscaping of completed cells to be undertaken.</p>

<p>11.Stability</p>	<p>The Panel commented that irrespective of the slopes being BPEM compliant, site specific cap design needs to consider all material interface strengths for all components and the drainage characteristics of the overlying soil.</p> <p>The steeper batters now proposed around all sides of the landfill, while being BPEM compliant, would require careful design to ensure veneer stability.</p> <p>In the risk assessment Consequence is rated Insignificant and Likelihood Rare. Even though failures can be readily rectified, albeit at a cost, the Panel question the validity of the rating given that damage to caps is considered likely rather than rare. Stability is reliant on appropriate cap design, cap construction and post planting maintenance.</p>	<p>This matter was taken into consideration during assessment of the WAA, see paragraphs 4.159 to 4.160.</p> <p>WCC provided additional information on the 27 August 2017.</p> <p>If a WA is issued, conditions of approval would be required at the detailed design phase that the WCC undertake both waste mass slope stability modelling and veneer cap assessment.(WA_W1 (a), (b), (c)) Additionally, conditions of approval would require the applicant to submit plans and technical specifications of the design and a construction quality assurance plan assessed by a EPA appointed auditor, in accordance with the procedures outline in the EPA Guideline, Publication 1323.3 (Landfill Licencing Guidelines) for each cell design. (WA_W1 (d), (e), (f))</p>
<p>12.LFG and leachate production and capture</p>	<p>The Panel considered and noted that the risk assessment discusses the impact of increased area for each cell if height of waste is reduced.</p> <p>While the larger area may result in greater saturation of the waste and therefore hasten gas generation, ultimately it is the volume of waste that determines the amount of gas produced.</p> <p>The Panel does not consider that the height of the landfill would significantly alter gas generation rates but would increase the volume of landfill gas generated given the greater volume of waste placed.</p> <p>The important issues are the effectiveness of leachate management, placement of cover, rehabilitation and gas capture infrastructure.</p>	<p>These issues are noted. An assessment of a site-specific LFG risk assessment was undertaken, see paragraphs 3.34 – 3.39, 3.41 – 3.46 and 4.46 – 4.51.</p> <p>The assessment takes into consideration the size and shape of the proposed emplacement, cell liner construction, the waste stream, LFG and leachate generation rates, and the progressive rehabilitation of the site.</p>

<p>13.Storm Water Management</p>	<p>The Panel noted that while the grades of the final capping would be within the BEPM permitted range, side slopes of 20% are proposed which would require careful design of surface water interception such as rock chutes and channels and other measures to prevent scouring and erosion of the capping. At 20% grade flows are more likely to contain suspended solids, meaning sufficient storm water detention to allow a settling period before discharge to surface waterways would be required.</p>	<p>This matter was taken into consideration during assessment of the WAA. The WAA was supported by a stormwater management plan. This plan was externally reviewed by an expert on behalf of the EPA (see paragraphs 4.88-4.92 and Appendix H).</p> <p>Additionally, the WCC provided additional information on the 7 September 2017 in response to the third s22 notice.</p> <p>If a WA is issued, conditions of approval would require further detailed design work to ensure the stormwater flows are appropriately designed.</p>
<p>14.Storm Water Management</p>	<p>The Panel commented that the site visit indicated interim soil cover on Cell 4 is still subject to stormwater erosion as batters are steep and other works being undertaken to establish landfill gas extraction and hotspot extinguishment result in limited capacity to direct surface water flows evenly over surfaces.</p> <p>A maintenance program therefore needs to be applied to ensure the effective LFG extraction in Cell 4 through replacement of interim cover following significant rain events and / or the construction of intercept drains and rock lined chutes to remove water from batters.</p>	<p>This matter was taken into consideration during the assessment of the WAA, see paragraphs 4.88-4.92.</p> <p>If a WA and subsequent licence is issued, conditions would be imposed requiring adequate environment protection during the operational phases of the development with regard to soil cover, and stormwater management.</p>

3 THE WORKS APPROVAL APPLICATION

- 3.1 On 7 September 2017, WCC provided a satisfactory response to the third s22 notice. Accordingly, it is highlighted that the final WAA comprises a number of documents as identified in Appendix A, and that some of the further information provided in response to the s22 notices revises and replaces that contained in the original WAA. For example, originally WCC were also proposing to fill over the top of previously filled Cells 1B,2 and 3, referred to as the ‘piggy back’ cells. On 5 May 2017, WCC withdrew this part of the proposal from the WAA.
- 3.2 The final WAA, assessed which is reported on in this WAAAR is described in Section 3 of this WAAAR.

DESCRIPTION OF THE PROPOSAL

- 3.3 The proposed activities subject to this WAA are the:
- Extension of the existing Type 2 landfill to areas north and west of the current active Cell (4C) following Holcim’s progressive quarrying of the site.
 - the construction of and subsequent filling, capping and rehabilitation of 4 new cells (Cells 5, 6, 7 and 8), to the approved height of 44m AHD. Each cell would be comprised of a series of sub-cells (11 in total) the sequencing Plan Figure 6 and durations for each landfill cell are shown in Table 4.

Table 4: Indicative filling schedule

Sub-cell/ Cell	Anticipated Year of Filling	Anticipated Year of Completion
5A	2018-2020	2022
5B	2020-2022	2024
6A	2023-2025	2027
5C	2025-2027	2029
6B	2027-2029	2031
6C	2029-2031	2033
7A	2032-2034	2036
7B	2034-2036	2038
7C	2036-2038	2040
8A	2039-2041	2042
8B	2041-2043	2044

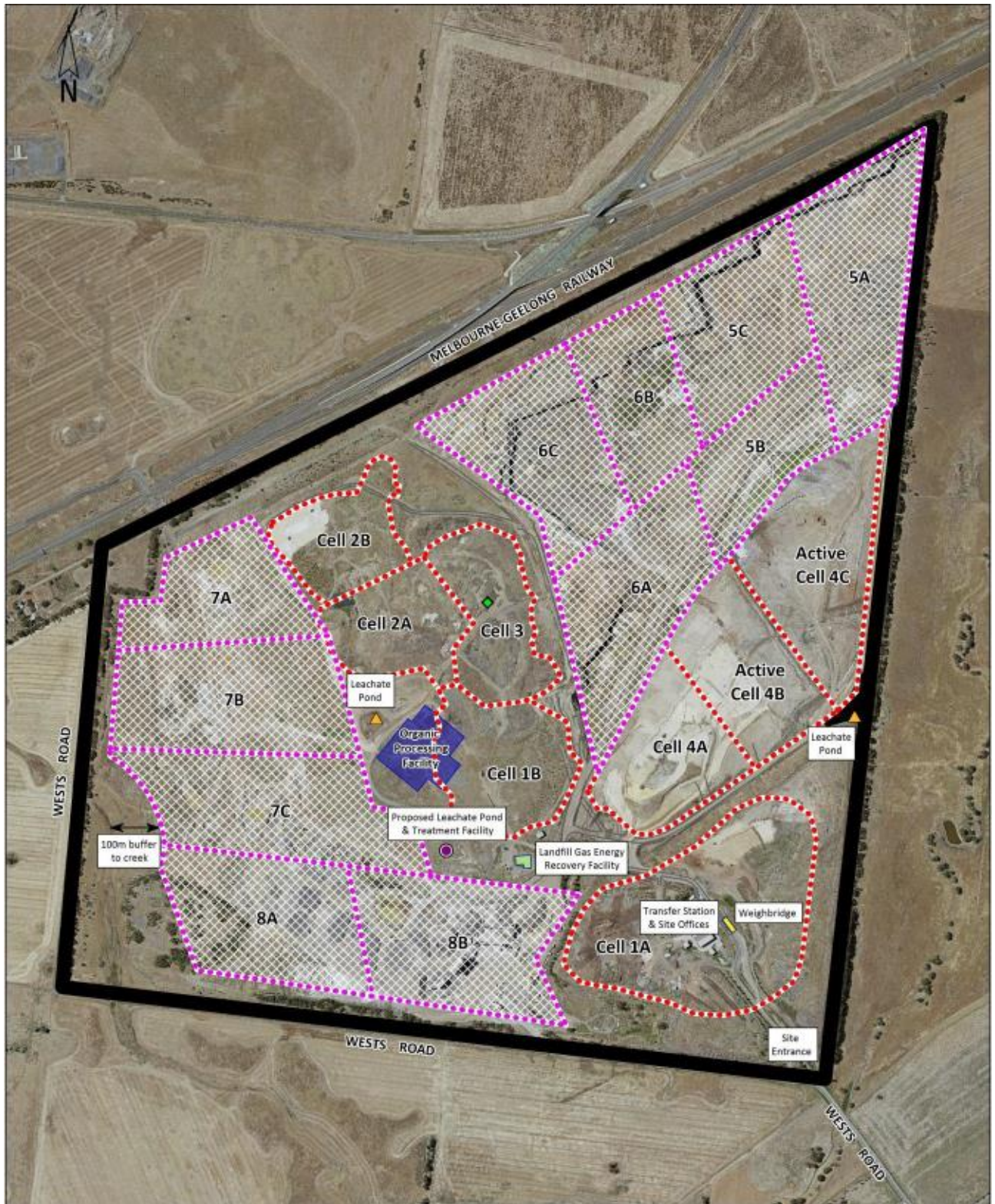


Figure 6: Site Layout and Associated and Ancillary Infrastructure

White hatched areas within are proposed cells, non-hatched cells are existing cells.

Proposed operational period and anticipated waste volumes:

- 3.4 The air space available is estimated at 21.5 million m³. Based on current tonnages (approximately 550,000 tonnes in 2017/18) and applying an annual growth factor of 3% to

the incoming quantity of waste the airspace would be consumed by 2043 (giving the proposed extension a life span of 26 years) as outlined in Table 4.

- 3.5 The proposed continuation of landfilling at the RDF is not expected to result in a significant change to existing traffic volumes or behaviour as there would still only be one cell (tipping face) open at a time, similar to the current level of operation. The number of heavy vehicles using the RDF averages 200 per week day and 50 on Saturday.
- 3.6 Access to the RDF would be directly from the State's Arterial Road Network (Princes Highway C109 exit).

WASTES TO BE DISPOSED

- 3.7 WCC is proposing the continued acceptance of the following waste streams:
- solid inert waste
 - putrescible waste
 - pneumatic tyres shredded into pieces less than 250 millimetres
- 3.8 Waste sources include
- municipal solid waste, including wastes received directly from the public and from kerbside collection
 - commercial and industrial waste
 - construction and demolition waste
 - waste from private waste companies and industries.

CONCEPT DESIGN

- 3.9 The design of the proposed landfill is described in the WAA. Its design, construction, operation and ongoing maintenance is based on the principles of the Landfill BPEM, namely:
- progressive sequencing of landfill cell construction and filling following quarrying activities, in accordance with a sequencing plan and being dependent of quarry activities.
 - sizing of the landfill cells and active tip face to minimise generation of odour, leachate and LFG escape, and to increase the capture efficiency of the LFG collection system
 - constructing the base and the sides of the landfill cells with appropriate liner systems, including leachate collection and LFG collection systems within quarried voids
 - containment of the wastes through a variety of liner and capping measures to prevent and reduce leachate and LFG from escaping the cells – combined with leachate and LFG collection systems;
 - ensuring adequate batter and side walls to maintain the stability of the landfill cells as they are filled and subsequently capped and rehabilitated, as well as other safety features
 - capturing stormwater runoff for reuse on-site for dust suppression and minimise leachate generation and wheel wash activities

- 3.10 It is noted that the proposed landfill is both an 'Area' and a 'Mound' Landfill, with the proposals filling an existing or to be excavated quarry (i.e. an Area) and also rising above pre-quarrying ground level (i.e. a Mound). In such circumstances, it is not critical to EPA's assessment of the proposal if the landfill is considered an 'area' or 'mound' landfill, rather the focus is ensuring the WAA's proposed design, operation and rehabilitation meets the Landfill WMP and BPEM.

Site Layout and Associated and Ancillary Infrastructure

- 3.11 The proposed layout and existing infrastructure is shown in Figure 6.
- 3.12 Four cells are proposed with each cell area comprising a number of sub cells giving 11 sub cells in total. Each sub cell is expected to provide approximately two years of filling capacity.
- 3.13 An additional 26 ML leachate pond is also proposed.
- 3.14 In addition to the construction of the landfill cells and the necessary management systems required to manage the landfill as wastes decompose, associated and ancillary infrastructure are also needed and proposed namely:
- leachate collection sumps, extraction and transmission pipework, extraction pumps.
 - LFG collection wells, transmission pipework, vacuum extraction equipment, condensate management equipment and LFG combustion plant
 - LFG monitoring bores along the site perimeter
 - groundwater monitoring bores
 - stormwater storage ponds
 - access & weighbridges
 - internal haul roads
 - facilities: existing offices, parking, education centres, public transfer station and access roads would be maintained;
 - litter screens: would be upgraded around the perimeter of the extension, up to maximum height of 12 metres.

Proposed capping and Rehabilitation Schedule

- 3.15 The proposed capping and rehabilitation schedule is shown in Figure 7.

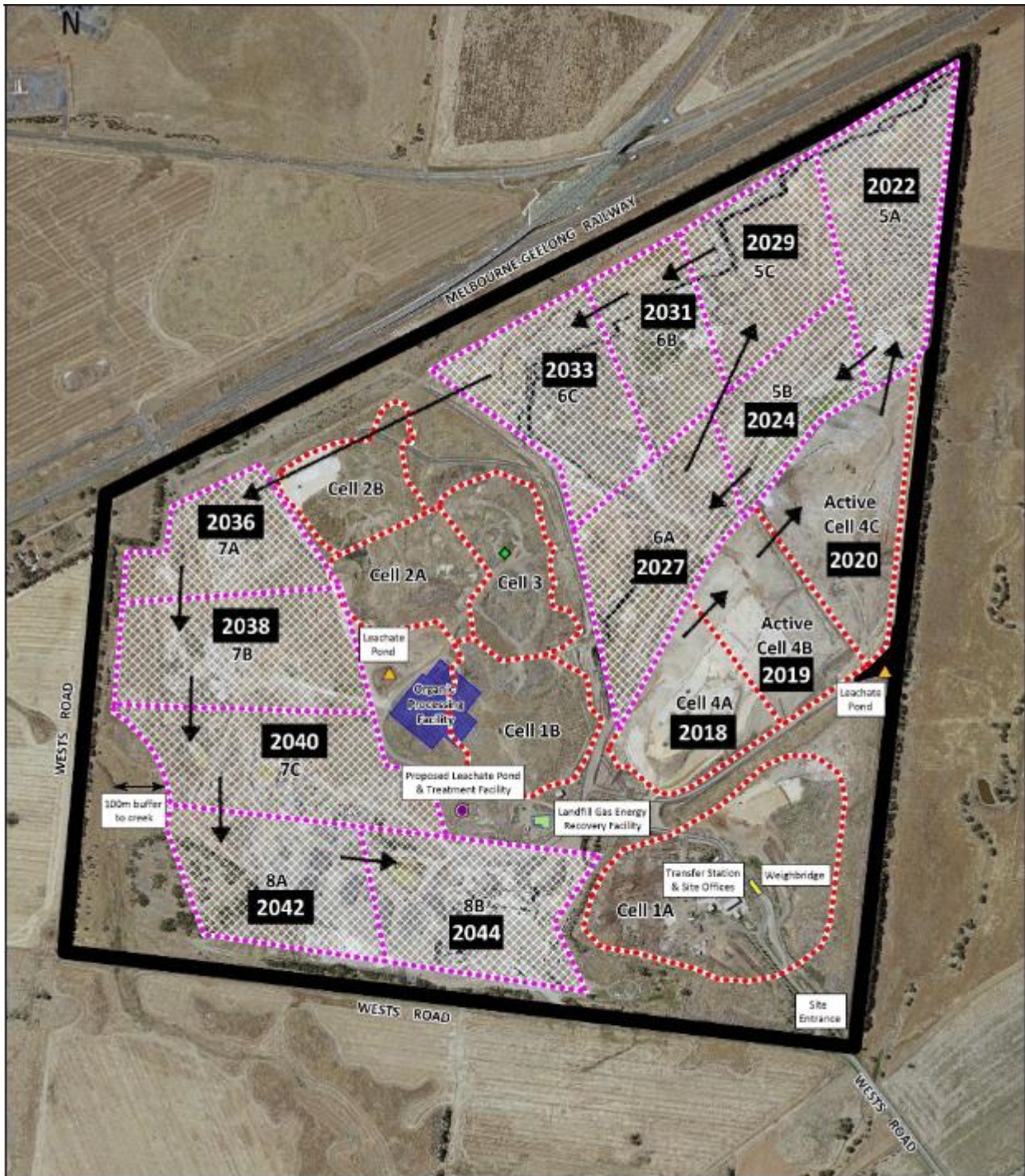


Figure 7: Revised Proposed Capping and Rehabilitation Schedule

CONSTRUCTION OF LANDFILL CELLS & LICENCE AMENDMENT APPLICATIONS

- 3.16 While preliminary designs are accepted at the works approval stage, detailed designs are required prior to starting construction. The detailed designs should provide more details on aspects including site characteristics at landfill cell level, dimensions of individual cells, material types and specifications, test methods, construction quality control and construction quality assurance details and environmental auditing. Furthermore it is noted that as the Landfill BPEM evolves to stay current with international landfilling best practices, it is likely that EPA's requirements at the time of construction may be higher and more stringent than the requirements at the time of works approval.
- 3.17 Once the designs for the first cell and the leachate pond are approved by EPA, construction of those structures can commence. At this stage, an environmental auditor must be engaged by the landfill operator to verify that the construction is in accordance with EPA approved design documents.
- 3.18 On completion of construction, the operator submits a licence amendment application (in accordance with section 20 of the EP Act), with an environmental audit report prepared by the auditor who verified the construction meets approved design documents (in accordance with section 53V of the EP Act). Once the audit report is reviewed by EPA, the licence is amended to include the newly constructed cell or leachate pond.
- 3.19 A landfill operator can only start to fill a new cell with waste (or operate a new leachate pond) after EPA has granted the licence or the licence amendment.
- 3.20 Should the landfill operator wish to construct new cells or a leachate pond, they must notify EPA and submit detailed design documents, as for the first cell or leachate pond. EPA reviews the plans and ensures they meet the relevant best-practice requirements that exist at that time, and that the designs meet any future landfill design improvements.
- 3.21 The plans would provide all the design details for the barrier system and leachate collection system (pipes, leachate sump, conveyancing infrastructure, plan views, cross sectional views, etc.).
- 3.22 The technical specifications would provide the details of specifications for all the materials that would be used in the cell (or the leachate pond) construction.
- 3.23 The Construction Quality Assurance Plan, would provide details on:
- compliance of materials with design specification
 - methods of construction
 - inspection and testing parameters and frequency
 - supervision
 - hold points (auditor and independent testing) during construction.
- 3.24 Following the end of quarrying activities, the base of the quarry void would be prepared with subgrade materials prior to the installation of the liner and leachate collection systems.

Base liner

- 3.25 The following liner configuration (from bottom to top) for the base of the cells is proposed, as shown in Figure 8 below:
- engineered compacted subgrade
 - low permeability compacted clay layer (1.0m thick) – compacted to a coefficient of permeability of less than 1×10^{-9} metres per second
 - geosynthetic clay liner (GCL) – reinforced multi-layered system would comprise of two layers of geotextile encapsulating a layer of dry sodium bentonite
 - geomembrane liner – a high-density polyethylene (HDPE) geomembrane liner would be used for the base and sidewall liner
 - cushion geotextile – comprising of non-woven geotextile of a specific mass and puncture strength appropriate to its application
 - leachate collection layer (aggregates, pipes, leachate sump)
 - filter geotextile – comprising of non-woven geotextile of a specific mass and puncture strength appropriate to its application.
 - A groundwater collection gravel layer, with associated collection pipes is also proposed to be placed between the liner system and the quarry floor as a management measure to achieve compliance of Landfill WMP Clause 16(2).
- 3.26 The original application did not have the groundwater collection layer or the GCL layer. These additional design and management measures are required if 2m of separation between the base of the landfill and the long term undisturbed groundwater levels cannot be established. A groundwater collection gravel layer, with associated collection pipes is also proposed to be placed between the liner system and the quarry floor as a management measure to achieve compliance of Landfill WMP Clause 16(2). This increases protection to groundwater by protecting the cell lining from a potential build-up of groundwater pressure. The additional GCL layer provides an additional barrier between leachate in the cell and the groundwater.

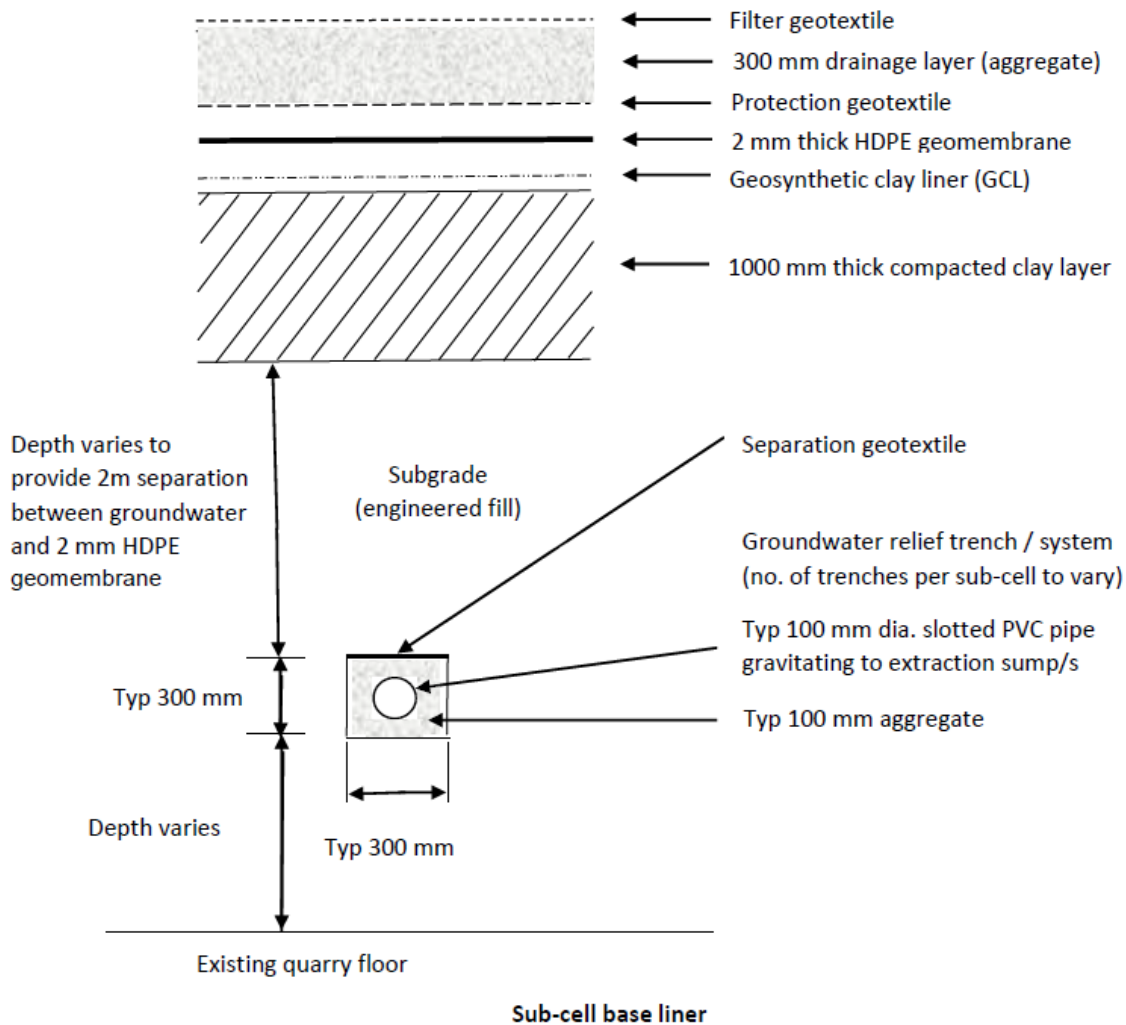


Figure 8: Sub cell base liner and groundwater collection layer below the liner system

Sidewall liner

3.27 The sidewall liner proposed would contain the following as shown in Figure 9 below:

- subgrade (engineered fill)
- geosynthetic clay liner
- geomembrane liner
- protection geotextile

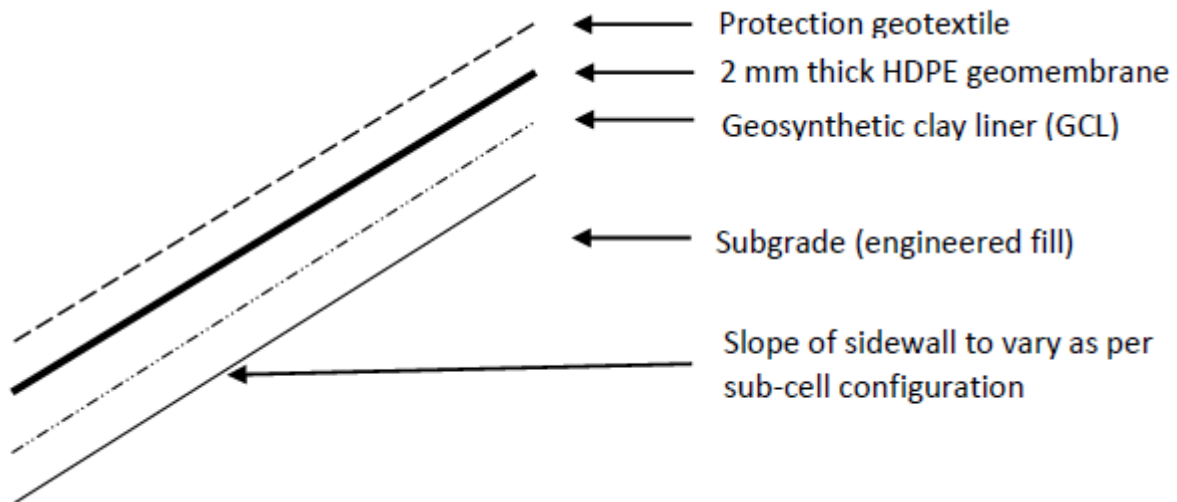


Figure 9: Sub-cell side wall liner

Landfill cap

3.28 The following capping profile is proposed in line with Type 2 landfill criteria as per the Landfill BPEM (from top to bottom).

- top soil and sub soil layers to a combined thickness of 1m
- geocomposite drainage layer
- geomembrane (LLDPE) liner
- Compacted Clay Layer (CCL) – 600mm thick with hydraulic conductivity less than 1×10^{-9} m per second.
- The old cells (1b, 2a, 2b and 3) will be capped and rehabilitated with a phytocap in accordance with the Rehabilitation Management Plan and associated documents in Appendix A of WAAAR (Doc 4.7). The rehabilitation Timetable is provided in section 5.7 of the Plan.

Long term interim capping

3.29 WCC have proposed the following measures for long term interim capping.

- prepared interim cover soils suitable for geocomposite installation
- geocomposite liner such as the Canal® liner
- consideration of lining around protrusions
- 500 mm thick cover soils.

3.30 Joining of the geocomposite liner and all design proposals should be assessed by an environmental auditor and constructions also need to be verified by an auditor.

3.31 In addition to revising the cell layout and filling sequence to reduce the time that any long term interim capping would be in place, WCC proposes to implement the following approach to any long term interim capping (e.g. between Cells: 4A/4B and 6A/5A and 5C/5B and 5C/6A and 6C).

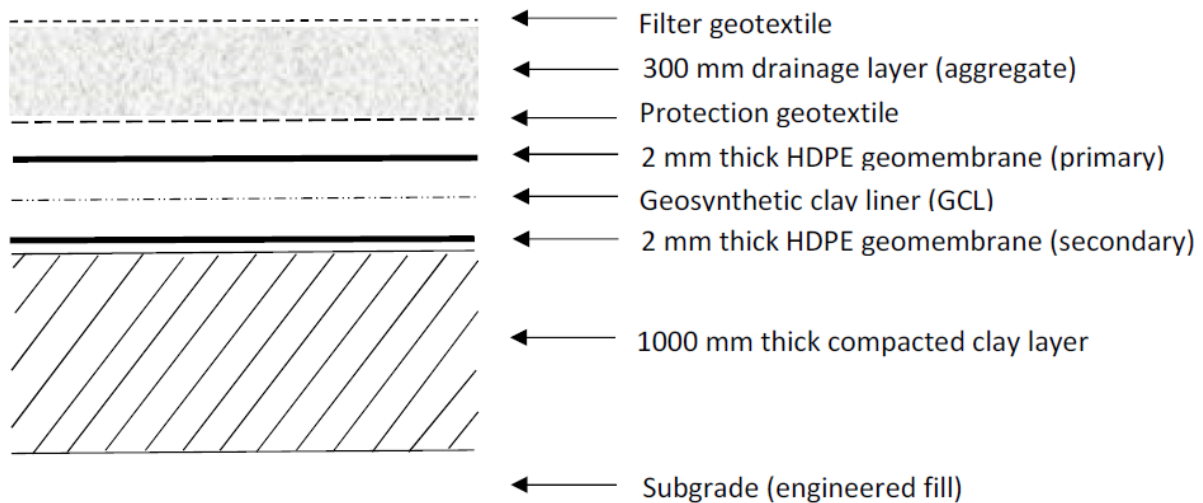
- 3.32 Design of the interim cap would be considered as part of the whole landfill cap from a stormwater management/design perspective and design of all long term interim capping would address the following main aspects of construction:
- earthworks to prepare the 1V:3H waste slope comprising intermediate cover.
 - installation of the geocomposite layer including anchor trenches and/or connection to the final cap.
 - placement and spreading of fill material.
 - installation of any filter geotextile and aggregate related to stormwater drains and details of the connection to the existing stormwater drainage system.

PROPOSED DESIGN CONTAINMENT MEASURES

- 3.33 The WAA sets out the proposed containment measures associated with the proposal. These are:
- a) a landfill liner with appropriate barrier system (described above)
 - b) a leachate collection and management system
 - c) a stormwater management system
 - d) a LFG management system, incorporating collection and treatment.

Leachate collection and management system

- 3.34 As the RDF site has an issue with legacy leachate with the old cells, leachate management at the site needs to address both the legacy leachate and the leachate to be generated from the new cell areas. The Leachate Management Plan prepared by Tonkin Consulting (and included as an appendix to the WAA) considers the future leachate management of the existing landfill and proposed new landfill cells.
- 3.35 The landfill liner system will consist of a leachate collection system containing a leachate drainage aggregate layer placed above the liner, and leachate collection pipes with a sump for its collection and removal. Each proposed sub-cell would be provided with at least one dedicated leachate collection sump (in most cases two sumps per sub-cell), the location to be determined during detailed design. Should the required 2m separation distance above the long term undisturbed groundwater levels not be achieved for a sub-cell, then additional design measures similar to that adopted for Cell 4C would be incorporated into the sump for that sub-cell as shown in Figure 10. This included a double HDPE liner in the area around each sump and a GCL sandwiched between the two HDPE membranes.



Groundwater relief system as per sub-cell liner section

Leachate sump liner

Figure 10: Proposed additional design measures underneath the leachate sump

- 3.36 Once leachate is collected in the sump, it is continually removed from the sump and is contained in the two leachate ponds on the landfill premises. Removed leachate is partially treated via evaporation from the storage ponds and aerators are proposed to be used to reduce odour generation from the leachate ponds which would also increase the evaporation of leachate from the ponds. Currently leachate is being disposed off-site via a tanker system to an EPA licensed waste treater to reduce the levels of legacy leachate and create extra capacity at the site for leachate retention.
- 3.37 HELP software has been used by the landfill designers to estimate the maximum leachate volumes generated. During initial filling of a cell waste would only be placed in the catchment of one of the sumps, stormwater generated in the non-waste part of the cell would be treated as stormwater not leachate, reducing the volumes of leachate generated. During the modelling, it was assumed that the entire cell would contribute to leachate generation.
- 3.38 The HELP modelling identified that an additional 26 ML of leachate storage from the proposal would be required for the new cells.
- 3.39 It is understood from the WAA and WCC's leachate management in response to the s22 notice of 19th January (Appendix A Doc 2.9) that two options are being considered by WCC, an on-site leachate pond and a connection to sewer. The connection to sewer is estimated to be a similar cost to the construction of a new leachate pond and the infrastructure required for that option would be located at the same location as proposed location for a new leachate pond Figure 11.



Figure 11: location of future 26 ML leachate pond

Stormwater management system

3.40 The proposed Stormwater Management System would comprise a series of open channel stormwater swales, hillside contour drains and rock lined drop chutes to drain the final and interim caps, drains, swales and stormwater ponds.

- Stormwater to be collected and managed to ensure that uncontaminated stormwater flows are kept away from contaminated (waste) areas and contaminated stormwater is contained within the site and is treated along with leachate.
- Rainfall from external catchments would be diverted around the site.
- Runoff from intermediate capped areas is considered potentially sediment laden and is treated separately to runoff from final capped and rehabilitated areas. Such runoff is to

be directed through a retention system, with ponds sized to contain a 1 in 20 year storm event, a 1 in 100 year storm event was considered to assess the risk of flooding or pond failure.

- All drains, swales and underground drainage to be designed to a 1 in 20 year event.
- Runoff to remain on-site or enter the Wests Road stormwater drainage system.

Landfill gas management system

- 3.41 LFG is to be collected using an active extraction system. This applies suction (vacuum) to the waste to remove the gas.
- 3.42 During the filling of each landfill cell, LFG would be collected using a series of horizontal (sacrificial) gas collection wells. The primary purpose of these wells is to reduce odour.
- 3.43 Once each cell is filled, LFG would be collected using vertical wells to extract LFG to engines where it is combusted to generate electricity. LFG flares are provided to enable continued extraction when an engine is being serviced or repaired, if electrical generation has to temporarily stop or if the gas flow exceeds the capacity of the gas engines. The net effect of the extraction is the depressurisation of the waste to significantly reduce the movement of gas out of the landfill into the surrounding environment, so that LFG emissions meet the Landfill BPEM gas action levels required by the EPA licence. Vertical wells would be installed to around 75% of the waste depth and would be connected to manifolds at the surface where they are regularly balanced (vacuum adjusted) and gas ratios checked to achieve efficient gas collection. Where horizontal sacrificial wells remain operational, they would continue to be used in addition to the vertical wells which are drilled into the full cell.
- 3.44 The horizontal and vertical wells are proposed to be installed progressively.
- 3.45 The horizontal gas collection system would be installed at a spacing of approximately 10m vertically and 40m horizontally, as the cell is being filled with waste. The first set of horizontal collection pipes would be installed after 6m of waste has been placed across the cell. As these collection pipes are laid they would be progressively connected to the gas extraction system.
- 3.46 It is understood that as production of LFG increases as the landfill develops LMS Energy intends to match this with increased engine capacity, electrical interconnection and flaring capacity.

PROPOSED OPERATIONAL MEASURES

Waste acceptance

- 3.47 As stated previously, the proposed landfill would accept the same types of waste it currently does. Signage at the entrance would be used to advise which types of waste are accepted at the site.
- 3.48 The existing weighbridge facility and gatehouse, located at the entrance to the landfill and manages waste recording and inspection. Random inspections of incoming waste loads would be undertaken and recorded. Vehicles carrying prohibited materials would be declined entry and vehicle details recorded and reported to EPA. Following inspection, vehicles are weighed and a weighbridge ticket created. The waste would then be taken

directly to the active landfill area. Vehicles are either weighed in and out using a stored tare weight (empty vehicle weight) and issued a docket on entry or are weighed again when exiting the site to provide an accurate figure of the weight of the deposited waste. Stored tares are periodically audited and updated and are used for vehicles whose configuration doesn't change (e.g. side loader vehicles used for kerbside collections). Weigh in /weigh out is used for all vehicles whose configuration can change regularly (e.g. hook lift trucks).

Waste placement and cover

- 3.49 A designated active tipping face would be established during landfill operations. The size of the active tipping area would be kept as small as possible and would be no larger than 1,250m² (the maximum size in the licence). However, to minimise amenity impacts such as odour and to better control litter and pests WCC aim to keep the tipping face size to 900m² or less.
- 3.50 The waste would be placed and compacted into approximately 5m lifts across the cell in a manner that ensures the stability of the waste batters and retains cover material. Daily cover would be continually placed over the waste during the filling of each cell with only the active tipping area exposed, in accordance with the licence.
- 3.51 The waste would be further compacted once daily filling is completed, and a subsequent 300mm thick daily-cover layer would be placed over the last active tipping area at the end of filling during each night or day shift. Inspection of the cover layers would be undertaken, and any damage or cracks would be rectified. The material used for the daily cover would be primarily sourced from on-site quarry scalps (basaltic clay with basalt fragments), with alternative sources to be considered, subject to availability, material quality and EPA approval at the detailed design and cell approval stages.
- 3.52 When the landfilling is complete within a cell, the waste would have an intermediate cover layer placed over it. To comply with EPA licence conditions, the intermediate cover layer consists of 500mm of compacted clay or clay-rich soil and commencement of placement of intermediate cover must commence within 1 month of the cell being full.
- 3.53 After a period of time set by EPA in a specific licence condition, each completed cell must be capped with a final cap that is in compliance with Landfill BPEM requirements.
- 3.54 The cap has the following purposes:
- minimises infiltration of water to the waste, which therefore minimises leachate generation
 - reduces emissions of LFG and aids efficient LFG extraction
 - minimises wind and water erosion
 - allows for settlement of waste during degradation.
- 3.55 All vehicles entering the site pass through an automatic truck wash prior to leaving the landfill.
- 3.56 Disposal activities occur 7 days a week. On week days waste acceptance commences at 12 am and continues until 5 pm. The tipping face operates from 6 am to 4 pm on Saturday and from 8:30 am to 4 pm on Sunday.

Litter control

- 3.57 It is a condition of the RDF licence to ensure that litter is not deposited beyond the boundaries of the premises. To comply with this requirement Council:
- utilises litter netting and cages to catch litter at or close to the tip face
 - undertakes regular inspections of litter netting and cages, perimeter fences and gates and surrounding areas where litter is known to accumulate and litter cleared as necessary.
 - closes the site during periods of excessively high wind (the site was closed on 2 occasions due to high winds in 2016) to reduce windblown litter
 - covering the waste on the tipping face at the end of each day's operations in accordance with the EPA licence
 - minimise the tipping face.
- 3.58 In addition to these preventative measures, WCC also undertakes additional inspections and collection on adjacent properties after periods of high wind. A substantial upgrade to the litter netting has been approved as part of the 2017/18 budget. Litter screens with a maximum height of 12m would be installed around the perimeter of the proposed landfill site. These are designed to contain the movement of windborne litter from the active landfill cells and the general site.

Fire prevention & management and hotspots

- 3.59 The following control measures would be implemented for fire prevention:
- inspection of incoming loads for 'hot' waste or burning materials
 - use of spark arrestor on landfill operation machinery
 - inspection of waste for ignition sources such as hot coals, car and marine batteries
 - enforcement of no smoking requirements for personnel and visitors
 - burying highly combustible materials such as timber as soon as practicable at the landfill active face
 - covering waste loads daily to prevent air intrusion and reduce the risk of spontaneous combustion
 - use of non-combustible cover materials
 - frequently monitoring the composition of LFG for indicators of hotspots in the waste. The EPA licence contains conditions for the prevention, detection and extinguishing of hotspots.
- 3.60 Basic fire-fighting equipment would be stored on-site, and 20,000L of secured water would be available plus water from the stormwater storage ponds. The CFA would be immediately notified in the event of a fire. Burning waste would be excavated and extinguished where possible. For deep-seated established landfill fires, the area would be capped with a low permeable material to limit oxygen intake. The LFG collection system in the affected area would be shut down using isolation valves.

PROPOSED LANDFORM RESTORATION

3.61 The proposed final landform would consist of contoured land designed to meet the following criteria:

- Planning Permit requirements
- Clause 8 of the *Mineral Resources (Sustainable Development) (Extractive Industries) Regulations 2010*
- Landfill BPEM
- a rehabilitated surface that is:
 - stable and resistant to wind and water erosion
 - suitable for revegetation
 - consistent with the surrounding land features and pre-quarry topography
 - suitable for use as public open space.

3.62 Cross sectional figures through the proposed landfill are provided in Figure 12 below.

WCC RDF Landform Design

3.63 The final landform would see the creation of two mounds peaking at RL 44 m AHD. To achieve this, the final pre-settlement surface contours (see Figure 13 below) would be formed at maximum BPEM grades (20%) tapering to minimum grades on the upper slopes.

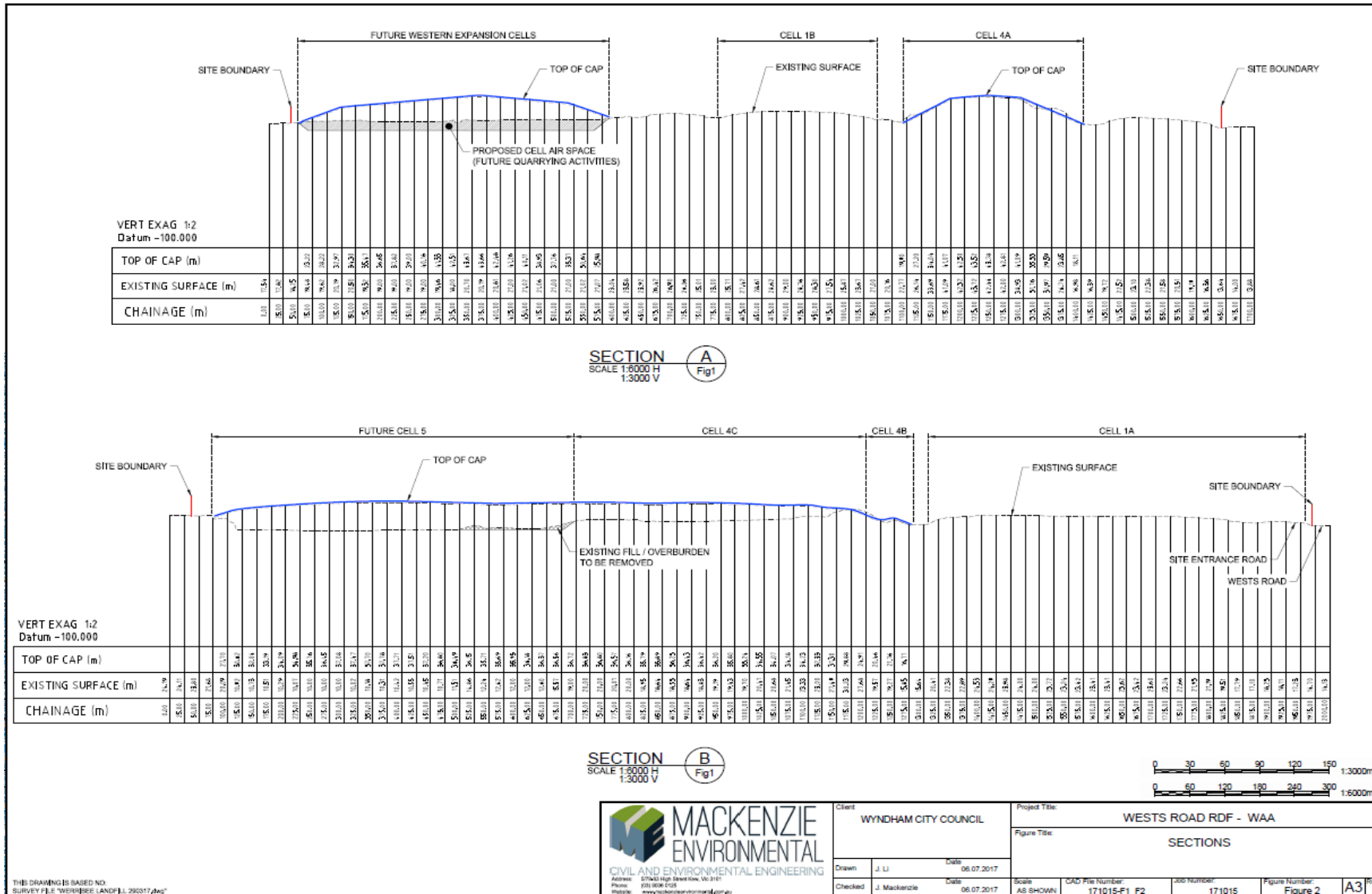


Figure 12: Cross sectional Plan



Figure 13: Pre-settlement Top of Waste Contour Plan

PROPOSED CLOSURE AND AFTERCARE MANAGEMENT

3.64 If a WA is granted, conditions would be attached to the WA and any subsequent licence, which would require that:

- the landfill to be constructed and filled in accordance with the Rehabilitation Plan and approved drawings;
- the landfill cells would be progressively rehabilitated in compliance with the licence conditions which require rehabilitation in accordance with Best Practice Environmental Management, Siting, Design, Operation and Rehabilitation of Landfills (EPA Publication 788);
- an independent annual survey would be conducted for each landfill cell which would confirm that cell heights are no greater than the approved pre-settlement contour plan;
- each landfill cell would be managed so that its final contour prior to settlement is not higher at any point than the pre-settlement contour plan included in the licence.
- the old cells (1b, 2a, 2b and 3) will be capped and rehabilitated with a phytocap in accordance with the Rehabilitation Management Plan and associated documents in Appendix A Docs 4.6,4.7 and 4.8. Rehabilitation Timetable is provided in section 5.7 of the Plan.

Failure to adhere to such licence conditions could result in EPA enforcement actions.

3.65 As closed landfill cells continue to generate LFG and leachate for many years, LFG extraction and leachate extraction systems would continue to operate after all cells are filled. The cap integrity and all ancillary systems supporting LFG and leachate management would also to be managed during aftercare. If a WA and subsequent licence is given, EPA would regulate the aftercare phase of the landfill by issuing a Post-Closure Pollution Abatement Notice (PC PAN) to WCC, which would remain in force until EPA assesses that the landfill no longer poses a risk to human health and the environment. Once the PC PAN is in force, the licence to operate the landfill is revoked.

3.66 Aftercare management and the aftercare Monitoring Program would be regulated by EPA through the PC PAN. The monitoring program would be an extension of the current auditor verified Environmental Monitoring Program for the site operations. These audits are currently carried out every two years and the monitoring plan would be assessed by the auditor and updated if required. As the closure date approaches, the auditor verified monitoring program and after care management would be developed.

3.67 WCC propose that the site post landfill closure would be used as public open space, noting that much of the land surrounding the proposal has been designated for future development. In addition, it is expected, that parts of the site may remain in use for waste management activities post closure of the landfill (e.g. transfer station, resource recovery activities).

Financial Assurance

3.68 As set out above, EPA requires landfill operators to rehabilitate landfills in accordance with EPA's guidelines – EPA Publication 1594: Financial assurance for licences and works approvals (2016) and EPA Publication 1596: Calculation of financial assurance for landfills, prescribed industrial waste (PIW) management and container washing (2016). In

the case that a landfill site is left abandoned prior to the satisfactory completion of rehabilitation, EPA also requires a Financial Assurance (FA) to be submitted by landfill operators that would be used to reimburse the State for clean-up costs incurred by EPA Victoria.

- 3.69 EPA requires the amount of FA to be reviewed and updated to reflect any changes to the future cost of rehabilitating the landfill. Progressive rehabilitation of the landfill helps to ensure that the required amount of FA is minimised, whilst the monies held in the FA would not be released back to until the EPA determines that the site no longer poses a risk to human health or the environment.
- 3.70 The FA guidance for landfill operators also includes criteria which must be met by landfill operators seeking to progressively reduce their aftercare FA. These act to encourage good landfill and aftercare management and rehabilitation.
- 3.71 Regarding the RDF, EPA holds a FA for the current landfill and would require this financial assurance to be updated for any extension of landfill activities at the RDF. As part of the response to the second s22 notice, WCC have submitted an updated FA calculation for the current activities. The amount of FA is commercial-in-confidence information. A condition of any WA granted would require the FA to be updated.

4 CONSIDERATION OF KEY ISSUES

TRACK RECORD

Why is Track Record a key Issue?

- 4.1 EPA is the environmental regulator in the State of Victoria and monitors industry to ensure it complies with the EP Act to achieve best practice environmental management to reduce potential air, noise, water and amenity impacts. EPA also investigates possible incidents of pollution, including those reported by the community. Where non-compliance is detected and proven, EPA has statutory powers to take various enforcement actions in line with the EP Act and EPA's Enforcement and Compliance Policy.
- 4.2 In the consideration of applications for Works Approvals and Licences, and transfers or amendments, s20C(3) of the EP Act states that:
- *'The Authority may refuse to issue, transfer or amend an authorisation –*
 - (c) if the person applying for the issue, transfer or amendment is a corporation, and any director or person who is concerned in the management of the corporation –*
 - (i) has been found guilty of one or more relevant offences in the 10 years immediately before the date the Authority received the application; and*
 - (ii) as a result the director or other person, is in the opinion of the Authority, not a fit and proper person to be involved in a corporation holding the authorisation, or in the case of an application for amendment, holding the authorisation in the amended form'.*

What is a Relevant Offence and what types of Actions and Notices does EPA consider in assessing track record?

- 4.3 EPA's *Guideline Works Approval Application EPA Publication 1307.10** (2015) sets out the works approval application requirements with regard to Track Record. It requires a summary of an applicant's environmental performance for the existing operations at the premises (if applicable) over the past three years, including:
- a summary of any community concerns or public feedback
 - a list of any enforcement actions received from EPA, including any written warnings, penalty infringement notices or prosecutions
 - the steps taken to deal with any environmental issues
 - and an explanation of how the WA proposal would affect any existing issues.
- 4.4 Where applicable it also requires works approval applications to:
- summarise any relevant offences as defined in s20C of the EP Act
 - indicate whether the applicant have been found guilty of any relevant offences in the past 10 years
 - indicate the recent track record of any other operations in Victoria or interstate.
- 4.5 Section 20(C) (1) of the EP Act defines a relevant offence to include an 'indictable offence' and certain summary offences.

- 4.6 In considering track record, it is noted that EPA considers and draws distinction between:
- Pollution reports made by members of the public to EPA which are recorded and used to inform investigative work by EPA's Authorised Officers
 - Remedial Notices¹ which include: Pollution Abatement Notices (PANs), Minor Works Pollution Abatement Notices (MWPAN) & Clean Up Notices
 - Penalty Infringement Notices (PINs)²
 - Prosecutions.

What is WCC's Track Record?

- 4.7 WCC have not been found guilty of a relevant offence in the ten years preceding the submission of the WAA. Accordingly s20C(3) does not apply in this instance. It is acknowledged that WCC's West Road RDF site has received a number of enforcement actions by EPA as listed in Table 5 below regarding their existing cells and associated legacy issues of a lack of leachate and LFG management infrastructure.

Table 5 Summary of Notices issued to WCC

Date	Activity Type	Number	Details
26/6/14	PAN	90004992	Requiring reduction in leachate levels in cells 1B to 4A and a hydrogeological assessment of cell 1A to determine appropriate leachate levels.
26/6/14	PAN	90004991	Requiring improvements to landfill gas management in Cells 1A to 4A and development of a progressive rehabilitation plan. Notice revoked on 26/9/15
11/6/15	PIN		For non-compliance with licence condition regarding cover. PIN confirmed following Council request for a review.
14/9/15	PIN		For non-compliance with clause 3.2 of PAN 90004491 relating to landfill gas management.
24/9/15	PAN	90004991	Revoked as it had been amended and PIN subsequently issued. Indicated a new PAN would be issued.
11/3/16	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

¹ Remedial Notices¹ require works or activities to be undertaken such as conduct a clean-up, stop works, install controls, or change a process or activity. They are served to prevent or remedy a range of non-compliances or likely non-compliances.

² PINs are used by EPA for less serious breaches of the law where the impacts are not considered serious enough to warrant prosecution. Offences for which PINs may be applied are listed in Schedule 1 of the EP Act. A PIN imposes a financial penalty for breaches of the law. Payment of a PIN is not an acknowledgement of guilt.

			amended on 29/6/16 to allow an additional 3 months for the works to be completed
30/6/17	PAN	90007289	Notice to complete construction of a new leachate storage/evaporation lagoon. Final compliance due date 30 September 2017.
10/7/17	PIN		EPA issued a PIN for contravening S.31(A)(7) requirement of PAN 90006742. This has been paid.
11/7/17	Official warning	528570	EPA issued an Official Warning for contravening S.31(A)(7) requirement of PAN 90006742
11/7/17	Official warning	528336	EPA issued a 2nd Official Warning for contravening S.31(A)(7) requirement of PAN 90006742

- 4.8 WCC's RDF site has also been the subject of a number of pollution reports. From July 2016 to July 2017 EPA received 27 pollution reports from the community relating to odour from the landfill operation activity at the site.
- 4.9 The WAA provides a summary of the complaints received since July 2014. In total, there were 38 odour complaints, 11 noise complaints and 1 litter complaint. WCC upon receiving an odour complaint immediately investigate for the possible source of the odour. In five cases the odour was ascribed to a source other than the landfill because the wind was in the wrong direction. Many of the other complaints were associated with upset conditions the main one being police investigations. Others were associated with transfer of leachate from one pond to another and re-profiling works on Cell 4A. All of the noise complaints were from the one complainant.
- 4.10 As a requirement of the licence, an Annual Performance Statement (APS) is completed every year and submitted to the EPA to review compliance with licence conditions. WCC have provided a summary of their licence non-compliances over the last three years, this summary is considered accurate.
- 4.11 Non-compliances have mainly been associated with subsurface landfill gas and groundwater contamination associated with the older unlined cells. The impacts on groundwater are minor and mainly confined to the site boundary and EPA agrees with their assessment that the risk is low.
- 4.12 The identified exceedances of the BPEM Action levels for landfill gas are mainly associated with the older landfill cells. A number of remedial activities have been taken to reduce LFG emissions and minimise the potential for gas migration off site. Some of the exceedances have been associated with Cell 4A and some very steep batters.

Conclusion

- 4.13 Whilst the EPA has received a number of pollution reports relating to the RDF and issued WCC with PANs and PINs as described above, WCC have not been found guilty of any relevant offences. It is considered that there has not been any significant or systematic non-compliance at the RDF. This is reflected in the revocation of PANs issued to WCC. WCC's recent track record and investment to resolve legacy issues has demonstrated a commitment to improving environmental performance.

The conclusions of the assessment of WCC's track record are that:

- WCC has not been found guilty of a relevant offence in the 10 years prior to making its application, so there is no basis for finding that WCC is not a fit and proper person to hold a works approval pursuant to s20C(3)
- WCC's RDF has been issued with PINs and PANs, but they have taken appropriate actions, which has resulted in the revocation of the notices
- WCC have initiated landfill management improvements in particular to resolve legacy issues increasing environmental performance at the RDF

AIR QUALITY

Why is Air Quality a key issue?

- 4.14 Landfills can pose a risk to air quality through LFG, odour and dust generation and transportation off-site. LFG and odour are a function of the decomposition of the wastes being landfilled and are considered in the relevant subsections of this assessment report. Dust can result from the movement of waste trucks and landfill equipment on internal haul roads, the active tip face and capping and rehabilitation activities.
- 4.15 The RDF site is considered to be high risk for dust and airborne particle (primarily PM₁₀) impacts due to unpaved road ways, earth movements (capping/excavations), earth stockpiles and high traffic movement.
- 4.16 The Protocol for Environmental Management (PEM) for Mining and Extractive Industries is commonly used to guide regulatory air quality assessment of high risk airborne particles/dust activities that are not mining or extractive industries, such as landfilling, where no alternative relevant guidance exists.

EPA's overall air and dust assessment

- 4.17 WCC have implemented a number of dust management practices, namely
- brush-vacuum street sweeper operating on the road and car park area
 - water cart spraying water on unsealed operational areas and roadways
 - speed limits and traffic management controls in place
 - aggregate capping on some of the unsealed roads
 - wheel wash in place for trucks entering and exiting the site
 - gate entrance/exit, car park, maintenance, and office areas are sealed.

Additionally in the summer of 2017/2018 WCC are proposing to trial a dust suppressant on the main haul road. The dust suppressant has been used on some of the council managed dirt roads throughout WCC over the last couple of years.

- 4.18 An EPA visit during the summer of 2017 in a hot dry period showed little dust generation from landfilling activities. The quarrying activities at the site were observed to generate dust. A dust monitoring program is required to confirm the amount of dust generated at this site and its impacts, and the main sources of dust within the site.
- 4.19 The dust management practices for wheel-generated dust observed by EPA officers on a site visit in 2017 listed above are considered to be best-practice dust control measures:

Conclusion

The conclusions of the review of potential effects on the air environment are that:

- the estimated air quality impacts meet the assessment criteria specified in the SEPP(AQM) - Protocol for Environment Management (PEM) for Mining and Extractive Industries
- no significant impacts from dust are expected with the proposal considered to meet SEPP AQM and the Landfill BPEM
- current dust controls are best practice and limited observations indicate they appear to be working but there is no air monitoring to verify they work all year round and during adverse conditions that are conducive to offsite dust impacts. There is no formal dust management plan with air monitoring trigger levels to activate dust contingencies and control practices to manage adverse dust events
- a formal best practice comprehensive dust management Plan is required. The dust management plan needs to also include an air monitoring program comprising of two components; (1) air program consisting of real time monitoring (PM₁₀/PM_{2.5}) to assess air quality impacts and initiate reactive management practices to respond to dust events; (2) air monitoring program to measure dust deposition for assessing nuisance dust impacts
- the proposed design and operational management practices are considered unlikely to cause any significant pollution or hazard to the air segment.

ODOUR

Why is Odour a key issue?

- 4.20 Odour is the single most frequent pollution report for the EPA, with more than one third of total pollution reports received relating to odour impacts on the community. Odour is also identified in the State Environment Protection Plan (Air Quality Management (SEPP(AQM)) which sets out the need for odour impact assessments and assessment of best practice odour controls.
- 4.21 The operation of landfill facilities are known to produce odour emissions even when the facilities are operated at best practice. Accordingly, controlling odour emissions and mitigating the residual odour emission impact on the local community are key issues associated with urban landfill planning and operation.

Climatology

- 4.22 Local climatology has a major influence on odour impacts on the area surrounding the landfill. In particular, it influences the direction and degree of atmospheric dispersion of the landfill odour emissions. Prevailing winds, atmospheric stability/turbulence, seasonality and inter-annual variability all need to be considered.
- 4.23 The prevailing winds at the RDF site (based on EPA data collected at Point Cook air monitoring station, which is considered as a representative site, and a meteorological data set constructed by EPA for the Wyndham Vale area) are from the south (11% of incident winds), followed in frequency by winds from the north (10%) and west (10%).

4.24 In a stable atmosphere 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. Analysis of wind data shows that most of the stable winds are from the northwest quadrant, which is consistent with overnight drainage flows out to Port Phillip Bay.

Odour risk assessment criteria and supporting data and information

4.25 The key considerations for the odour risk assessment are:

- i) SEPP(AQM) criterion (1 odour unit concentration) is used for the odour impact assessment at representative receptors
- ii) analysis of current operations impacts including assessment of local odour reports by local residents, on and off-site odour surveys, past and current management practices
- iii) assessment of proposed best practice odour controls as required by clause 18 (SEPP(AQM)).

Review of the WAA's Odour modelling and assessment

4.26 The WAA uses results from the Wyndham Vale Buffer study (which used the Ausplume model suite which was applicable at the time) to inform the assessment of potential odour impacts of the landfill expansion. The updated odour modelling undertaken for this WAA used (at the request of the EPA) the current regulatory model AERMOD, with the methodology, assumptions, odour emission rates, meteorological data sets and scenarios discussed and agreed with the EPA staff. The results of this assessment are presented in WCC's Odour dispersion modelling report in response to EPA's 10 April 2017 s 22 Notice request for further information.

4.27 Based on the odour dispersion modelling, the results of the dispersion modelling assessment show that:

- Current RDF throughput is approximately 530,000 tpa, based on 10 weeks of data for 2017.
- Under typical operations with a throughput of 650,000 tpa, six identified sensitive receptors would be exposed to an odour level greater than 1 OU, at the 99.9th percentile frequency.
- Under typical operations with a throughput of 650,000 tpa, no identified sensitive receptor would be exposed to an odour level greater than 5 OU, at the 99.9th percentile frequency.
- Under an upset operation where the tipping face is 1250m² or larger (35X35 m) and with a throughput of 650,000 tpa, there is at least a 40 percent chance that the closest receptor to the tipping face, RO5, would be exposed to an odour level greater than 5 OU at the 99.9th percentile frequency.
- Under modelled 24 hour operations with a typical 30X30 m (900m²) tipping face, and a resultant throughput of 850,000 tpa, the off-site odour impact at the 99.9th percentile frequency is virtually unchanged from the lower throughput of 650,000 tpa.

- The identified highest OERA risk rating at any existing residence is ‘medium’. This is based on receptor R05 during normal operations and receptors R05 and R06 during modelled upset conditions.
- The risk rating of ‘medium’ is sensitive to the modelled upset and different meteorological year conditions.
- As the tipping face moves westwards, away from the eastern boundary, the expected odour impacts on the closest receptors would decrease.
- The current as-modelled odour emissions from Council’s green waste processing operation and Veolia’s green waste transfer station have negligible off-site odour impact.

4.28 Because of the prevailing wind patterns, the zone of odour impact from the RDF mainly spreads east and south as shown in Figure 14.

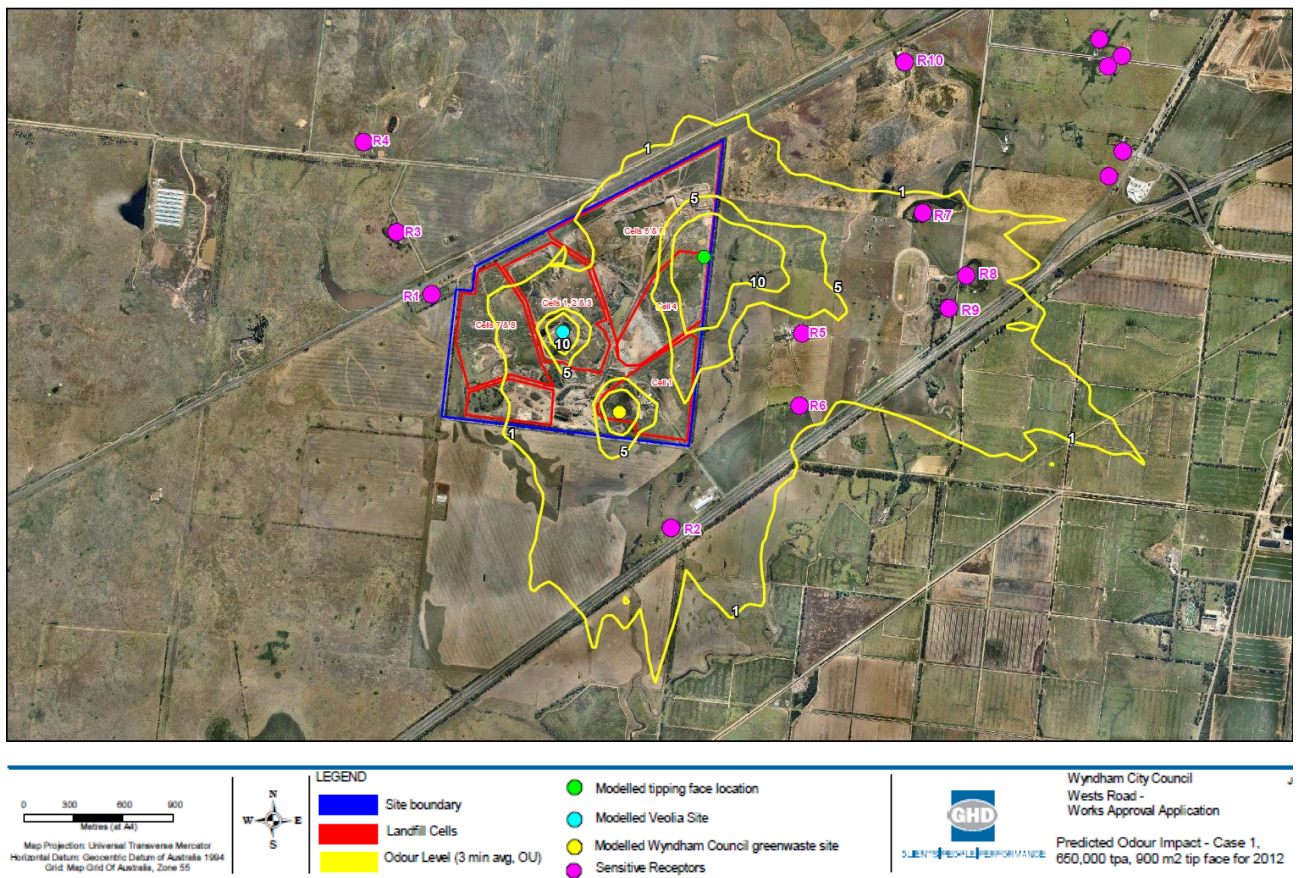


Figure 14: Predicted Odour Impact – Case 1 650,000 tpa 900 m² tip face

EPA odour surveillance studies

- 4.29 A comparison of scenario 1 with observed data collected by EPA indicates that the modelling is broadly consistent with observations. In the EPA surveys (20 surveys conducted between February and May 2017), strong odour (considered to be 4-8 OU or greater) was not detected beyond a distance of 2km away.
- 4.30 The type of odour observed from the landfill was primarily waste or rubbish type odour, LFG odour (produced from decomposition of the wastes within the landfill) was not detected during the monitoring. This observation suggests that the main source of

detectable odour off site is the tipping face and that the LFG capture system is effective in preventing odorous gases, generated from the decomposing wastes within the landfill, impacting off site.

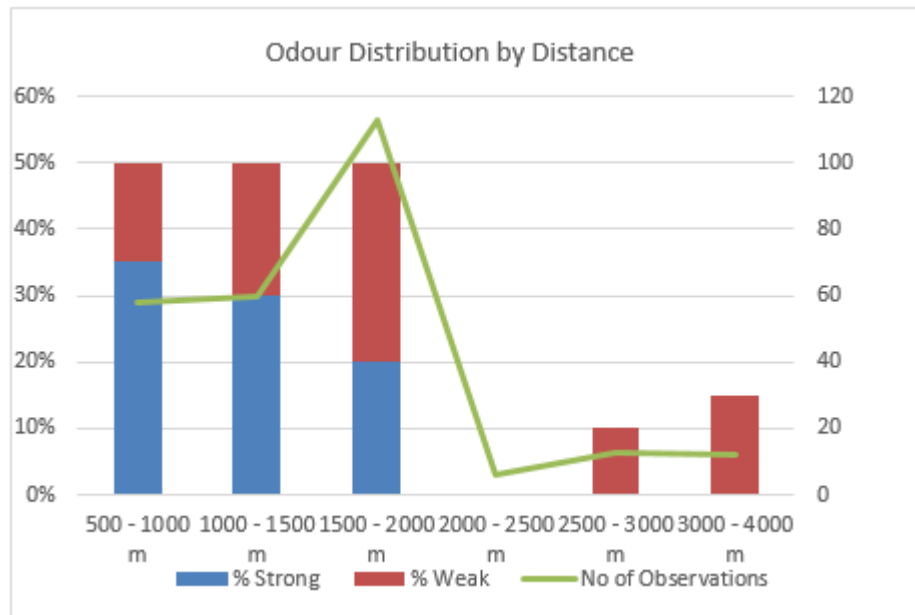


Figure 15: Odour distribution by distance – from EPA odour survey data 2017

- 4.31 EPA conducted 20 odour surveys from February to May 2017. The frequency of odour impact was determined by the number of times odour was observed downwind of the landfill divided by the number of surveys, this was repeated at set distances. Figure 15 above shows the frequency of strong and weak odours as a function of distance for odour recorded from the landfill, which gives an indication of how far odour plumes extend from the tipping face. It is highlighted that the Figure does not show the % frequency when no odour was observed on the survey.
- 4.32 EPA also considered the likelihood of odour impacts at two locations where odour complaints originate from: Browns Road and Hopetoun Road as set out below:
- Brown’s Road is approximately 1.8km east from the tipping face, so when it is downwind from the landfill strong odour is likely 20% of the time. Westerly winds occur 12 % of the time such that the likelihood of strong odour being experienced at Browns Rd is 2.4% of the time or 4 hours per week. The only strong odour recorded at this distance was waste odour.
 - Residents at Hopetoun Road are 5km north east from the tip face. The furthest location from the landfill EPA officers detected any odour (very weak) from the landfill was 3.7km. Accordingly it is unlikely that residents at Hopetoun Road would be exposed to any odour arising from this landfill.

EPA pollution reports

- 4.33 The RDF facility has received a total of 50 pollution reports over the last three years, with seven reporters making 17 reports in the last year. Compared to other comparable landfills within the state this is a relatively low level of odour reports and is likely to be a function of the location being in a rural area, with large buffers and tipping face size kept to the minimum required.

- 4.34 At the RDF, the tipping face is kept at 900m² or less except during upset conditions. The odour dispersion modelling found that if the tipping face was increased to the maximum size allowed by the licence (1250m²) that a fairly substantial increase in odour impact could be expected. Keeping the tipping face at 900m² but increasing the throughput had little effect on the estimated odour impact.
- 4.35 The manager of the RDF was asked how they would be able to maintain the size of the tipping face as throughput increase over time, the response is as follows.
- “The reality will be that there is a maximum tip face size specified by the licence which will not be exceeded and this maximum would only be used when the geometry of the tip face relative to the cell layout (e.g. working in a corner) means you need a slightly larger tip face. Under normal operations the tip face would be no more than 900m² with a tip pad that would be a max of 30m wide (preferably around 600-750m²). If throughput increases the most likely outcome is that vehicles will have to queue during peak periods. This is much more preferable to widening the tip face to 40m (say). With a larger tip face traffic management and operational safety become critical considerations as well. Queuing is currently uncommon at the RDF whereas it is, I believe, common at some other landfills. So the size of the tip face can be independent of the throughput to a large extent.”*
- 4.36 This response is considered acceptable and provides reassurance that the operators of the RDF are focussed on minimising the area of the tipping face a key factor in determining the odour impact.
- 4.37 As development of surrounding areas progresses there would be encroachment upon the landfill. As described in paragraphs 1.29 to 1.38 WCC propose to address this using planning controls such as an ESO). The proposed extent of the ESO would be subject to some revision using the latest odour dispersion modelling results, which has not yet occurred. It is likely to be similar to the yellow (medium [odour] risk in Figure 16 overleaf (plus the EPA Default 500m Buffer) which is based on the previous odour modelling. It is also noted that as landfilling progresses it would initially move northwards then westwards after about 2022. After this time the landfilling activities would be occurring to the west of the landfill mound of cells four and five. This would provide a shield to the developing urban areas which would be approaching from the north east.

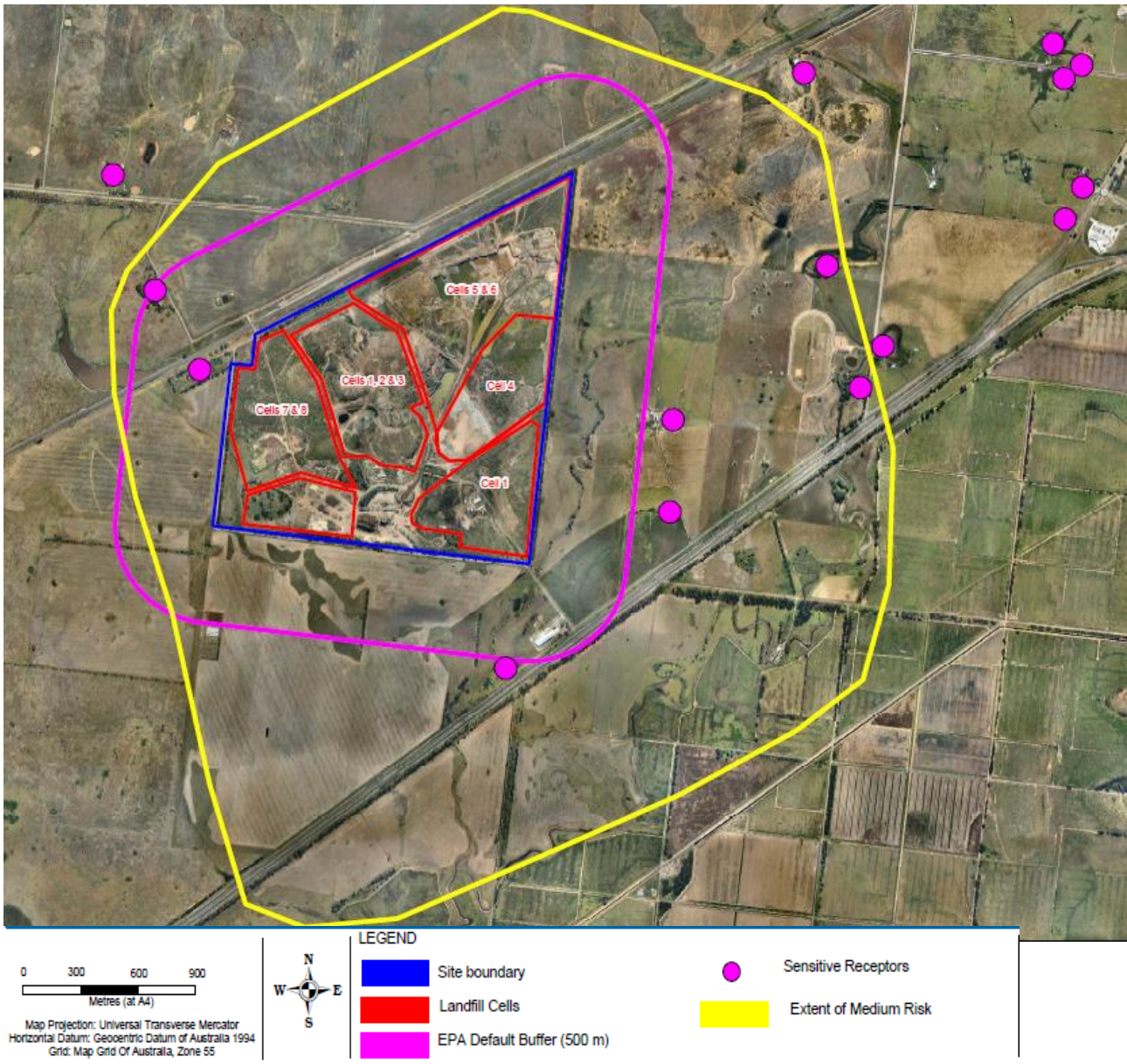


Figure 16 Extent of medium risk (odour)

EPA Assessment of proposed best practice odour controls

4.38 Key best practice odour control at the site includes:

- application of daily cover
- restricting tipping face of the landfill to an area of 900m², covering and compacting daily waste promptly after being deposited, completing daily, interim and final capping as per the best practice standards
- implementing and operating best practice LFG extraction and management system as per best practice requirements
- installing (sacrificial) horizontal gas wells in newly covered areas of the cells
- operating waste gas to energy system as per best practice requirements

- aeration of leachate ponds
- undertaking odour impacts assessments around the landfill to guide and trigger odour mitigation activities as required.

4.39 EPA considers that the proposed measures do meet odour management best practice, such that they meet Clauses 18 and 19 of SEPP (AQM).

Odour and Height

4.40 The perception of some of the residents to the east of the RDF is that odour has been more noticeable since WCC have been landfilling at height (Cells 4A, 4B and 4C). The odour dispersion modelling report is based on modelling the tipping face at ground level which is presented as a worst-case scenario. The reason for this is that if an elevated source was used, the model predicts greater dispersion resulting in lower odour concentrations at ground level.

4.41 EPA considers this as unrealistic and that an odour plume emitted from a high mound could behave differently and that current models are not able to model odour emissions from a high mound realistically. With regards to the perception that odour is more noticeable since the landfill operations have moved to the full height, EPA consider this could also be because the tipping face has moved eastward by at least 500m during the filling of Cells 4A, 4B and 4C and is more likely to account for the increased perception of odour by residents to the east.

4.42 ILEAP recommended that the odour modelling be re-done to take into account the change in profile of the landfill mound following the removal of the piggy back cells. EPA's odour experts view is that this exercise would be unlikely to alter the odour contours as the model would not be able to adequately model the differences. Additionally, EPA's focus is on ensuring that there are appropriate operational management measures in place to minimise odour emissions at source.

EPA's Overall Odour impact assessment

4.43 Given there is evidence of occasional odour detection in the area beyond 1.5km up to 5 km for weak odour, this would indicate that the 1 odour unit threshold is being exceeded at the boundary. Consequently EPA has assessed the odour risk and considers it to be low to medium risk as identified in the latest Odour Dispersion modelling report (Appendix A Doc 2.16). The risk of odour impact is likely to decrease after the filling of Cell 5A and as the tipping face moves westwards further away from the receptors and behind the completed Cells 4A, 4B, 4C and 5A. The increased separation distance as the tipping face moves westwards would decrease the odour impacts to the east and south. The closest residence to the RDF at the north-west corner of the site has recently been purchased by WCC.

4.44 The combination of the on-site odour reduction measures (as required in the Odour Management Plan) and the introduction of the ESO is considered to represent best practice.

4.45 If WA is issued, it is recommended that the Odour Management Plan presented as a part of the WAA and current as of 2015 be updated on a regular basis. This should include but not be limited to:

- the submission and approval by EPA of an updated Odour Management and Monitoring Plan which should detail the odour management controls and monitoring regime to be undertaken during the life of the landfill including but not limited to:
 - a) Identification of potential odour sources and receptors
 - b) Specifying the odour mitigation measures and procedures to manage the odour impact off-site of the various potential odour sources and to mitigate the off-site odour impacts
 - c) Comprehensive monitoring practices, including surveillance by independent and appropriately trained personnel
 - d) Procedures for addressing the odour source if a report is verified, including consideration of any mitigation measures or operational changes that might be required
 - e) Provision of surveillance or monitoring records to the Community Consultation Committee, the Responsible Authority and the Environment Protection Authority
 - f) Incorporation of a requirement to assess new odour management technologies or tools on a regular basis.

The approved Odour Management and Monitoring Plan must be implemented to the satisfaction of the Authority and must be reviewed, and if necessary, updated every 5 years to the satisfaction of the Authority.

Conclusion

The conclusions of the review of potential odour effects on the environment are that:

- Odour dispersion modelling estimates used to evaluate the odour impact assessment is associated with significant uncertainty, and therefore the odour impact assessment was compared with EPA data on observed odour impacts to verify the overall odour risk assessment.
- Based on current odour complaints (landfill operation activities for 2016) and EPA odour surveys in 2017, it can be concluded that the detections were consistent with landfills that operate with best practice odour controls.
- Odour modelling is showing that the variability in odour levels is generally consistent over five years, indicating that the future odour impacts are likely to be similar to the odour observed from the current landfill during 2016/17.
- If the WCC proposed ESO is adopted, this would assist in protecting the buffer around the RDF site and with the adoption of best practice controls to reduce potential odour release at source, have the effect of reducing potential land use conflict.
- A works approval condition, requiring a robust Odour Management Plan which is updated on a regular basis is recommended.

LANDFILL GAS

Why is Landfill Gas a key issue?

- 4.46 Landfill gas (LFG) is an asphyxiant and potentially explosive when mixed with air. It also contains potent greenhouse gases. LFG is emitted to atmosphere and can migrate through the geology and underground service structures surrounding the landfill. For

these reasons, LFG requires rigorous management and monitoring. Internationally, best practice landfill management and monitoring is well established and the WAA meets best practice. The impacts of the proposed LFG management hazard reduction are considered in this section. LFG has odorous components that are also managed as part of this process. Consequently, LFG Management is a key consideration of the Landfill BPEM.

Review of the WAA's Landfill Gas Risk Assessment and EPA's Assessment

- 4.47 In accordance with the Landfill BPEM a site-specific LFG Risk Assessment (LFGRA) has been prepared and presented as part of the WAA.
- 4.48 The LFGRA is based on a conceptual model of the site that accounts for the site size, topography, meteorology, cell liners, waste types, LFG generation, leachate generation and the progressive rehabilitation plan. The model then sets the site characteristics in its geological, hydrogeological, hydrological, air quality and human and environmental receptor context. Quantitative and qualitative risk assessments were carried out.
- 4.49 The LFGRA is considered appropriate, includes monitoring and meets BPEM requirements.

Legacy landfill gas issues

- 4.50 The LFGRA identifies a number of significant risks mainly associated with the older cells (1 to 3). These older cells, although constructed to the standards of the time do not have BPEM compliant liners, leachate collection systems, landfill gas capture systems or final capping.
- 4.51 Although the management of landfill gas issues in the older cells is not specifically a part of this WAA, it is an important part of the management of the site as a whole and needs to be considered as a part of the LFG assessment. With regards the LFG issues with the older cells, it is noted that WCC is taking several steps that will reduce the risks identified in the LFGRA, they are:
- bringing forward the rehabilitation schedule for cells 1B to 3, facilitated by the removal of the piggy back cells. The capping will reduce emissions of LFG and reduce leachate generation in these areas
 - installation of additional LFG extraction wells in this older area
 - installation of a 20ML leachate pond (completed in august 2017) to enable reduction of the leachate levels (legacy leachate see paragraphs 3.34 – 3.35)
 - expansion of the landfill gas bore monitoring network to meet the spacing requirements outlined in Appendix B of the Landfill BPEM. Recommended landfill gas bore monitoring spacing table will be done by WCC before any expansion of the new landfill cells across the site that are approved by EPA as a result of this WAA.

Landfill Gas Management

- 4.52 The LFG management system is described in paragraphs 3.60 – 3.67. Whilst there is much discussion of LFG management in the WAA and the LFGRA, there is no standalone document covering LFG management. It is recommended that should a WA be issued, a suitably worded condition should be included requiring the provision of a LFG Management Plan – see WA-W1(e). The plan should address the recommendations of

the site specific LFGRA and detail how compliance with licence condition L5 (meeting BPEM gas action levels) will be achieved.

- 4.53 LFG management practices must demonstrate all practicable measures to meet the LFG action levels (emissions limits) stipulated in Landfill BPEM. This requirement is further specified in standard licence condition L5 (You must take all practicable measures to prevent emissions of LFG from exceeding the action levels specified in Table 6.4 of the Landfill BPEM).
- 4.54 The WAA proposes standard practices of drilling LFG wells into filled cells which are connected to transmission pipework, which in turn is connected to vacuum extraction and LFG combustion equipment. The Landfill BPEM LFG hierarchy is met by the combustion of LFG in engines with connected electrical generators. Effective LFG control to meet Landfill BPEM LFG action levels cannot be achieved if proper progressive rehabilitation is not undertaken, progressive rehabilitation will be regulated by licence conditions L22 and L23. Active LFG extraction would be installed in each completed cell soon after filling has ceased and intermediate cover has been placed. This would reduce odours significantly from those completed cells. Sequential final capping of each cell would follow the intermediate cover, this further reduces odorous emissions by increasing the cap thickness which allows improved LFG collection efficiency. The proposed LFG well spacings are 40m which is considered appropriate as it accords with international best practice. However, the primary driver of spacing is compliance with licence condition L5, if more wells are required to comply, the 40m spacings will be reduced.

Landfill Gas Monitoring

- 4.55 A LFG monitoring program is described in the LFGRA document and is an extension of that currently operated at the RDF site and comprises monitoring of sub-surface geology, surface emissions and buildings and structures on-site and off-site in immediate surrounds.
- 4.56 The operation of the LMS waste to energy facility is a key part of WCC's overall strategy to achieve emission limits for LFG. The current system extracts approximately 12 million m³ of LFG per year.
- 4.57 Monthly data is provided by LMS to WCC on the performance of the LFG system, including performance data for each gas well. This data is used to determine the effectiveness of the gas collection system and identify any wells with excessive ingress of air. Where a high level of ingress is detected the following steps are taken:
- Reduce the flow rate on the individual well;
 - Evaluate the level of cover and capping near the well;
 - Assess the well infrastructure for damage or leaks.
- 4.58 All filled cells are monitored for surface methane emissions. These cells presently comprise Cells 1A, 1B, 2A, 2B, 3, 4A and 4B. Surface methane emissions are also monitored within the quarry voids.
- 4.59 Underground services across the Holcim and RDF areas are also monitored e.g. telecommunications pits, stormwater pits, and electrical conduit pits. Buildings and structures across the Holcim and RDF area are also monitored.

- 4.60 A network of monitoring bores (31 in total) mainly around the perimeter of the landfill is used to assess the sub surface geology ground gas. This monitoring has occurred since December 2011.
- 4.61 This monitoring program would be used to provide feedback to the operation of the gas extraction system. The two major triggers for investigation are a breach of the Landfill BPEM gas action levels and odour. Recommended spacings for the perimeter LFG monitoring bores (monitoring for sub-surface LFG migration) is contained within Landfill BPEM, the WAA does not make a commitment to these spacings. The LFGRA recommended that the bore network be upgraded to meet the BPEM requirements for spacing, this can be addressed through a works approval condition.
- 4.62 It is recommended that a pre-construction condition of any works approval issued includes for the preparation of a LFG Monitoring and Management Plan – see WA-W1(e).
- 4.63 It is noted that the monitoring program, LFG risk assessment and operational audits form a continuous cycle, whereby the monitoring program is updated after the risk assessment is reviewed and re-verified at each environmental audit. Monitoring frequency, type and locations are increased or decreased according to the ongoing risk assessment.

Landfill Gas Odour Control

- 4.64 The WAA proposes extraction of LFG from each active cell using horizontal (sacrificial) gas collection wells. This is recognised best practice and is noted in Landfill BPEM. This measure reduces LFG odour from the active cell but does not prevent it. Other than daily cover the active cell is open to atmosphere and emissions of significant odours from it is the nature of landfilling, hence why a sufficient amenity buffer must be maintained.

Conclusion

The conclusions of the review of the proposed LFG management and monitoring measures are that:

- best practice LFG management and monitoring is proposed and described in the WAA and LFGRA documents and can be expected to be reinforced by EPA licence conditions, as happens with the current operation. The proposed and current management and monitoring represents expected practicable measures to achieve the Landfill BPEM LFG action levels and aligns with the LFG risk assessment.
- the proposed and current LFG management practices represent best practice and comply with BPEM and the Landfill Waste Management Policy.

GROUNDWATER

Why is Groundwater a key issue?

- 4.65 Groundwater is a segment of the environment which has a wide range of interactions with other parts of the environment. Groundwater discharges into surface environments and in many cases contributes a significant proportion of the base flow of streams. Ensuring that groundwater quality does not adversely affect surface water ecosystems is integral to the protection of these ecosystems and other beneficial uses of surface environments such as drinking water and recreation uses. The SEPP (GoV) is an important aspect of Victoria's regulatory framework for protecting and improving Victoria's groundwater, by providing

clear and relevant standards and legal obligations. This includes protecting environmental values and human activities from the effect of pollution and waste.

Review of the WAA’s Groundwater Assessment and EPA’s Assessment

- 4.66 The assessment of groundwater information provided in the WAA was compared against the EP Act and SEPP (GoV) which are discussed in paragraph 1.46 (the EP Act) and paragraph 1.50 (SEPP (GoV)) above. In particular, the definition of pollution in Section 4 of the EP Act was considered in conjunction with Section 39 (1) of the EP Act regarding what constitutes "pollution of waters".
- 4.67 In reviewing the WAA, SEPP (GoV) was referenced to confirm what was considered to be the baseline regional and site-specific groundwater conditions. Key sections of SEPP (GoV) that were considered as part of the review were:
- Section 4 - Definitions, specifically "background levels"
 - Clause 8 - Segments of the groundwater environment
 - Clause 9 - Beneficial uses
 - Clause 10 - Groundwater quality indicators and objectives
 - Clause 21 – Rising water-tables.
- 4.68 As described in section 2 of this WAAAR, further information was requested through s22 Notices to confirm various aspects of the groundwater resources (i.e. depth, quality and segment) to inform this technical assessment.

Classification of background levels and segment

- 4.69 The background water quality, as determined by groundwater monitoring bore 13, is summarised in Table 14 of the WAA (Appendix A Doc 1) and reproduced below in Table 6.

Table 6: Groundwater Quality at the RDF as determined from monitoring bore S13

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

- 4.70 As can be seen in Table 6 the TDS levels would place the groundwater in Segment C. Whilst EPA considers that the groundwater would probably be classified as Segment C, EPA did not accept the results from one bore that was possibly being affected by the activities at the site as being representative of regional groundwater quality.

- 4.71 EPA requested WCC provide further information on the regional groundwater quality in the first s22 notice. WCC were unable to do so and have committed to installing a number of off-site bores so as the undisturbed regional groundwater quality and level can be determined. Accordingly, additional design and management measures to protect groundwater in the future cells are required. WCC has proposed additional design and management measures as described in paragraph 3.26 of this WAAAR.

Protected Beneficial Uses

- 4.72 The protected beneficial uses for various classes of groundwater are shown in the Table 7 below. The relevant beneficial uses to be protected for Segment C groundwater are stock watering, industrial water use, primary contact recreation, buildings and structures and ecosystem protection.

Table 7 Protected 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	✓	✓	✓	✓	✓

Groundwater Bore Use

- 4.73 No existing beneficial users of groundwater have been identified within 700 m of the site.

Findings of the s53V audits and Legacy Contamination

- 4.74 As described in section 4.4 of the WAA (Appendix A Doc 1). and the 2014 53V Audit, groundwater monitoring has shown some small changes in the quality of the underlying groundwater compared to background levels (mainly for TOC, ammonia, total nitrogen, bicarbonate, manganese and iron) which appear to be associated with the landfill. The extent of groundwater impacts and their likely future behaviour was assessed by the site's Environmental Auditor, within the 53V audit, in the context of the potential impact on the existing and potential beneficial uses of the groundwater near the RDF site.
- 4.75 The nearest potential surface water body that may be affected by groundwater contamination is Port Phillip Bay 7km away. The Environmental Auditor concluded that at

present, there was a negligible risk to the ecosystems of Port Phillip Bay (mainly due to the large distance to the surface water and the low contaminant concentrations at the down gradient site boundary).

4.76 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 stock watering groundwater use in the vicinity of the site suggested 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, it is reasonable to assume that risks to recreational users of Port Phillip Bay were also negligible.
- it is reasonable to assume that there are no unacceptable risks associated with off-site properties extracting groundwater for the purposes of filling a swimming pool.

4.77 The contamination is mostly confined to the site boundaries and the source of contamination is considered to be the old landfill cells, particularly Cell 1A which was unlined, and de-commissioned leachate pond. The earlier cells were constructed to the standards that applied at the time and were un-lined or had a base liner but no side lining. The old leachate pond was also unlined.

4.78 Two fully lined and BPEM compliant leachate ponds were built and commissioned in 2014 and 2017.

4.79 WCC is implementing actions identified in the s53V audits of the existing landfill to reduce the leachate levels in the old cells (see section 3.34). Due to the very high level of containment provided by a landfill constructed to BPEM standards, the most recent cells (4A, 4B and 4C) and any future cells are not expected to significantly affect groundwater quality.

Conclusion

The conclusions of the review of potential effects on the groundwater environment are that:

- whilst there is limited groundwater quality data, it is considered that the groundwater aquifer under the site can be classified as Segment C
- groundwater monitoring from the existing landfill indicates that there has been some groundwater contamination compared to background, this contamination is largely contained to the site and contaminant concentrations at the hydraulically downgradient boundaries of the premises are low.
- the potential risk to human health and the environment were considered, by the environmental auditor to be low based on the nature and limited extent of elevated concentrations of potential contaminants in groundwater e.g. TOC, ammonia, bicarbonate, manganese and iron.
- the WAA and supplementary information provided were considered to comply with SEPP (GoV) such that the WAA is not expected to adversely affect the interests of any person other than the applicant.
- the works proposed in the WAA are not expected to adversely affect the quality of the groundwater nor cause any pollution or environmental hazard as the proposed works are assessed to be in accordance with the Landfill BPEM.
- WCC in response to the 1st s22 Notice requesting further information on groundwater quality and depth has proposed to install a series of groundwater bores to characterise the long term undisturbed groundwater quality and depth of the region.

Groundwater Monitoring and Management

4.80 WCC is and has implemented a number of actions to reduce future risks to the groundwater, consistent with the Environmental Auditor recommendations made in the 2013/14 Audit report including:

- Ongoing monitoring of groundwater conditions at the site, with a number of changes to the Monitoring Program being implemented as per auditor recommendations. Additionally as a part of the first s22 notice response (Appendix A Doc. 2.5) WCC has committed to the installation of additional bores.
- An assessment of hydraulics properties of the aquifer formation to obtain a greater understanding on the likely future behaviour of the contaminants has been completed.
- Develop a leachate management plan. A plan was developed in 2015 and submitted with the WAA. This plan was updated in response to the first S22 notice served on 19 January 2017 and assessed as acceptable by EPA.

SURFACE WATER

Why is Surface Water a key issue?

- 4.81 Surface waters, in the form of creeks, wetlands and estuaries, support important environmental values such as fish, frogs and other wildlife, as well as providing valuable places for both passive and active recreation by people. These waterways in turn depend on the catchments that feed them with catchment runoff being a key factor in determining whether a waterway is healthy or not. The more contaminants in the runoff, the more likely that a waterway would be adversely impacted. SEPP WoV defines objectives for key indicators for rivers and streams throughout Victoria and requires that discharges do not adversely change background conditions. Whilst the objectives in SEPP WoV apply to permanent water bodies they can be used as a guide for the desirable water quality in ephemeral systems such as Cherry Creek.

Review of the WAA's the Surface Water Assessment and EPA's Assessment

- 4.82 The RDF site lies within the Cherry Creek catchment and is set in a rural area comprising quarrying, grazing land and isolated residential dwellings. Cherry Creek (an ephemeral Creek) cuts through the south west corner of the site running in a north west to south east direction. A tributary of Cherry Creek runs close to the eastern boundary of the site. The two waterways converge approximately 1.5km south of the site. Cherry Creek joins Lollypop Creek 3km south of the site which runs about 7km into Port Phillip Bay.
- 4.83 The majority of runoff from the site remains within the site boundary ponding in low lying areas. The remainder is discharged to the roadside stormwater system on Wests Road via the eastern boundary swale. The WAA lists the following measures for control of surface water flows:
- All leachate/polluted surface water is directed to leachate ponds.
 - Drainage channel to prevent runoff from entering the site or landfill cells.
 - Bunding approximately 4m high around the northern, eastern and southern boundaries of the site, to control off-site discharge of surface water. Runoff 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 would be managed by way of collection drains around the perimeter of the cell which would divert run-off from the caps to a sediment control pond prior to any potential discharge from site.
 - Rainwater tanks collect rainwater from the roofs of buildings within the transfer station for reuse on site.
- 4.84 WCC has been monitoring surface water quality at a number of locations in the vicinity of the RDF following a suggestion by the CRG in early 2016. The environmental monitoring program required by EPA was reviewed in March 2017 and verified by an independent Environmental Auditor. The revised plan now formally includes monitoring of surface water quality. Sampling is carried out on a quarterly basis if there is flow.

Potential Impacts on Surface Water

- 4.85 No significant water issues are anticipated as most of the rain that falls onto the site is captured within the pit and used for dust suppression, washing plant and equipment,

landscaping, general cleaning, drinking or evaporates. All the proposed cells would be constructed with BPEM compliant liners and caps, leachate capture and treatment systems and stormwater control systems. The high level of containment afforded by these systems would prevent any significant contamination of groundwater or surface water.

Potential Impacts of Surface Water on the RDF

- 4.86 Some of the submissions from the public raised the potential issue of a historic creek diversion on the north side of the RDF and does it represent a risk to the RDF. The concern is that under extreme rain events the old water course which was diverted by the quarry operators may resume its old course through the RDF site. The quarry operator advised WCC that prior to commencement of rock extraction activities there was an old creek line in the north central part of the site. In the early 1990s this surface drainage was redirected away from the site boundary to a storage dam in the north west section of the site. Heavy rain in the summer of 2010/11 resulted in the existing levee banks being breached and a considerable amount of surface water entered the site from the rail line culvert area. Following this the entire levee bank was strengthened considerably (adding height and width) no further breaches and surface water inflows have occurred since. Based on this it is considered that there is no further risk to the RDF from this old water course.
- 4.87 Another concern was with flooding and that the 1:100 flood overlay prepared by Melbourne Water appeared to show that the north east section of the site, approximately where Cell 5 would be located, would be subject to inundation. This was referred to Melbourne Water (see section 2.18 – 2.19). MW confirmed that the apparent inundation was a modelling anomaly arising from the quarry hole being the lowest point in the digital elevation model (DEM). The small section of waterway (Cherry Creek) in the south west portion of the site is valid.

Stormwater Management Plan Review

- 4.88 As described in Section 2 of this WAAAR, further information was requested from WCC via a s22 notice request and Stormy Water Solutions (SWS) were engaged by EPA to Independently Peer Review the WAA's stormwater management plan.
- 4.89 The Peer Review (see Appendix H) concluded that the site and staging delineation detailed in the June 2017 SWMP is transparent and clear. However because of the calculation methods used SWS concluded that design flows could be low and there is potential undersizing of some of the stormwater management structures. The report made a number of recommendations regarding calculations, including the use of modelling to better estimate peak flow rates and volumes and better predict pollutant level reduction at all site outfall points.
- 4.90 The SWS report concluded as follows *“There appears to be adequate site area to modify and change designs over time as the design process goes forward. Therefore, provided transparent and detailed calculations as recommended in this report are undertaken going forward (as part of the design development process), SWS considers the usual EPA requirements can be met. By completing detailed calculations, modelling and site analysis, SWS considers that the requirements as detailed above will be shown to be met as the design process develops. However, in meeting these requirements additional land*

take for drainage assets (in addition to what is shown in the June 2017 SWMP) may be required.”

- 4.91 EPA’s assessment of the review considered that these were details that could be addressed at the detailed design phase. The third s22 notice requested WCC to outline their approach in the detailed design phase, taking into consideration the recommendations of the report and the concerns of ILEAP regarding erosion control. The proposed response was assessed by EPA as acceptable.
- 4.92 It is recommended that should a WA be issued, a suitably worded condition should be included requiring the provision of additional design information at the detailed design stage– see paragraph 5.13 and WA_W1(c).

Conclusion

The conclusions of the review of potential effects on the surface water environment are that:

- no significant impacts from stormwater are expected with the proposal considered to meet requirements of the Landfill BPEM.
- no significant impacts are expected on the surface water segment.
- MW confirmed that the apparent area of inundation in the 1% AEP flood extent was a modelling anomaly.
- Strengthening of the bund wall along the northern boundary and addition to its height has eliminated the risk of flooding from an old water course.
- the proposed design and operational management practices are considered unlikely to cause any pollution or hazard to surface waters.
- the SWMP would require further development to address issues raised by SWS but this can be done at the detailed design stage.

Surface Water Monitoring and Management

- 4.93 In the event that WA is issued, ongoing physical and chemical surface water monitoring would be required at where the sediment ponds discharge to the environment in order to ensure no contamination due to leachate or sediment. The implementation of this monitoring should be secured through suitably worded conditions – see WA_R4 (g).

The Surface Water Monitoring and Management Plan should include but not be limited to;

- sampling of water at retention points prior to discharge to the environment and downstream of the site in Cherry Creek;
- visual inspection of sediment and erosion control facilities and other potential sources of contamination;
- a sampling plan and methods consistent with those in EPA publication IWRG701;
- routine testing of stormwater for, but not limited to, the following physico-chemical parameters: total phosphorus and nitrogen, turbidity, electrical conductivity, pH, and dissolved oxygen with occasional testing for heavy metals and indicators of leachate. The sampling frequency and reporting is to be agreed with EPA as are the action levels for each parameter.

- 4.94 It is noted that the Environmental Auditor approved Environmental Monitoring plan for the RDF includes monitoring of groundwater (levels and quality), surface water quality on a quarterly basis, leachate levels and leachate quality. This would be adequate to detect any possible contamination or potential sources of contamination of surrounding water bodies.

NOISE

Why is Noise a key issue?

- 4.95 Excessive noise can adversely impact on sleep and domestic activities. Noise levels that protect the environment for these uses are set by the SEPP (Control of Noise from Commerce, Trade and Industry) No. N-1.

SEPP and Guidance Requirements

- 4.96 Noise from commercial and industrial premises within the Melbourne metropolitan area such as a landfill must meet the requirements of SEPP(N-1). The policy sets the mechanism for determining the permissible noise levels that apply at any noise affected sensitive location (usually a residential location). The permissible noise levels are determined by the planning zoning around the sensitive location as adjusted by application of Schedule B of the SEPP.
- 4.97 EPA Publications 1254 “Noise Control Guidelines” and 480 “Environmental Guidelines for Major Construction Sites” provide requirements that apply to construction noise. In summary, the requirements are that noise is minimised during the daytime period and a number of “best practice” options provided. The noise should not be more than 10 dBA above background during evening and weekends if construction is less than 18 months. Works that are unavoidable are permitted at any time. “Unavoidable works” are the activities that can only be undertaken outside the daytime period for safety or other reasons.

Review of the WAA’s Noise Assessment and EPA’s Assessment

Baseline

- 4.98 In applying the zoning method in Schedule B of SEPP (N-1), different locations may have different noise limits. The range for daytime levels is 50-56 dBA, evening 44-53 dbA and 40-48 dBA for the night period. The days of the week and times for these periods are specified in SEPP(N-1). The noise limits are specified in the noise modelling report (Appendix A Doc. 2.15) response to first s22 notice, Table 12. It is considered that these noise limits have been calculated correctly.
- 4.99 Under SEPP(N-1) the background is measured in the absence of any industrial noise and the permissible noise limit is the sum of all industrial noise and not just the new or altered source.

Review of the WAA Modelled Noise Emissions

- 4.100 Expected noise from the landfill has been modelled using CadNaA v 4.6, taking into account airborne operational noise and applying the method in ISO 9612-2 Acoustics –

Attenuation of sound during propagation outdoors. EPA considers that this model and method is appropriate for assessing the noise from the proposed landfill.

- 4.101 The model included noise from the quarry, transfer station, Veolia Organic Waste transfer facility and the LMS waste to energy facility in assessing the impact of the proposed landfill and included the effect of topography.
- 4.102 Scenarios and activities that are likely to maximise the noise from the premises at the nearby sensitive locations have been modelled.

Review of the WAA Noise Assessment and EPA's Assessment

- 4.103 Eight sensitive receptors for noise were identified. Analysis of the noise modelling results (Appendix A Doc. 2.15) reveals that there are occasional exceedances at some receptors under some scenarios. The scenarios correspond to the filling of individual cells. The WAA assumes that the worst case is when filling is at the closest point to the boundary and at the maximum height. Under worst case conditions, noise management actions are required to reduce the predicted noise. Accordingly, an acoustic management plan has been prepared Appendix I in the WAA (Appendix A Doc 1) and was reviewed by EPA. The following points are noted.
- the acoustic management program is adequate for assessing the noise from the current tipping operation
 - the acoustic management plan should be reviewed as the tipping face moves to ensure it is providing an adequate assessment of the noise generated by the landfill
 - the acoustic management plan provides a list of actions to be taken to minimise the noise from the landfill. The list of recommended actions appears to be comprehensive
 - the acoustic management plan should provide a mechanism (such as auditing) that assesses the implementation of the actions specified. This should also include the maintenance and inspection of training records
- 4.104 A review of the noise reports recorded in recent years, indicate that they arise from one of the eight modelled receptors and interestingly that the modelling did not predict exceedances at this location under any scenario. Noise levels were predicted to just meet the night time noise criteria which is when the lowest levels apply at a receptor and when noise is most likely to have an adverse impact. The model predicts the highest level of noise at location R7# under the current scenario will be the filling of Cell 4C and that noise levels at location R7# would decrease as the tipping face moves further away with the filling of subsequent cells. The existence of noise reports made to EPA from this source suggest there may actually be some exceedance of SEPP (N1) at this location. To check this EPA installed a noise logger at this location for a week. The following observations were noted:
- the noise measurements confirm the background levels and noise limits derived for this location
 - the level of background noise is high with two sources. The most constant one is the Princes Freeway which is less than 1km away, the other is the Geelong-Melbourne railway line less than 1km to the north. Railway noise although loudest is intermittent and of short duration. At most times landfill noise could not be distinguished above the background noise.

- on the occasions landfill noise could be distinguished levels were generally below the noise limits. On one occasion the landfill was up to about 5 dBA over the limit and on another 1-3 dBA over the limit.
- the exceedances are considered minor but indicate there is a need for mitigation actions if the SEPP noise limits are to be met at all times.
- it was noted by EPA that the containers that are being used as a portable noise barrier were not in place at the time.

4.105 It is recommended that if a works approval is issued that conditions be in place to ensure that a suitable noise management plan is updated and put in place before the filling of each new cell commences. The plan needs to include the following:

- identification of the receptors most likely to be impacted by the filling of a particular cell.
- identification of mitigation actions to be employed
- a program of monitoring and reporting including installation of noise loggers to assess noise levels at receptors and the effectiveness of mitigation actions.
- the monitoring program to include logging of any noise complaints and any follow up actions
- auditing of the monitoring program including auditing of the implementation of management and mitigation actions
- regular reporting to EPA especially of non-compliances with noise limits.

Conclusion

The conclusions of the review of potential noise effects on the environment are that:

- noise permissible noise limits in the application have been calculated in accordance with methods in SEPP(N-1)
- noise generation from all sources have been assessed.
- EPA has concluded on the basis of the WAA that the risk is minimal if all mitigation measures are adhered to, including earth berms and the use of the portable noise barriers.
- some slight exceedances were measured by EPA at the receptor who seems most affected by noise from the current operations. The noise modelling although predicting compliance at this point (just under the limits) did predict the noise levels to decrease in future operations.
- noise measurements should be undertaken to confirm the assumptions and effectiveness of noise abatement are undertaken at each step in the landfill staging plan.
- should a WA be issued an updated noise management plan and monitoring program should be required before the commencement of future cell operation under a condition of the WA.

GREENHOUSE GAS EMISSIONS

Why is Greenhouse Gas Emission a key issue?

- 4.106 The SEPP (Air Quality Management) has as one of its aims to support national and state measures to address the “enhanced greenhouse effect³. This effect along with the control of ozone depleting substances are identified as international issues addressed by SEPP (Air Quality Management) requirements. Global warming caused by the enhanced greenhouse effect poses a risk to the environment.

Review of the WAA GHG Emissions and EPA’s Assessment

Expected GHG emissions from the proposals

- 4.107 *State Environment Protection Policy (Air Quality Management) (SEPP AQM)*, requires that generators of greenhouse gas (GHG) emissions avoid and minimise emissions in accordance with 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 (PEM)*.
- 4.108 The PEM outlines the following requirements for applicants applying for a WA:
- Describe the proposed works in relation to energy use and GHG emissions
 - Include energy consumption and any non-energy related GHG emissions
 - Discuss best practise for energy use and GHG emissions.
- 4.109 The WAA meets these requirements in their WAA, identifies that the main source of energy GHG emissions arise from the use of fuel ("diesel") in equipment used to manage the landfill. Electricity consumption for generators, buildings and other site operations is another significant source.
- 4.110 The total calculated annual energy related GHG emissions associated with fuel and electricity usage from the operation of the landfill site are 1,743 tCO₂-e.
- 4.111 LMS Energy Pty Ltd own and operate the Wyndham Renewable Energy Facility (WREF) within the boundary of the RDF. There are significant GHG benefits from operating a waste to energy plant fuelled by LFG. A major component of LFG is methane which has about 25 times the GHG potential of CO₂. The best practice gas extraction system incorporated into the landfill design captures LFG and either uses it to generate electricity through the WREF or flares the LFG if excess to requirements of the gas engines. In 2015/16 WREF produced approximately 14.5 MWh of electricity sufficient to supply the requirements of 2600 households. Flaring of the LFG converts the methane to CO₂ reducing GHG emissions but the energy potential from burning the LFG is not realised. The net greenhouse benefit from use of the LFG to produce energy, thereby off setting electricity produced from the burning of coal was calculated to be 16,950 tCO₂-e per year.

³ State environment protection policy (Air Quality Management) Clause 6.

- 4.112 LMS Energy propose to install additional electricity generation capacity at the WREF (not a part of this application) which would progressively increase the generating capacity to around 5MW over the next 2-3 years.
- 4.113 In the event that a WA is issued, it is recommended that a suitably worded condition be included to secure the implementation of a Fuel Use Minimisation Plan such as:
- Prior to commencement of any commissioning, a Fuel Use Minimisation Plan to seek more efficient use of energy during construction and operation of the landfill should be submitted to EPA for approval including but not limited to consideration of alternatives such as:
 - vehicle and equipment use;
 - LFG collection and treatment;
 - Promotion of waste minimisation programs;
 - use of alternative fuels and engines; and
 - improved driver training and fleet maintenance.
- 4.114 The control of GHG from the LFG is achieved by the measures that would be used to control LFG. It is considered minimising LFG emissions through the burning of methane to convert it to carbon dioxide and generate electricity is best practice.

Conclusion

The conclusions of the review of potential effects of GHG emissions on the environment are that:

- the capture and minimisation of the emissions of LFG would reduce the emissions of GHG from the landfill by converting methane in the LFG to carbon dioxide by combustion. This is further offset by the production of electricity which is planned to be scaled up as more LFG becomes available.
- WCC has proposed measures to ensure that fuel usage is minimised.
- WCC has proposed a framework to evaluate future equipment and fuel choices that is consistent with the determination of “best practice”.
- a fuel use minimisation plan would be required as a condition of the approval.

WATER RESOURCE USE

Why is Water Resource Use a key issue?

- 4.115 Victoria is particularly vulnerable to the adverse effects of climate change, including increased frequency and severity of droughts such that effective management of water resources is crucial. Clause 40 of SEPP (WoV) requires that water-saving practices be implemented to ensure a sustainable water supply.
- 4.116 Furthermore, the water needs to be readily available to assist in the construction and operation of the proposed landfill.

Review of the WAA Resource Water Use and EPA's Assessment

- 4.117 Currently the site is largely self-sufficient in water with the Wyndham RDF's water supply consisting of a reticulated potable water supply to the transfer station and 40,000L of rainwater in two polyethylene tanks on site. Stormwater is also harvested on-site from stormwater drains and ponds. Water tankers can also be filled from a City West Water hydrant and transported back to the site for use.
- 4.118 It is considered that the current supply will not be adequate for the planned expanded operation and rehabilitation at the Wyndham RDF, and some augmentation will be required. WCC has applied to City West Water to upgrade the supply of water to the Wyndham RDF in the 2017/18 financial year. The main driver for the upgrade to the water supply is to provide security of water for fire fighting.
- 4.119 Rainfall falling on waste filling areas will be kept separate from runoff from elsewhere within the premises and will be collected in the leachate sumps at the base of each landfill cell. Stormwater runoff will be classified according to the rehabilitation stage the stormwater is collected from, with any sediment washed off the capping layer allowed to dissipate out prior to reuse on-site by WCC, or discharge to the off-site stormwater network.

Conclusion

The conclusions of the review of potential effects on water use are that:

- The site is largely self-sufficient in water.
- Augmentation of the supply is required to meet the needs of the planned expansion of the RDF and for firefighting. Augmentation will be through an upgrade of the supply from City West Water.
- It is not considered that water use at the site will place a strain on the State's Water Resources

CLIMATE CHANGE

Why is Climate Change a key issue?

- 4.120 Victoria is particularly vulnerable to the adverse effects of Climate Change with the state government recognising the risks and the need for urgent action through the recent passing of the Climate Change Act 2017. The act is not yet in force such that the Climate Change Act 2010 (CC Act) is still the key legislative instrument.
- 4.121 Under the requirements of section 14 of the CC Act, Climate Change must be considered in WA decisions. EPA notes however that there are no published guidelines on how applicants or EPA should assess potential impacts on Climate Change.

EPA's assessment of potential climate change impacts

- 4.122 Taking into account the location of the site, potential influences of Climate Change on the proposed landfill are considered to be primarily that of more extreme weather events such as more drought conditions, higher average temperatures and more extreme storms and wet weather events.

- 4.123 It is noted that through the decomposition of wastes within the landfill the greenhouse gases (GHG) methane would be produced. The WAA proposals include a LFG collection system to capture these gases such that they can be burnt in gas engines to produce electricity. This capture and conversion minimising LFG emissions (by converting the more greenhouse intensive methane to carbon dioxide) is considered by EPA to be best practice and would assist in reducing Climate Change impacts.

Conclusions

The conclusions of the review of potential effects in relation to Climate Change are that:

- potential influences of Climate Change on the proposed landfill are expected to be limited to more extreme weather events
- the decomposition of wastes within the proposed landfill would generate greenhouse gas (GHG) emissions (mainly methane and some carbon dioxide). The LFG collection system would convert the main gas with GHG potential (methane) to carbon dioxide and water either through burning in flares or combustion in gas engines to produce electricity. Carbon dioxide has about 1/20th of the GHG potential of methane so capturing the methane and converting it to carbon dioxide is a very positive step in terms of reducing GHG emissions and the electricity produced would offset GHG emissions from the burning of coal to produce electricity.

SOIL RESOURCES & LAND

Why is Soil Resources and Land a key issue?

- 4.124 The beneficial uses of soils are protected as outlined in SEPP (PMCL). This requires that contamination of land must not adversely affect produce quality or yield.

EPA's assessment of potential impacts on soil resources and land

- 4.125 As described in paragraphs 1.3 the current site is a combination of quarried mine void (where top and subsoil resources) have already been stripped and removed, and poor pasture that will be quarried by Holcim regardless of whether the proposed extension occurs or not. Accordingly, it can be considered that any beneficial uses from soil resources and mineral resource will already have been extracted prior to landfilling commencing.
- 4.126 Further it is noted that the proposed activity is a waste repository which fill a mining void with waste ultimately leading to a rehabilitated mine void.
- 4.127 The deposition of waste in a void is in effect creating an authorised and licensed parcel of contaminated land, however as described elsewhere in this WAAAR, the proposed landfill location and containment measures are fully considered. Accordingly, the overall technical assessment of the WAA focuses on impacts on other segments of the environment.
- 4.128 Potential impacts to soil resources and land were considered by having regard to:
- the current land uses (as described in paragraph 1.29 – 1.40) – the proposed site is in a Special Use Zone for earth and energy resource industry. Accordingly, when the landfill

cells are constructed they will be an industrial site that has already been heavily disturbed by the quarrying activities and subsequent disposal of waste

- the composition of the waste and other materials that have already been deposited, treated or stored in the RDF and are proposed to be deposited into the proposed landfill cells, the protective measures and their leachability
- the best practice assessment of the proposals and compliance with Landfill WMP and Landfill BPEM as described in paragraphs 4.146-4.159 which were developed to prevent amongst other things impacts on soil resources, land and groundwater pollution.

Conclusions

The conclusions of the assessment of potential effects on soil resources and land from the proposals are that:

- prior to any landfilling the soil resources and land would have already been significantly altered by the Holcim quarrying operations such that the beneficial uses from soil resources and mineral resource would already have been extracted prior to landfilling commencing
- the proposed activity is a waste repository which fill a mining void with waste ultimately leading to a rehabilitated mine void
- the proposal would create an authorised and licensed parcel of contaminated land, albeit in a suitable location with containment measures that meets best practice requirements.

HEALTH

Why is Health a key issue?

- 4.129 The fourth most commonly mentioned issue in non-proforma submissions was about potential health effects from the proposed landfill. Few submitters elaborated on what aspects of human health they were concerned with. One submitters provided more detail on the nature of their health concerns, the issues of greatest concerns were respiratory diseases (asthma).
- 4.130 EPA's assessment of potential health impacts in accordance with Regulation 19B(3) of the Environmental Protection Act, the original WAA was referred to the Secretary of Health at the DHHS. Clause 19B(5) then requires the EPA to:
- “(a) take into account any replies, reports, comments and information received under subsection (4), (4A) or (4B)*
- (b) where the Secretary to the Department of Health submits a written report objecting to the issue of a works approval on the ground that the public health is likely to be endangered if a works approval is issued, refuse to issue a works approval;”*
- 4.131 DHHS' referral response is provided in full in Appendix X:
- In their response of 6 January 2017, DHHS simply stated that *“The department does not object to this application on public health grounds provided the Environment Protection Authority is satisfied that all relevant State Environment Protection Policies and*

environmental guidelines are met, especially for the management of off-site odour and landfill gas emissions and groundwater” (Appendix C.3).

- 4.132 It is noted that a literature review was published in December 2016 and is available on EPA’s website at <http://www.epa.vic.gov.au/our-work/publications/publication/2016/december/1645>. The review, jointly commissioned by EPA and DHHS in 2016 confirmed the findings of the RMIT (2013) review, *“that assessment of all available data and published studies does not show that living near a non-hazardous waste landfill is associated with adverse health effects”*. The review did, however, acknowledge that some gases and compounds released from non-hazardous waste landfills may be odorous and can affect the wellbeing of the local community. The review also included recommendations for the development of future monitoring programs around non-hazardous landfills - these have been considered in the setting of the WA conditions.

Conclusion

The conclusions of the assessment of potential health effects from the proposed landfill are that:

- potential health effects are a concern for some members of the community
- DHHS do not object to the WAA on public health grounds provided EPA is satisfied that the relevant SEPP and environmental guidelines would be met.
- the key conclusion of an updated independent literature review jointly commissioned by EPA and DHHS were that living near a non-hazardous waste landfill is not associated with any adverse health effects but that some gases and compounds released from non-hazardous waste landfills may be odorous and can affect the wellbeing of the local community.

COMPLIANCE WITH SECTION 50C OF THE EP ACT

Why is Compliance with Section 50C a key issue?

- 4.133 In accordance with section 50C(1) of the EP Act, the Authority may refuse to consider an application for a WA in relation to a waste management facility if the operations of the facility would be inconsistent with the SWRRIP, or relevant RWRRIP, or the applicant is in breach of a schedule of existing and required waste and resource recovery infrastructure within a RWRRIP.
- 4.134 In accordance with section 50C(2) of the EP Act, the Authority must refuse to issue a WA for a new landfill if the landfill is not provided for in the proposed sequence for the filling of available landfill sites in the relevant landfill schedule.

EPA’s Assessment of Compliance with Section 50C

- 4.135 Prior to formal acceptance of the WAA, SV were consulted to ensure the WAA was consistent with the SWRRIP and passed the section 50C threshold test. In their response of 11 October 2016 (see Appendix C.3). SV state that *“Overall, SV considers this proposal to be consistent with the State-wide Waste and Resource Recovery Infrastructure Plan. The continued operation of this landfill has been identified as important to the management of residual waste from the metropolitan region, and potentially other*

Victorian waste regions.” Specifically, the expansion of the Wests Road RDF is consistent with the SWRRIP for the following reasons:

- Infrastructure hub of state importance – this site provides long-term disposal security to the state.
- Listed on the Metropolitan Waste and Resource Recovery Implementation Plan’s Infrastructure schedule – the purpose of the schedule is to ensure that Melbourne has adequate landfill capacity to safely manage residual waste, while also ensuring that the development and use of landfills is limited to that required.
- Protection of strategically important infrastructure in the land use planning system – SV applauds Wyndham City Council’s intentions to better define the Wests Road RDF’s buffers by amending the Wyndham Planning Scheme.
- Resource recovery – SV acknowledges Wyndham City Council’s commitment to increasing the recovery of resources throughout the municipality, noting the goal to establish the Wests Road RDF as a precinct focused on resource recovery, with only residual waste being landfilled.

4.136 Accordingly it is considered that the proposal is consistent with the SWRRIP and that it meets the threshold test in section 50C(1).

4.137 The Metropolitan Waste and Resource Recovery Implementation Plan (MWRRIP) 2016 is the relevant Regional Waste and Resource Recovery Implementation Plan applicable for the proposed landfill site. This Plan, finalised in October 2016 includes a landfill schedule. This schedule is a list of landfills identified and assessed by the MWRRG as being required for the Metropolitan Melbourne region for the next 30 years. The Wests Road RDF is listed in the Landfill Schedule of the MWRRIP being referred to in this report as the Werribee landfill. It identifies that the RDF (i.e. the existing landfill) has landfill capacity for over 20 years but subject to necessary approvals (Works Approval). It also identifies as a site with potential to operate beyond 2046. See Figure 17 below which shows the Melbourne Metropolitan landfill schedule sequence.

4.138 MWRRG provided a response on 6 February 2017 (see Appendix C.5). It is noted that MWRRG did not object to the WAA. In summary, MWRRG noted:

- The Werribee Landfill is a strategically significant waste and resource recovery infrastructure site for the metropolitan region. The WAA is consistent with the landfill schedule of the Metropolitan Implementation Plan.
- The infrastructure schedule of the Metropolitan Implementation Plan is the Victorian Government’s principal tool to plan for the waste and resource recovery infrastructure that is needed to meet the needs of metropolitan Melbourne.
- The site has been planned as a long-term facility and is scheduled until 2046 with a likely closure date beyond 2046.
- The broader site is listed on the State Infrastructure Plan as an active hub of state importance and has potential 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.
- A reduction of the planned capacity of hubs of state significance (such as that at Werribee) would be expected to impact on available waste capacity and resource

recovery network serving metropolitan Melbourne and if the Werribee site were to close early there would be a need to find another large site capable of accepting large amounts of waste well into the future. MWRRG observes that it is difficult to quickly replace lost capacity in the network.

- Approximately 73% of all waste in Metropolitan Melbourne is currently recovered and not landfilled. MWRRG seeks to reduce Melbourne’s reliance on landfill through new resource recovery infrastructure and through removing organic waste from landfill. In this context while landfills are expected to progressively manage less waste they importantly would still be needed.

4.139 Accordingly, it is considered that the proposal is listed in the landfill schedule of the MWRRIP 2016, noting that the currency of the Plan is 2016-2046. The proposed new landfill development meets the threshold requirements in s50C of the Act.

4.140 Beyond 2046, which is the end date for government waste management policy (the SWRRIP covers 2015 – 2044), the plans do not currently identify the need for landfilling at the RDF. The MWRRIP does however identify that waste and/or resource recovery activities may continue beyond 2046 and that the landfill has the potential to operate beyond 2046. During the 30-year life of the MWRRIP there would be changes in the need and ability of sites such as Wests Road RDF to undertake resource recovery and disposal activities.

Conclusion

The proposed landfill facility is consistent with the SWRRIP and the MWRRIP and meets the threshold test in s50C of the EP Act. It is noted that the original application had a proposed lifespan to about 2050. The removal of the piggy back cells from the WAA now means that the lifespan of the proposal (2043) is within the duration of the SWRRIP (2015-2044) and the MWRRIP (2016-2046).

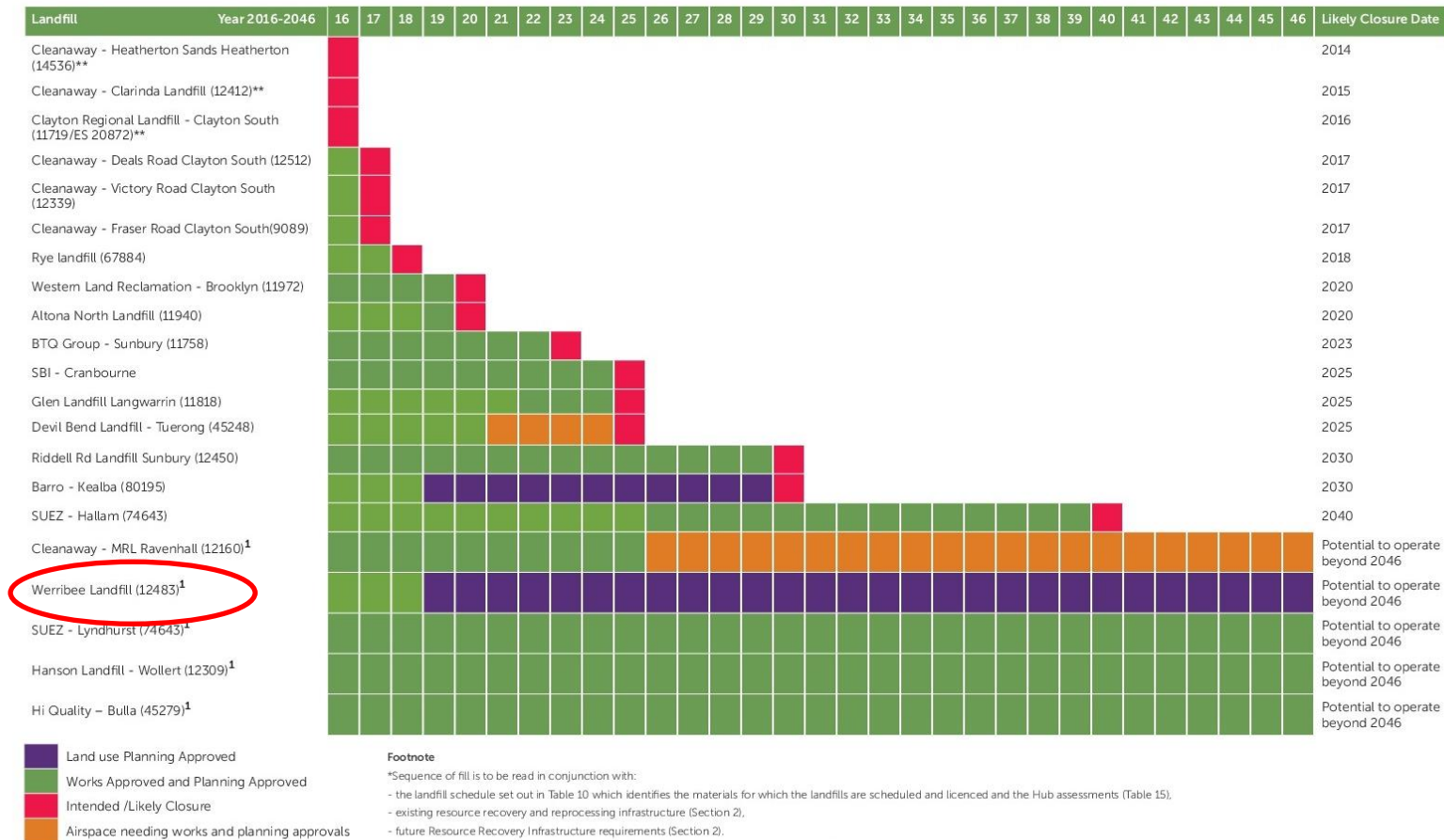


Figure 17: Metropolitan landfill Schedule Sequence of fill – reproduction of Table 11

The above figure is reproduced from Table 11 of the Metropolitan Waste Resource & recovery Implementation Plan. Note 1 reads Landfills have potential to operate beyond 2046. It is acknowledged that due to their size and potential long term capacity, some waste and/or resource recovery activities may continue beyond the current landfill schedule. In addition it is expected that, during this 30 year period and beyond, there would be changes in the need and ability of these sites to undertake resource recovery and disposal activities.

COMPLIANCE WITH THE LANDFILL WASTE MANAGEMENT POLICY & LANDFILL BEST PRACTICE ENVIRONMENTAL MANAGEMENT

Why is Compliance with Landfill WMP and Landfill BPEM a key issue?

- 4.141 As per section 20C of the EP Act, the EPA may refuse to issue a WA if policy is not met. The Landfill WMP and Landfill BPEM are of particular relevance.

Compliance with clause 15(3)(a) of the Landfill WMP

- 4.142 Clause 15(3)(a) of the Landfill WMP requires applicants for a landfill WA to comply with the Landfill WMP and all other relevant SEPP and waste management policies.
- 4.143 The WAA included several documents containing supporting information addressing various aspects. Based on the initial assessment of the information provided, further information and clarification were also requested under s22 of the Act (via s22 notice of 19th January 2017).

Compliance with clause 13(3) of the Landfill WMP

- 4.144 Clause 13(3) of the Landfill WMP requires that new landfill sites must not be established or extended into any area where an aquifer contains Segment A groundwater, unless the:
- landfill operator satisfies the Authority that sufficient additional design and management practices would be implemented
 - the Authority determines that regional circumstances exist that warrant the development of a landfill in the area.

Groundwater Segment

- 4.145 Based on information presented in the WAA the groundwater quality in the area is classed as Segment C (and thus Clause 13(3) does not apply, however this was based upon only one bore (located at the premises). Despite being requested through a s22 Notice WCC have been unable to provide additional information to better define the background groundwater quality.

Compliance with clause 16(2) of the Landfill WMP

- 4.146 Clause 16(2) of the Landfill WMP requires that all new landfill sites must deposit waste at least 2m above the long-term undisturbed groundwater, unless the:
- landfill operator satisfies the Authority that sufficient additional design and management practices would be implemented
 - the Authority determines that regional circumstances exist that warrant the development of the landfill.

Long-term undisturbed groundwater level:

- 4.147 In order to show compliance with Clause 16(2) of the Landfill WMP, it is necessary to establish the long term undisturbed groundwater level for the area.

- 4.148 Subsection 4.4.2 of the WAA, (Appendix A Doc. 1) states that “*analysis of historical groundwater standing water levels for the site 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 – 12.80m AHD
 - Cell 6 – 11.53m AHD
 - Cell 7A – 11.40m AHD
 - Cell 7B – 11.30m AHD
 - Cell 7C – 11.00m AHD
 - Cell 8 – 11.08m AHD.
- 4.149 The works approval application contained groundwater level information monitored from 16 monitoring bores. This data showed that groundwater level varies from 10m, AHD in the northeast corner of the site to 7.5 - 9.0m AHD in the southwest boundary of the site. The information presented with the WAA suggests that the base of the landfill is expected to vary between 12.80, AHD in Cell 5A to 11m, AHD in Cell 7C. This information indicates that some cells, especially in the north east section of the site, may not be in a position to have adequate separation of 2m between waste and long-term undisturbed groundwater level, for the compliance of clause 16(2) of the landfill WMP.
- 4.150 As stated previously in this WAAAR, it is considered that the data upon which these levels are based is inadequate because they are based upon data from only one bore and that bore that is affected by the quarrying operations. WCC were requested to provide data representative of the area in the s22 notice of 19th January 2017 but were unable to provide additional information to better define the background groundwater quality.
- 4.151 Given that WCC was unable to provide sufficient acceptable data to fully determine the long term undisturbed groundwater quality and groundwater levels, the WAA proposes additional design and management measures to achieve compliance with Clauses 13(3) and 16(2) of the Landfill WMP.
- 4.152 Therefore, for those cells not in compliance with Clause 13(3) and/or 16(2) of the Landfill WMP, it is necessary to consider whether:
- the landfill operator satisfies the Authority that sufficient additional design and management practices would be implemented
 - the Authority determines that regional circumstances exist that warrant the development of the landfill.

Additional design and management measures

- 4.153 In response to the first s22 Notice WAA has proposed the following additional design and management measures for improved groundwater protection (see section 3 for details) for Sub-cells 5A, 5B and 5C:
- sub-cell liner upgraded to include a geosynthetic clay liner (GCL) as well as 1m compacted clay liner and 2mm HDPE geomembrane.
 - the sump liner would be upgraded to include 1 m of compacted clay, 2mm HDPE, a GCL and a further 2mm HDPE.

- a groundwater relief layer beneath the basal liner system with groundwater extraction to ensure a hydrostatic pressure is not exerted on the liner.
- 4.154 In the light of the proposed additional design and management measures outlined above WCC also propose that the base level of sub-cells 5A, 5B and 5C be based on the 95th UCL of 10.0m AHD for bore S13, that is the minimum base of cell level would be 12.0m AHD. WCC's consultants consider this to be their best estimate of undisturbed levels.
- 4.155 WCC also propose to install a series of off-site groundwater monitoring bores to provide extra information over the next few years on groundwater quality and levels. EPA and an environmental auditor would be consulted in the location and design of these new bores. The need for subsequent sub-cells (e.g. 6A etc.) to incorporate additional design and management practises would be reconsidered in consultation with an auditor and EPA based on the information these bores would provide.
- 4.156 It is considered that, the design and management measures are acceptable.

Does the Authority determine that regional circumstances exist that warrant the development of the landfill?

- 4.157 Given that some cells at least cannot be demonstrated to meet the 2m separation between waste and the long term undisturbed groundwater level, EPA needs to determine that the regional circumstances exist to warrant the development of the landfill in the area as required by clauses 16(2)(b) of the Landfill WMP.
- 4.158 The RDF landfill is listed in the Landfill Schedule of the MWRRIP 2016 for landfilling activities until 2046 and is also identified as a regional hub of State importance in the SWRRIP.
- 4.159 Under such circumstances, it is considered that the EPA can determine that the regional circumstances exist that warrant the development of the proposed landfill.

Geotechnical Stability

- 4.160 Geotechnical stability due to steepness of batters and control of erosion was considered an issue by ILEAP and EPA experts. WCC were requested in the third s22 notice to outline their approach to stability issues and stormwater management in the detailed design phase. Their responses were assessed as satisfactory.
- 4.161 Accordingly, it is recommended that if a WA is issued a requirement to undertake geotechnical assessment and provide supporting evidence of geotechnical stability in the detailed designs should be included within a suitably worded condition. See WA_W1 (a)

Buffer Requirements

- 4.162 The Landfill BPEM required outcome for buffers is *provide buffers in accordance with Table 5.2 and Table 8.2; where these are unavailable, demonstrate that risks are mitigated to the same standard*. Table 5.2 gives a buffer distance of 500m. BPEM qualifies the required outcome stating *“that appropriate buffer distance must be maintained between the landfill and sensitive receptors (users) to protect those receptors from any potential impacts resulting from a failure of landfill design or management or abnormal weather conditions”*. Landfill BPEM additional notes that *“buffer areas are not an alternative to providing appropriate management practices, but provide for contingencies that may arise with typical management practices”*. The Landfill BPEM provides buffer

distances requirements for various receptors, which is reproduced in Table 8 below (along with EPA’s assessment of the WAA against them).

- 4.163 Groundwater in the vicinity of the RDF is probably in Segment C but the level of information presented could not confirm this, likewise the level of information available on groundwater levels, although indicative, was inadequate to confirm the long term undisturbed groundwater level. The proposed additional design and management measures for groundwater protection mean that the proposal would be able to comply with the intent of buffer requirements of the Landfill BPEM.
- 4.164 The nearest water body to the site is Cherry Tree Creek which is located at the south-west corner of the RDF through an area that has not been quarried. Holcim would quarry to 20m of the site boundary except in the area around Cherry Tree Creek which is protected and would have a buffer of 100m. A buffer of 100m would be maintained from Cherry Tree Creek and future landfilling activities. The buffer distance to the creek is considered compliant with the Landfill BPEM.
- 4.165 Landfill odour impacts have multiple contributing factors, in particular, the type and quantities of waste accepted, active cell management, filling profile, size of cells, use and proper management of LFG extraction systems, leachate management, site topography, local meteorology, number of truck movements per day. In addition, many of these factors are site-specific, all of which makes the task of setting an appropriate, single separation distance challenging. An appropriate separation or buffer distance should be situated where there would be an observable and significant reduction in the likelihood of detecting an odour.

Table 8: EPA Assessment of the WAA Compliance with the Landfill BPEM Buffer Siting Distance requirements for LFG migration, safety and amenity (including odour) impacts

Receptor	Landfill BPEM buffer requirement (m)	Information presented	Compliance accepted (Y/N)
Groundwater	2 (between waste and long-term undisturbed groundwater)	Long term undisturbed groundwater levels could not be established with certainty, although base of cells was set at best estimate.	Additional design and management measures were proposed and accepted. Yes
Surface waters	100	A buffer of 100m would be maintained from Cherry Tree Creek and future landfilling activities.	Yes

Receptor	Landfill BPEM buffer requirement (m)	Information presented	Compliance accepted (Y/N)
Buildings and structures	500	A residence is located 180m from the site which is now owned by WCC for a part of the site that would not be landfilled for at least another decade. Other residences are greater than 500m with most over 1km.	Currently in compliance.
Aerodrome for piston engine propeller-driven aircraft	1500	There is no aerodrome within 1500m from the site	Yes
Aerodrome for jet aircraft	3000	The is no aerodrome within 3000m	Yes

- 4.166 As indicated in Table 8 above, BPEM recommends a minimum buffer distance of 500m for siting new landfills (Type 2) for buildings and structures. It is highlighted, that the Landfill BPEM is however a general guideline based on landfill classification and not landfill size, with no provisions for determining appropriate buffers for expansions of existing landfills and the scale of the expansion. As noted previously EPA considers that the BPEM buffer distance of 500m is based only on LFG sub-surface migration risks and not impacts from LFG odours on amenity.
- 4.167 WCC proposes to implement an Environmental Significance Overlay (ESO) as an appropriate tool to manage both use and development within the buffer areas. The effect of the ESO would be to trigger a planning permit requirement for development associated with a sensitive use and overcomes the shortcomings of existing zones where sensitive uses may establish without a permit. The issue of adequate buffer zones around the RDF was the subject of the Wyndhamvale Buffer Study Audit (CARMS 69507) which proposed a risk based odour buffer in conjunction with the 500m landfill gas buffer. The key findings and recommendations from this Audit Report would be reviewed in light of the revised odour dispersion modelling undertaken for this works approval application. It is then intended to propose the adoption of an Environmental Significance Overlay (ESO) as part of a planning scheme amendment for the land surrounding the RDF. The adoption of such an ESO is yet to be considered and adopted by Council.
- 4.168 The extent of the ESO would take in both the 500m buffer required by BPEM for landfill gas migration and the extent of the medium risk (for odour impact) contour as shown by the yellow line (subject to some minor revision in light of the revised odour dispersion modelling) in Figure 16.
- 4.169 EPA assesses that these buffers are currently met and recommends formalisation of required odour and LFG buffers in the planning scheme.

Compliance with clause 13(2) of the Landfill WMP

- 4.170 Clause 13(2) of the Landfill WMP requires that landfill sites must not be established or extended into any area listed in Schedule A of the Landfill WMP. Based on the information presented in the WAA the assessment of this requirement is presented in Table 9 below.

Table 9: EPA Assessment of the WAA Compliance with Clause 13(2) of the Landfill WMP

Not to be located in the following areas	Compliance
High value wetlands of international significance	No listed wetlands
Areas of significance for spawning, nursery, breeding, roosting etc.	No relevant areas located
Marine and coastal reserves listed in the National Parks Act 1975	No relevant areas located.
Water supply catchment areas	No water supply catchments located
State wildlife reserves listed under the Wildlife Act 1975	No wildlife reserves located in the area
Critical habitat of fauna and flora under the Flora and Fauna Guarantee Act 1988	Not within the proposed site
Water supply protection areas under the Water Act 1989	No water supply protection areas located
Groundwater protection zones	No such zones located
Matters of national significance as per the Environment Protection and Biodiversity Conservation Act 1999 (Cth)	Proposed landfill would not cause vegetation loss
Surface waters	No waters

- 4.171 Based on the information presented and revised, it is considered that the proposal complies with the requirements of Clause 13(2).

Detailed designs for the landfill construction

- 4.172 The WAA contains preliminary designs for the landfill which are considered appropriate. If the WA is granted, detailed designs should be provided prior to start construction of the landfill (landfill cells) as per WA_W1.
- 4.173 The preliminary designs show that the landfill would be constructed with the liner configurations set out in paragraphs 3.25 - 3.27, Figures 8 and 9.

Additional design and management measures

- 4.174 The liner configuration set out in paragraphs 3.25 - 3.27, details the additional design and management measures to be applied to the cell liners to achieve compliance with clauses 13(3) and 16(2) of the WMP. In response to the first s22 Notice the applicant has proposed the following additional design and management measures for improved groundwater protection for Sub-cells 5A, 5B and 5C:

- sub-cell liner upgraded to include a geosynthetic clay liner (GCL) as well as 1m compacted clay liner and 2mm HDPE geomembrane.
- the sump liner would be upgraded to include 1m of compacted clay, 2mm HDPE, a GCL and a further 2mm HDPE.
- a groundwater relief layer beneath the basal liner system with groundwater extraction to ensure a hydrostatic pressure is not exerted on the liner.

WCC also propose that the base level of sub-cells 5A,5B and 5C be based on the 95th UCL of 10.0m AHD for bore S13, that is the minimum base of cell level would be 12.0m AHD. WCC's consultants consider this to be their best estimate of undisturbed levels.,

- 4.175 For cells that would require interim capping for more than 2-3 years, WCC in response to the third s22 notice has proposed additional design measures for the long-term interim capping (see section 3.29 - 3.32 for details).

Landfill cap:

- 4.176 The capping profile proposed for the new cells is in line with Type 2 landfill criteria and is considered appropriate.
- 4.177 A pre-settlement contour plan has also been provided.
- 4.178 The proposed liner configurations for the base, side wall and the cap are considered appropriate. However, detailed designs must be provided prior to start construction of landfill cells

Leachate collection and management

- 4.179 Leachate is to be collected through the leachate pipe system embedded in the liner system and would be directed to the leachate sumps in each cell for collection and transfer into two storage ponds for treatment. Paragraphs 3.34 - 3.39 describe the proposed leachate management system including the measures for dealing with the legacy leachate. This is considered acceptable at the WA stage. Further storage and treatment details depending on the need should be included in the detail design stage.

Rehabilitation of the landfill

- 4.180 In response to the third s22 notice and removal of the piggy back cells, both pre-settlement top of waste and top of cap contours have been revised. The revised contour plans are considered acceptable. However, if an alternative capping (i.e. ET) was to be proposed at the detailed design stage, the pre-settlement top of cap contour may have to be revised to accommodate that. Such a change would need to be formally assessed and approved by the EPA.
- 4.181 The proposed sequential filling followed by placement of intermediate cover prior to capping Cells (see Figure 11) is considered appropriate and meets BPEM required outcomes for rehabilitation.
- 4.182 Progressive rehabilitation of the landfill would also be a statutory requirement in any EPA Licence for the site.
- 4.183 A Landfill Aftercare Management Plan and Monitoring Program has been included in the WAA, and are considered consistent with requirements of EPA's Closed Landfill

Guidelines however these are working documents and would be required to be revised and updated throughout the operating and post-closure life of the landfill. This would be regulated by EPA through licence compliance activities and Environmental Auditing as well as possible remedial notices.

Planning requirements

- 4.184 WCC holds Planning Permit WYP122/07/03 (Amended) issued on 18 June 2014 for the expansion of the existing Refuse Disposal Facility into Cells 4 - 8 to the maximum height not exceeding 44m AHD, made in accordance with an order issued by the Victorian Civil and Administrative Tribunal (VCAT).

Best-practice Operation

Leachate management

- 4.185 The leachate management practices proposed in the WAA (as summarised in paragraphs 3.29 - 3.32) meets BPEM requirements. Aerators would be used to reduce odour generation from the leachate ponds which would also increase the evaporation of leachate from the ponds.
- 4.186 In addition to treatment in leachate ponds, WCC is also investigating the option of connection to sewer for disposal of excess leachate. Excess leachate is currently being trucked off site to be treated at licensed waste treaters. If the connection to sewer does not eventuate, WCC would construct an additional 26 MLs leachate pond when the need arises.

Waste acceptance

- 4.187 The proposed operational measures for waste acceptance summarised in paragraphs 4.2 - 4.9 meet the required outcomes and suggested measures for waste acceptance in the Landfill BPEM.
- 4.188 It is recommended that suitably worded conditions are attached to any WA issued (see WA_G1) and subsequent licence, limiting the types of waste permitted to be disposed of at the facility, and requiring waste recording and inspections.

Cell operation / cell filling

- 4.189 The WAA states that only one active tipping area would be in operation at any time. This is acceptable.

Active tipping area size

- 4.190 The active tipping area would be kept 'as small as possible' and is proposed to be no larger than 900m² to minimise amenity impacts such as odour and to better control litter and pests. The Landfill BPEM recommends a tipping area size of 900m² or less the operator of the RDF has indicated that they would normally operate at about 600 to 700 m. The licence allows a tipping face up to 1250m². This would only be used when the cell geometry does not allow a smaller tipping face to be used e.g. working in a corner.

Waste Placement and Use of cover

- 4.191 The waste placement and cover practises are described in paragraphs 3.49 – 3.56 the practises described align with best practise.

Operations and Maintenance Procedures manual

- 4.192 The Operations and Maintenance Procedures manual (Appendix L of the WAA) documents the procedures to be followed operations of the landfill including: Litter control, Fire management, Disease and Vermin Control and Weed control. The procedures described are in accordance with the required outcomes and suggested measures in the Landfill BPEM.

Best-practice Rehabilitation and Aftercare

- 4.193 Progressive rehabilitation / rehabilitation - the WAA and appendices contain sufficient information to demonstrate that progressive rehabilitation would be undertaken in accordance with the required outcomes for rehabilitation in the Landfill BPEM. WCC were asked to revise their rehabilitation schedule to reduce the time that various sections of cells would be under intermediate cover. This was done as a part of the response to the third s22 notice. This reduced the time that portions of cells would be under intermediate cover from 20 years to 9 years. In addition, WCC have proposed an upgrade to the intermediate cover to be used on cells that will require intermediate cover for longer than 2-3 years, this proposal was accepted. The key aspects for odour control and meeting LFG action levels are swift placement of intermediate cover and installation of gas wells in completed cells. Licence condition L23 requires that intermediate cover be applied to the filled cell within 1 month of completion. The cover does not need to completed within one month, but likely would be in order to achieve licence compliance with L5.
- 4.194 The cell phasing plans showing the construction, filling, intermediate cover and final capping sequence, accords with the required outcomes for rehabilitation in the Landfill BPEM provided that it is implemented. EPA licence conditions do not regulate phasing plans, however the cell approval process is a major driver of phasing as each cell would be allowed a maximum filling time of 2 years after which it would be rehabilitated in accordance with L23 (intermediate cover) and L27 (final capping of each cell by a certain date). During this two year window new cells are built and previous ones capped, thus achieving the phasing plan.

Conclusions

Overall, the conclusions of the assessment are that:

- the proposed Wests Road RDF site meets the landfilling siting requirements of Landfill WMP and the Landfill BPEM
- WAA complies with the design, management and rehabilitation requirements of the Landfill WMP and Landfill BPEM
- additional design and management measures are required to ensure groundwater protection as there is 2m separation between the base of the waste body and the top of the long term undisturbed water table could not be established with certainty. Additional design and management measures have been proposed and accepted.
- if WA is issued, it should be subject to a series of WA conditions
- if a licence is subsequently issued similarly it should be subject to a series of licence conditions.

CONSIDERATION OF THE PRINCIPLES OF THE EP ACT

Why is consideration of the Principles of EP Act a key issue?

- 4.195 As per section 1A(3) of the EP Act, EPA must consider the environment protection principles in all of its assessments and decisions. In practice, this means that the applicant must demonstrate to EPA how it has considered the environment protection principles set out in the EP Act, and that the EPA needs to consider them as part of its assessment when making decisions on approval applications.
- 4.196 In assessing the WAA against the environment protection principles, EPA has considered its Publication 1565 'Application of environment protection principles to EPA's approvals process' (2014). This publication explains how EPA expects applicants to consider the environment protection principles when developing proposals and preparing applications for an EPA approval. Since the principles provide the basis for developing statutory policy (the SEPPs and Landfill WMP), they are already integrated into many statutory policy requirements.
- 4.197 Publication 1565 discusses the relevance of the principles in and in section 2.1 states:
- *“all of the principles are relevant to some extent to all proposals within the approval process ... the direct relevance of each principle depends on the issues arising in a particular proposal”;*
 - *“different principles (or combinations of principles) of varying significance may apply to different applications. They can moderate or balance each other in the overall assessment. However, none of the principles is treated as absolute or totally dominant in any given situation. The principles are commonly applied in an integrated fashion.*
 - *In applying the principles, EPA focuses on achieving efficient and practicable outcomes that are in proportion to the significance of the environmental problem(s) being addressed.*

- *Also, the principles are not to be considered in isolation from the other matters (e.g. best practice and other statutory policy requirements) that proponents and EPA need to consider”.*

4.198 EPA’s assessment gave particular consideration to the following principles:

- 1B - integration of economic, social and environmental considerations
- 1C - precautionary principle
- 1D - intergenerational equity
- 1I - waste hierarchy
- 1L - accountability.

Principle 1B - Integration of economic, social and environmental considerations

- 4.199 Principle 1B aims to balance sometimes competing concerns associated with developments such as landfills and ensure that decision-making practices result in the protection of the environment and human health while taking into account relevant social and economic considerations and the benefit of future generations
- 4.200 A proposal that may generate significant external economic and social impacts, consideration needs to be given first to whether the proposal is consistent with statutory policy (SEPPs and Landfill WMP), and how likely is it to cause an environmental hazard first before broader economic and social issues are taken into account. The principle does not require EPA to balance the financial viability of a proposal with broader economic, social and environmental concerns. It is the overall impact of a proposal on society and the environment (rather than the applicant) that is of primary interest in applying principle 1B.
- 4.201 As noted in the assessment of key issues in the previous subsections of this WAA Assessment Report, it is considered that the proposal is consistent with the applicable policies. It is therefore considered that the WAA will, subject to compliance with appropriate conditions, adopt sound environmental practices and procedures for the benefits of human health and the environment.
- 4.202 It is noted that comprehensive strategic assessments were undertaken to determine options for waste and resource recovery across Victoria and metropolitan Melbourne as part of the development of the SWRRIP and the MWRRIP. This included industry and community consultations and assessment processes which looked at a broad range of economic and social considerations.
- 4.203 At state and regional level as set out in the WAA (Appendix A Doc. 1), the proposed landfill extension would see the transfer of and disposal of waste from a large number of councils in the greater Melbourne metropolitan area and also regional Victoria. Waste volumes are projected to grow by 3% per annum over the life of the proposal. The economic, social and environmental benefits of the proposal will mostly be distributed across the broader Victorian community.
- 4.204 At a local level, as evidenced by the concerns raised by many of the submissions, the proposal may result in significant economic and social impacts (eg potential impacts on house prices, amenity and well-being) on persons who live in the local community. While most of the economic and social benefits from the proposal will be distributed more

broadly, some benefits of the proposal will also accrue to the local community. This includes the use of the subject land as a public open space following rehabilitation, and indirect economic benefits to WCC residents from revenue derived from landfill operations (eg gate receipts, sale of electricity generated from LFG).

4.205 These benefits may partly offset some of the potential impacts of the proposal.

Principle 1C – Precautionary Principle

4.206 Applying Principle 1C requires the consideration of the risk-weighted consequences, rather than a total avoidance of all risks. It requires a reasonable balance between the risks and costs associated with various environment protection measures and the benefits to be derived from them.

4.207 In establishing if the precautionary principle is applicable to a WA, it is necessary to determine whether two necessary conditions are satisfied, namely the existence of:

1. the threat of serious or irreversible environmental impacts
2. scientific uncertainty about those impacts.

4.208 In relation to the threat, if it is considered serious, it does not matter whether the threat is irreversible or not. In addition, the expectation of damage should have 'reasonable scientific plausibility', even if it is not fully demonstrable.

4.209 The need for precautionary action increases with both the level of possible harm (potential threat) and the degree of uncertainty.

4.210 An applicant should also consider any potential cumulative impacts arising from a proposal, which is, whether the proposal's impacts or risks would add significantly to the seriousness of a threat which already exists.

4.211 With regards to the consideration of WCC's proposal, it is noted that landfilling is a well established waste disposal activity that occurs globally and is one of the most heavily regulated industries. Accordingly, the potential environmental risks and impacts are well known, with evolving improvements in containment, control and monitoring technologies. As discussed previously, the Landfill BPEM which is the key compliance policy document that the proposal would need to meet, gets regularly updated to reflect international best practice.

4.212 EPA notes that the updated literature review on Air Emissions from Non-hazardous Waste Landfills, concluded that an assessment of all available data and published studies shows that living near a non-hazardous waste landfill is not associated with any adverse health effects.

4.213 A common thread in some of the submissions centred around the long-term performance of the proposed liners and leachate collection system. In this regard it is noted that containment technology and the requirements in the Landfill BPEM have evolved and become more stringent and may continue to do so in the future. If a WA is issued, the future landfill cell designs would be assessed against the Landfill BPEM that exists at that time.

4.214 Further, it is noted that if a WA is issued, there would be appropriate management and monitoring programs for groundwater, surface water and LFG conditioned as part of any WA and subsequent licence amendments. These would be designed with monitoring boreholes close to the perimeter of the landfill cells to monitor and detect any off-site

migration of leachate and LFG. As such, if any off-site migration was detected, appropriate actions, overseen and regulated by EPA, could be taken before the leachate or LFG had travelled beyond the boundary of the premises.

4.215 Accordingly, it is considered Principle 1C is met.

Principle 1 D - Intergenerational Equity

4.216 As described earlier in this Assessment Report, the WAA proposals seek approval for 26 years of landfilling ending in 2043. The longevity of the proposal aligns with the planning horizons of the current SWRRIP and MWRRIP.

4.217 While the landfill would be designed and operated to best practice standards and regulated by the EPA, there would be landfilling activities (such as final capping and rehabilitation) after landfilling has ceased. These activities would still require containment and management in a way that could potentially affect future generations beyond 2046.

4.218 The WAA includes a LFG collection system that would be connected up to gas-fired engines (not included in the WAA see paragraphs 1.25 - 1.28), which would minimise GHG emissions through the conversion of methane (with a higher GHG equivalent) to carbon dioxide.

4.219 Given that the proposal aligns with the planning horizons of the SWRRIP and the MRRIP and has been identified in those documents as a longer-term landfill and as a waste management hub of state importance EPA has assessed the WA proposed by WCC as meeting Principle 1D.

Principle 1I – Waste Hierarchy

4.220 This principle is based on the concept of a hierarchy of preferred waste management options, with avoidance being the most preferred option and disposal being the least preferred. While landfilling is at the bottom of the hierarchy, WCC uses waste management options that are higher up the hierarchy through their pre-sorting at source and transfer stations to recover any saleable materials.

4.221 Furthermore, the WAA includes a LFG collection system to capture LFG produced, which would be connected to gas turbines to produce electricity, and the landfill itself as described above is considered to meet the Landfill BPEM.

4.222 The waste management policy and the waste management sector is however, dynamic and evolving. The current SWRRIP covers the period 2015 to 2044 but is reviewed every five years. The MWRRIP would also be subject to review, with the next review scheduled for 2019. Not only do these documents identify the need for landfills, they also set out government waste management policy for other elements of waste management that is higher up the waste hierarchy (such as avoidance, re-use, recycling, recovery of energy, treatment and containment).

4.223 Accordingly, EPA considers it likely that in such a dynamic environment the need for landfilling, and the waste types and volumes that could be disposed at the proposed Wests Road RDF could be different from the situation now. In this regard approving a 26-year landfill up to the current government identified need of 2046, can be considered consistent to Principle 1I (waste hierarchy).

Principle 1L - Accountability

- 4.224 This basis for this principle is that the “*aspirations of the people of Victoria for environmental quality should drive environmental improvement*” and that “*members of the public should therefore be given access to reliable and relevant information in appropriate forms to facilitate a good understanding of environmental issues and opportunities to participate in policy and program development*”. On the latter, EPA notes that this does not just relate to policy and program development but also includes the opportunity for the general public (and other third parties) to comment on an application when it is advertised, and to request VCAT to review EPA’s decision on the application.
- 4.225 It is acknowledged that with regards to this WAA, WCC had undertaken pre-application consultation and provides support to the Wests Road Refuse Disposal Facility & Waste Management Community Reference Group of the Melbourne Regional Landfill Community Consultation Group. This group was established in December 2013 and has an independent chairperson and consists of two City of Wyndham Councillors, two Council Staff, a representative of MWRRG and nine community representatives. The group meets on a regular basis and minutes of the meetings are available on the council website.
- 4.226 It is further noted that as a licence holder, WCC currently, and would in the future if a WA and subsequent licence is issued, report annually on compliance with their EPA licence conditions. This is reported via Annual Performance Statements which are made available on EPA’s website. s53V Environmental Audits undertaken by independent Environmental Auditors are also made available on EPA’s website.
- 4.227 Additionally, EPA acknowledges that through the WAA assessment, opportunities have been provided for the general public and other third parties to comment on the WAA (see section 2), through attendance at the Information Sessions and section 20B Conference.
- 4.228 Accordingly, it can be considered that principle has been met and would continue to be met in the future.
- 4.229 Overall on balance it is considered that the WAA accords with Principle 1L.

Conclusions

Overall, the conclusions of the review of the WAA against the environment protection principles of the Act relevant to the WAA are that the WAA meets the principles.

5 ASSESSMENT RECOMMENDATIONS AND PROPOSED WORKS APPROVAL CONDITIONS

- 5.1 In consideration of the assessment of key issues in Section 4 above EPA recommends that a WA be issued, allowing construction of the new landfill cells starting in 2018, with final rehabilitation occurring in 2044, subject to a series of conditions, as detailed below. The extent of the landfill would be identified in figure schedules, included within the statutory document.
- 5.2 The following WA conditions are proposed.

GENERAL WA CONDITIONS

WA_G1

Subject to the following conditions, this approval allows the construction of the following works and associated equipment - a landfill for the deposit of solid inert waste, putrescible waste, pneumatic tyres shredded into pieces <250 mm, as defined in EPA Publication 631, Industrial Waste Resource Guidelines, Solid Industrial Waste Hazard Categorisation and Management, dated July 2009.

WA_G2

- 5.3 The works must be constructed in accordance with the application accepted on 8 December 2016 comprising the application received on 30 November 2016 as augmented by additional information received on 9 May, 10 July and 7 September 2017 and as identified in the documents listed in Appendix A of this Works Approval, except that, in the event of any inconsistency arising between the application and the conditions of this approval, the conditions of this approval shall apply.

WA_G3

- 5.4 This approval will not take effect until any permit which is required under the Planning and Environment Act 1987 has been issued by the Responsible Planning Authority.

WA_G4.1.1

- 5.5 This works approval will expire:

(a) on the issue or amendment of a licence relating to all works covered by the works approval; or

(b) on the issue of written notification from EPA confirming that all works covered by the works approval are complete and that no licence or licence amendment is required to operate the works; or

(c) two years from the date of issue unless the works have been commenced by that date to the satisfaction of EPA.

WA_G6

- 5.6 You must maintain a financial assurance calculated in accordance with the EPA method.

WA_G6.3

- 5.7 You must submit the financial assurance instalment determined by the EPA for each landfill cell prior to the addition of the cell to the licence.

WORKS CONDITIONS

WA_W1

- 5.8 Before commencing construction of the following components of the works, you must provide to EPA a report or reports with the plans and specifications of those components, including details of:
- (a) for each landfill cell or leachate pond: a geotechnical stability assessment including material characteristics and specifications, with supporting evidence, demonstrating total geotechnical stability for each landfill cell or leachate pond;
 - (b) for each cell a veneer cap assessment, demonstrating the geotechnical stability of the cap;
 - (c) for each landfill cell: Stormwater and erosion control structures including calculations of stormwater flows to appropriately size and position the control structures;
 - (d) for the drainage layer of each landfill cell or leachate pond: Plans, technical specifications and a construction quality assurance (CQA Plan) (“design documents”) for groundwater collection. For cells 5A, 5B and 5C additional design and management measures, as outlined in documents received in responses to S22 notices received on 9 May 2017 and 10 July 2017, must be employed, these measures include: 1) A groundwater collection layer which shall be installed beneath the cell liner and/or leachate pond liner, 2) an upgrade to the sump liner and 3) an additional GCL layer. In all subsequent cells (in areas 6, 7 and 8) these additional design and management measures, or the equivalent, must be employed where a minimum 2 metres separation between the top of the liner (including any sumps) and the long term undisturbed groundwater elevation is either not achieved or not able to be verified by the EPA appointed auditor conducting the verification of the cell (or pond) design;
 - (e) for each landfill cell or leachate pond: the plans, the technical specifications, and a construction quality assurance plan (CQA plan) (“design documents”) for the construction of each landfill cell and/or the leachate pond prior to submission for EPA approval.
 - (f) the “design documents” (plans, technical specifications and CQA plan) referred to in conditions WA-W1(d) & (e) must comply with this Works Approval and the Best Practice Environmental Management (Siting, Design and Management of Landfills) Guidelines) (EPA Publication 788.3) (as amended from time to time), and assessed by an EPA-appointed environmental auditor, in accordance with the procedures outlined in EPA Publication 1323.3 (Landfill Licensing Guidelines) (as amended from time to time) prior to submission for EPA approval;
 - (g) for each landfill cell or leachate pond: the name of the environmental auditor, appointed under the Environment Protection Act 1970, engaged by you to conduct the audit required under WA_R1; and
 - (h) for the landfill site: designs of the environmental monitoring network infrastructure to include landfill gas, odour, dust, groundwater and surface water monitoring for the premises.

WA_W2

- 5.9 You must not commence construction of those parts of the works for which reports are required by condition WA_W1 until written EPA approval of those reports has been received.

WA_W3

- 5.10 Where any reports specified in condition WA_W1 and approved by EPA differ from the application, the works must be constructed in accordance with those approved reports.

WA_W4

- 5.11 You must notify EPA when the construction of the works covered by this approval has been commenced.

WA_W5

- 5.12 You must notify EPA when the construction of the works covered by this approval has been completed.

WA_W7

- 5.13 You must not commission or operate the works without written approval of EPA

WA_W8

- 5.14 You must install:

(a) in respect of each new cell, leachate collection sumps, extraction and transmission pipework and extraction pumps.

(b) in respect of each new cell, a landfill gas collection system to a design approved by the EPA that includes landfill gas collection wells, transmission pipework, vacuum extraction equipment, condensate management equipment and landfill gas combustion equipment. The landfill gas extraction & combustion capacity must match the predicted gas generation for the site, validated by site gas concentration and flow data.

(c) prior to commissioning of the next new cell, landfill gas monitoring bores along the site perimeter upgraded to meet the spacing requirements outlined in Table B.2 of EPA Publication 788.3 Best Practice Environmental Management (Siting, Design and Management of Landfills) (as amended from time to time);

(d) prior to construction of the next new cell, additional groundwater monitoring bores to assess the regional undisturbed ground water quality and level;

(e) stormwater storage pond;

(f) upgraded litter screens around the perimeter of the site at least 10m high, up to a maximum height of 12m;

(h) noise abatement barriers as identified in the noise modelling;

(i) litter traps on stormwater drains;

(j) mobile nets near the tip face;

(k) wheel wash on the egress road;

(l) fire fighting equipment including on-site water trucks that must be available on-site at all times;

(m) dust monitors detailed in condition WA_W1(e) and approved by WA_W2.

WA_W15

- 5.15 During construction, unacceptable noise (including vibration) must not be emitted beyond the boundaries of the premises.

WA_W16

- 5.16 During construction, stormwater discharged from the premises must not be contaminated with waste.

WA_W17

- 5.17 All construction activities must be undertaken in accordance with EPA Publication 480 "Environmental Guidelines for Major Construction Sites" (1996).

WA_W18

- 5.18 During construction, you must undertake an environmental monitoring program that enables you and EPA to determine compliance with condition(s) WA_W15 and WA_W16.

REPORTING CONDITIONS

WA_R1

- 5.19 At least two months before the commencement of any commissioning, you must provide to EPA a report that include(s):

(a) in respect of each new cell, information as to the status of the site on the landfill schedule in the State-wide Waste and Resource Recovery Infrastructure Plan and the Metropolitan Waste and Resource Recovery Implementation Plan (and any future successor or replacement policy documents);

(b) in respect of each new cell or leachate pond, an environmental audit report, under S53V of the EP Act on the risk of harm from its construction and confirming construction compliance in accordance with EPA approved reports as set out in condition WA_W1 above;

(c) in respect of each new cell or leachate pond, a report from a suitably qualified, experienced and independent (to the contractor who constructs the landfill cell or leachate pond) person which details liner integrity testing (leak detection survey) results for each cell and leachate pond;

(d) in respect of each new cell, details of how you have informed the community through the Refuse Disposal Facility Community Reference Group (RDFCRG) or alternative engagement activities of the progress regarding the construction of cells and leachate pond and the progressive rehabilitation of the landfill. This must include explanations about how any issues or concerns raised have been considered; and

(e) in respect of each new cell, the environmental performance of the preceding cells as determined by the monitoring required in the monitoring and management plans identified in WA_R4.

WA_R4

Before the commencement of any commissioning, you must provide, to the satisfaction of EPA, a report that includes:

(a) a Leachate Management Plan including but not limited to:

(i) predicting and monitoring cumulative volumes of leachate generated and to be managed;

- (ii) an assessment on the adequacy of the existing leachate management system to handle the cumulative volumes of leachate generated;
- (iii) a proposal to manage leachate across the site;
- (iv) a plan to minimise any impacts on the environment from the proposed leachate management system.

(b) a Rehabilitation Plan including but not limited to:

- (i) progressive rehabilitation of landfill cells and sub-cells in accordance with BPEM;
- (ii) a process for an independent annual survey to be conducted for each active and filled landfill cell to ensure that the cell heights are less than the approved pre-settlement top of waste contour plan;
- (iii) each landfill cell would be managed so that its final contour prior to settlement is not higher at any point than the pre-settlement top of waste and top of cap contour plan included in the licence.

(c) a Dust Management Plan incorporating Air Monitoring Program including but not limited to;

- (i) implementation of best practice airborne particulate and dust control measures that also includes adaptive operational practices to respond and control dust events on site;
- (ii) air monitoring program to assess air quality impacts and triggers reactive management practices to be implemented during dust events on site;
- (iii) dust deposition monitoring that enables an assessment of nuisance dust impacts;
- (iv) a review of the effectiveness of the particulate and dust control measures in light of the monitoring data produced from (ii) and (iii) above and the relevant standards for the control of airborne particulate and dust; and
- (v) provision of surveillance or monitoring records to the RDFCRG and the Authority;

(d) an Odour Monitoring and Management Plan including but not limited to:

- (i) identification of potential odour sources and receptors;
- (ii) specifying the odour mitigation measures and procedures to manage the odour impact off-site of the various potential odour sources and to mitigate the off-site odour impacts;
- (iii) comprehensive monitoring practices, including surveillance by independent and appropriately trained personnel;
- (iv) procedures for addressing the odour source if a complaint is verified, including consideration of any mitigation measures or operational changes that might be required;
- (v) provision of surveillance or monitoring records to the RDFCRG and the Authority; and
- (vi) incorporation of a requirement to assess new odour management technologies or tools on a regular basis;

- (e) a Landfill Gas Monitoring & Management Plan including but not limited to:
- (i) details (numbers and locations) of landfill gas perimeter monitoring bores. The landfill gas perimeter monitoring bore spacings must meet the recommended spacings in Table B.2 of EPA Publication 788.3 Best Practice Environmental Management (Siting, Design and Management of Landfills) (as amended from time to time);
 - (ii) the sequencing for the design and installation of the landfill gas extraction system in each cell;
 - (iii) the sequencing for the design and installation of the horizontal gas wells in each active cell;
 - (iv) a program of inspection and maintenance of landfill gas extraction and monitoring infrastructure including provision of standby equipment; and
 - (v) a schedule of landfill gas well balancing frequency and condensate management.
- (f) a Groundwater Monitoring and Management Plan including but not limited to:
- (i) updating the Conceptual Site Model to illustrate the hydrogeology, surrounding land uses and receptors more comprehensively;
 - (ii) installation of additional groundwater monitoring bores
 - (iii) improved groundwater quality sampling, testing and monitoring to additionally include groundwater depth; and
 - (iv) enable the establishment of the long term undisturbed groundwater quality and depth.
- (g) a Surface Water Monitoring and Management Plan including but not limited to;
- (i) sampling of water at retention points prior to discharge to the environment and downstream of the site in Cherry Creek;
 - (ii) visual inspection of sediment and erosion control facilities and other potential sources of contamination;
 - (iii) a sampling plan and methods consistent with those in EPA publication IWRG701; and
 - (iv) routine testing of stormwater for, but not limited to, the following physio-chemical parameters: total phosphorus and nitrogen, turbidity, electrical conductivity, pH, and dissolved oxygen with occasional testing for heavy metals and indicators of leachate. The sampling frequency and reporting is to be agreed with EPA as are the action levels for each parameter.
- (h) a Noise Management and Monitoring Plan including but not limited to:
- (i) identification of the receptors most likely to be impacted by the filling of a particular cell;

- (ii) identification of mitigation actions to be employed which are being relied upon to meet the permissible noise levels of SEPP N1;
- (iii) a program of monitoring and reporting including installation of noise loggers to assess noise levels at receptors and the effectiveness of mitigation actions;
- (iv) the monitoring program to include logging of any noise complaints and any follow up actions;
- (v) a monitoring program for assessment of the noise from construction and operation of the landfill, and effectiveness of the noise abatement (including barriers) being applied. This may include the definition of derived point(s) located in accordance with SEPP N1;
- (vi) auditing of the monitoring program (by an EPA appointed auditor) including auditing of the implementation of management and mitigation actions
- (vii) regular reporting to EPA and the RDFCRG especially of non-compliances with noise limits
- (viii) milestones to be used for updating and submitting any amendments to the monitoring, assessments and noise abatement required by the noise management plan. The noise monitoring data from each cell construction and operation to be used to confirm the assumptions in modelling and identification of any amendments to the plan and required noise abatement for subsequent cells.

(i) Fuel Use Minimisation Plan to seek more efficient use of energy during construction and operation of the landfill including but not limited to consideration of alternatives such as:

- (i) vehicle and equipment use;
- (ii) LFG collection and treatment;
- (iii) promotion of waste minimisation programs;
- (iv) use of alternative fuels and engines; and
- (v) improved driver training and fleet maintenance.

(j) a Vermin Management Plan detailing measures to reduce disease vectors at the landfill and the spread of vermin from the landfill to the surrounding area.

(k) an Environmental Management Plan detailing measures to manage potential environmental impacts.

Each of the above plans must be approved by the Authority prior to the commissioning of each new cell. Each approved plan must be implemented to the satisfaction of the Authority. Plans which have previously been approved by the Authority may be reviewed by the Authority prior to commissioning of each new cell, and updated plans must be submitted to the satisfaction of the Authority if required.

6 CONCLUSIONS

- 6.1 WCC's WAA was assessed for the construction of four new landfill cells to create a total additional landfill airspace volume of 21.5 million m³. Landfilling is proposed to commence in 2018 and continue for 26 years, operating 24 hours a day, seven days a week. The proposals for the Type 2 Landfill have been designed to meet the Landfill BPEM. Following the disposal phase, the landfill would be progressively rehabilitated in accordance with a Rehabilitation Plan to form a safe and stable landform. The proposed end use is open space.
- 6.2 EPA technically assessed WCC's WAA (as described in Section 2), taking into account the local community's views, in addition to the recommendations made by the Chairman of section 20B Conference, referral agencies and ILEAP. Peer reviews of the odour modelling and stormwater management plan commissioned by the EPA were also considered in the assessment. As part of the assessment process, EPA identified and considered the following key issues:
- WCC's track record
 - air
 - odour;
 - landfill gas
 - groundwater
 - surface water
 - noise
 - greenhouse gas emissions
 - water use
 - climate change
 - soil resources and land
 - human health
 - consistency with the SWRRIP and MWRRIP and compliance with section 50C of the EP Act
 - compliance with the Landfill WMP and Landfill BPEM
 - the principles of environment protection in the EP Act.
- 6.3 The assessments concluded that the WAA is:
- consistent with SWRRIP
 - identified in the 2016 MWRRIP landfill schedule
 - compliant with the relevant SEPPs
 - compliant with Landfill WMP requirements – in particular landfill siting requirements
 - compliant with the Landfill BPEM, on the condition that further detailed design information be provided prior to the start of landfill construction

- not expected to adversely affect the interests of any person other than the applicant
- not expected to adversely affect the quality of any segment of the environment nor cause pollution or environmental hazard
- have not been objected to by DHHS.

6.4 The WA issued will be subject to a series of conditions. The conditions also require specific activities to be undertaken - some prior to the commencement of construction and others that will extend throughout the lifetime of the landfill's operation. They include:

- reporting requirements
- a requirement for the provision of a Financial Assurance to an amount agreed with the EPA
- a requirement for the provision of detailed design documents for written approval prior to commencement of any construction
- requirements for the inclusion of the additional design and management measures identified by EPA within the final designs
- requirements for the development and implementation of odour, groundwater, surface water and LFG monitoring and management plans
- engagement of an environmental auditor (appointed under the EP Act) to prepare an environmental audit report (in accordance with s.53V of the Act) in relation to the construction of a new landfill cell or the leachate collection pond.

6.5 It is highlighted that the WA is dependent on WCC obtaining a valid planning permit, and that WCC will still need to obtain an EPA Licence to commence disposing of waste in the proposed cells.

7 REPORT DATE

Date: 10 October 2017

APPENDIX A LIST OF APPLICATION DOCUMENTS

1. Wyndham City Council Wests Road Refuse Disposal Facility Works Approval Application – extension of operations, November 2016 / GHD Report for Wyndham City Council – Wests Road Refuse Disposal Facility – Works Approval Application – extension of operations, November 2016, 31/33268 supported by:
 - Appendix A – Planning Permit
 - Appendix B – EPA Licence
 - Appendix C – Supporting information to Section 3.1
 - Appendix D – Letter regarding Metropolitan Landfill Schedule
 - Appendix E – Groundwater Section Annual Compliance report 2014 - 2015
 - Appendix F – Leachate Management Plan
 - Appendix G – Surface Water Management Plan
 - Appendix H – Odour Management Plan
 - Appendix I – Acoustic Management Plan
 - Appendix J – Noise Survey Monitoring Report (Compass Environmental)
 - Appendix K – Fire Management Plan
 - Appendix L – Operations and Maintenance Procedure Manual

2. Further Information received on 10 July 2017 in response to section 22 Notice 1, issued on 19 January 2017 comprising:
 - 2.1 Response
 - 2.2 S22 Notice issued by EPA
 - 2.3 Additional groundwater information
 - 2.4 EPA assessment of S22 response Feb 2017
 - 2.5 Revised groundwater and Design measures report
 - 2.6 Sidewall linear section
 - 2.7 Conception groundwater interception layout
 - 2.8 Concept groundwater relief trench
 - 2.9 Additional leachate information
 - 2.10 Leachate pond location
 - 2.11 Typical leachate pond design
 - 2.12 Stormwater management plan

- 2.13 Revised site contours
- 2.14 Landfill gas risk assessment
- 2.15 Noise modelling report
- 2.16 Odour dispersion modelling report
- 2.17 Cap and Sump sections including groundwater relief system received 9 May 2017

3. Further Information received on 10 July in response to the second section 22 Notice, comprising the:

- 3.1 Second section 22 Notice from EPA dated 12 April 2017
- 3.2 Revised cell layout plan
- 3.3 RDF landscape plans
- 3.4 Bulban Rd landscape plans
- 3.5 Sample fact sheet
- 3.6 Top of cap presettlement plan
- 3.7 Top of waste presettlement plan
- 3.8 Site cross sections
- 3.9 Progressive rehabilitation plan
- 3.10 Response to submissions
- 3.11 WCC response

4. Further Information received on 7 Sept 2017 in response to the third section 22 Notice comprising the:

- 4.1 Third section 22 Notice, issued 18 August 2017
- 4.2 RDF Revised cell layout and rehabilitation Schedule
- 4.3 Revised Contour Plans
- 4.4 Revised Premises plan
- 4.5 Response to WREC submission
- 4.6 Preliminary construction drawings Cells 1B – 3 rehabilitation
- 4.7 Rehabilitation Management Plan Cells 1B – 3 final report
- 4.8 Addendum rehabilitation of Cells 1B to 3
- 4.9 WCC response

APPENDIX B

WESTERN
RESOURCE
ENVIRONMENT
CENTRE
SUBMISSION



WREC Submission re Wests Road Landfill Works Approval Application 2016-17

PART I

“Mound landfills are to be avoided as their exposed nature requires significant litter controls and present a significant visual impact on the landscape. Further difficulties attached to these landfills are leachate seeps from the side of the landfill and the stability of the landfill cap.” (EPA BPEM 788.3, 2015)

Summary

WREC opposes this Application on the grounds that it will:

1. Be a blight on the landscape: a 25m – 30m high mountain of unsightly rubbish;
2. Smell (up to 2 km away)
3. Contaminate air and ground water;
4. Create a risk to community health and well-being
5. Perpetuate a stigma telling the world that the Western suburbs are the dumping ground for everyone else’s waste;
6. Negatively impact the amenity and liveability of the thousands of new homes that will be built in the areas surrounding the landfill over the next few decades;
7. Set a precedent for other quarries in the region; (but there may be a need for one or two additional landfills outside the UGB to reduce the impact of the waste on local communities);
8. Encourage the continuation of cheap waste dumping instead of recycling and resource recovery;
9. Send the wrong message to industry and the community and will provide a serious economic disincentive for resource recovery investments;
10. Seriously contravene a number of legal requirements and policy intentions of the Government, including its policies of consultation and community and the principles of Environmental Justice.

**Part I Prepared by Harry van Moorst
On behalf of the Western Region Environment Centre
April - May 2017**

**Part II Prepared by Dr. Chris Atmore
On behalf of Environmental Justice Australia
April 2017**

Contents

Part I

1.	Introduction – who we are and our ‘standing’	3
2.	The Wyndham Waste Landfill – the past decade.....	4
3.	Government Policies	6
	State Policy	6
	EPA Policy.....	8
	Community Rights and Needs (EPA BPEM 788.3)	10
	Wyndham City Council Policy	11
	Visual Amenity	12
4.	Need for Further Landfill Space at this Time.....	14
5.	Odour.....	20
6.	Mounds, Leachate and Infrastructure failure	30
7.	Piggy Back Cells.....	31
8.	Fire:.....	33
9.	Other Community impacts	38
	9.1.Hours of operation:	38
	9.2.Stigma:.....	39
	9.3.Anti- Competition Issues:	40
	9.4.Problems With Leachate:	40
	9.5.Community Sense of Belonging:	41
10.	Risk and Environmental Justice	41
	10.1. Whose risk and acceptability?	42
	10.2 Global WA excludes community rights.....	44
	10.3 Potential legal and administrative problems	45
	10.4 The exclusion of the community and other stakeholders.....	46
	10.5 Excessive time horizon.....	47
11.	Summary and Conclusion	48
	Annex 1 – Non Compliance Report – 2013 - 2017	50
	Annex 2 – EPA Letter recognising need for prudence re lengthy time frames for Approvals	67
	Annex 3 –EPA Letter re Visual Amenity Powers	69
	Annex 4 – Photos of Wests Road Landfill	70

Part II	76
----------------------	-----------

1. Introduction – who we are and our ‘standing’

The Western Region Environment Centre (WREC) was formed in 1999 to protect our environment and our communities through research, policy development, advocacy and campaigning. WREC is a non-profit organisation with a part-time paid director. It is managed by community volunteers.

Over the past 15 years WREC has been engaged in a range of activities to enhance our environment, such as organising some of Australia’s largest Tree Day plantings and working on the policies to develop the linear park along the Werribee River in Werribee South or the development and implementation of water recycling from the Western Treatment Plant. WREC’s main work is to promote sustainability in the west by encouraging changes to individual lifestyles as well as changes to business and government practices.

WREC has simultaneously worked hard to protect the western suburbs from environmental abuse, whether from inappropriate housing developments (such as those too close to river banks), golf courses threatening major waterways, toxic dumps or the destruction of important native vegetation.

In the course of our work we have had a significant involvement in waste management and landfill issues. Our origins lay in the fight against the proposed CSR-Government proposal to establish a “Toxic Dump” at Wests Road in Werribee which was won by the community in late 1998. From that time onwards WREC members were involved with Government committees (such as the Hazardous Waste Consultative Committee and the Hazardous Waste Siting Committee) as well as membership of the EPA “expert committee” charged with advising EPA on hazardous waste management issues. Subsequently WREC was involved with the attempts to locate a hazardous waste landfill facility at Pittong, Violet town and Nowingi.

WREC has acted as a “community advocate” for a number of communities involved in landfill issues.

The current concern of WREC is that the legitimate use of landfill for ‘last resort’/residual waste is being seriously undermined by a narrow and unacceptable implementation of the Government’s “Resource Recovery policy. The Works Approval Application by Wyndham City Council for the expansion of the landfill for a period of 30 – 40 years and at an unacceptable height above ground level forms a major component of the intention to establish a very small number of giant waste landfills, with all the subsequent impacts on two or three local communities, instead of a broader approach that retains the legitimacy of landfills and secures community acceptance instead of growing opposition - and which actively promotes resource recovery.

While WREC is located in Wyndham and the majority of our active members reside in Wyndham we are equally concerned about the impact these implementation strategies will have on other communities, especially those in the neighbouring municipalities of Melton and Brimbank, as a result of similar proposals for the expansion of the Ravenhall landfill, and increasingly with the Wollert landfill which will face similar community opposition as the surrounding community grows.

We have prepared this submission in accordance with our broad concerns as well as with the specifics of the Werribee landfill and the substantial shortcomings of this Works Approval Application.

2. The Wyndham Waste Landfill – the past decade

The current situation facing the Wyndham landfill provides an example of the problems arising from the observations above. Wyndham City Council owns and operates the Wests Road landfill and has done so since 1976. During this time the Wyndham community was not concerned about the way the landfill operated and there were no objections raised (except the local belief that the prices were too high). That has now changed drastically:

- 2.1. In 2008 Wyndham City Council granted itself a permit to raise the landfill from approx 20m AHD to 44m AHD, that is, 24m above the surrounding ground level. They subsequently applied for a Works Approval (W.A.) to EPA which was granted late the same year. However:
 - 2.1.1. Council had failed to notify the majority of the local landowners or any residents. This failure breached the Planning and Environment Act but was unknown to EPA or the local community until 2012. This meant that local residents were denied the opportunity to comment or to appeal against the decisions
 - 2.1.2. In 2010 Council gave itself a permit to raise the height of the landfill to 65m AHD, again without any notification to local residents in breach of the P&E Act. Neither EPA or MWRRG were notified of the breaches at this time
- 2.2. In 2012 Council again gave itself a permit that raised the height of the landfill to 120m AHD, again without notifying residents
 - 2.2.1. In 2012, after giving itself the permit Council presented a draft Works Approval with a pre-settlement contour of 120m AHD. EPA was not prepared to accept this Works Approval without modification the earlier height of 65m AHD was subsequently proposed by the Council and accepted by EPA
- 2.3. In late November 2012 residents began to notice the growth of the “waste mountain” as the landfill cell rose above ground level. This was the first time that residents began to question the landfill and became aware of the 2008 permit and W.A..
- 2.4. Since early 2013 there has been growing community concern expressed in many quarters about the “waste mountain” and its impacts, including:
 - 2.4.1. The visual amenity – it is considered an eyesore and a major visual intrusion that obscures the iconic landscape of the Werribee Plains and the You Yangs (contrary to Council’s own Landscape Guidelines) – See Section 10 below and photos attached as Annex 4;
 - 2.4.2. The increased odour – substantial amounts of odour have been released since the landfill rose above ground and these have been recorded with statutory declarations and witness statements as well as sometimes reported to both Council and EPA (although without acknowledgement by these bodies in most cases) – see Section 5 below and Part II;
 - 2.4.3. Increased litter problems (4m litter control fences don’t have much impact on a 24m high mound on a windy day!);

- 2.4.4. Increased dust, noise and related amenity problems outside the facility's boundaries;
 - 2.4.5. The stigma that accompanies such a "waste mountain" and attaches to a local community such as Wyndham.
- 2.5. The Western Region Environment Centre (WREC) has expressed additional concerns relating to the environment:
- 2.5.1. The increased risk of gas and odour emissions from an above ground landfill, especially during the filling phase (which is proposed to continue for a further 30-40 years);
 - 2.5.2. The increased risk of fire due to greater exposure to the elements, especially lightning strikes, and the greater access to oxygen for the acceleration of fire. In addition there is a greater risk of grass fires (to which the area is prone) spreading to a "waste mountain" than to one at ground level -see below;
 - 2.5.3. Increased vulnerability to external factors such as storms, erosion, etc.
 - 2.5.4. Increased risk of rain and moisture ingress through the above-ground open faces of the landfill leading to increased leachate and gas production prior to adequate leachate management infrastructure being in place;
 - 2.5.5. Increased risk of failure of the cap and/or liner systems due to increased stresses, pressures and external vulnerability.
 - 2.5.6. Increased risk of Infrastructure deterioration and failure due to a greater mass of waste exerting greater pressure on leachate collection and gas collection infrastructure;
 - 2.5.7. Increased risk of Leachate leakage as a result of infrastructure failure means an increased risk to the environment and health. The adjoining Cherry Tree Creek discharges into the RAMSAR site on the Western Treatment Plant and any contaminated groundwater or surface water would impact this important environmental catchment. There is already an existing plume of "fugitive leachate" resulting from a growing number of non-compliances – at this stage it is unclear what risk this plume poses for the environment in the future (the auditor has required further investigations).
- 2.6. The level of risk to nearby residents has increased significantly as a consequence of the expansion of the Urban Growth Boundary since the Government's "Melbourne 5 Million" policy. Several large housing estates have been approved (and partly commenced) within much closer proximity than before (as close as 1km from the site) and within the existing visual and odour amenity "proximity range". Further expansion of the housing and commercial areas will inevitably follow and will force the current odour and visual imposition onto a considerably larger population. This "encroachment" was not considered a serious problem until the landfill began to rise above the surrounding landscape.
- 2.6.1. As discussed below, the Council's Works Approval application has failed to establish any real need for additional landfill space at this time, let alone a need to go beyond a landfill into a waste mountain.
 - 2.6.2. Therefore, although the Werribee Landfill is an important component of the metropolitan waste management infrastructure, no need exists to turn it from a landfill

into a waste mountain nor to continue using landfill as the primary option instead of a last resort as required by the legislated Waste Hierarchy. There is no net benefit resulting from this – only net disbenefits unjustly imposed on one section of the metropolitan community.

3. Government Policies

It is required that EPA considers the broader state waste legislative and policy context within which the Works Approval is assessed. It is a requirement of the P&E Act that Works Approvals are granted on the basis of complying with Government policies and legislation.

There are several levels of policy that need to be considered:

- State Government Policy (including EPA policy)
- The Implementation strategy as tentatively developed by Sustainability Victoria, Metropolitan Waste and Resource Recovery Group and EPA
- Wyndham City Council policy

These policies include the following:

State Policy

Victoria's Waste and Resource Recovery Policy, *Getting Full Value* (April 2013), requires that:

"The waste management and resource recovery system will protect public health and preserve local amenity by: ... avoiding or minimizing the risk of harm to people from the waste and resource recovery system" and that *"The waste management and resource recovery system will contribute to environmental protection by:*

Avoiding or minimizing harm to the environment caused by waste and resource recovery activities... (and)

Promoting forms of waste and resource recovery management which have least impact on the natural environment." (Victorian Government 2013, p.3 – our emphasis)

This policy intent needs to be read in the context of the *Environment Protection Act 1970 (Vic)* and the Policy Principles set out in Section 1 of that Act, including:

- ***Integration of Economic, Social and Environmental Considerations***
- ***Precautionary Principle***
- ***Intergenerational Equity.***
- ***Conservation of Biological Diversity and Ecological Integrity.***
- ***Wastes Hierarchy.***

These principles are further outlined and discussed in greater detail in Part II.

The importance of the Waste Hierarchy is also repeated in the EPA policy encompassed in *Waste Management Policy (Siting, Design and Management of Landfills)*:

“use of landfills is a last resort and needs to be carried out in a way that protects the environment and the community” (p.i)

“Landfills represent the least preferred waste management option and thus should be kept to a minimum.” (p.13)

“Future landfill development should be minimised, consistent with the broader objective of ecologically sustainable development of Victoria.” (p. 13)

Implementing State Policy

It is important to recognise several aspects of the policy commitment:

“The statewide waste and resource recovery infrastructure plan will include:

- *a comprehensive audit of existing infrastructure across the state, including current and future capacity, and current environmental performance*
- *identification of residential and industrial growth land use areas*
- *transport considerations such as strategic freight corridors and logistics hubs*
- *statewide guidance on issues, risks and infrastructure gaps”(our emphasis)*

And the MWRRG plans will be responsible for:

- *identifying new infrastructure needs and timing for their development*
- *identifying and assessing possible precincts for infrastructure, along with necessary mechanisms to secure land through infrastructure/landfill schedules*
- *contingency planning for emergency events*

Many of these tasks have not been completed in accordance with government statements and community expectations. For example, there has not been a “comprehensive audit” of capacity or performance nor has there been any serious identification of new infrastructure needs let alone “the timing of their development”. The issue of contingency planning, which we have raised several times due to the trend towards putting all our waste into only 3 huge landfills, does not appear to have been taken seriously.

The desire to convert existing major landfills into “Hubs” without either consultation, assessment of their suitability or consideration of the best way to establish such hubs fails to accord with the policy objectives and implementation requirements.

WREC does not oppose the Policy but considers that the requirements implied by the above, especially those aimed at auditing, assessing and planning the hubs, **have yet to be met**. There have been considerable changes to the UGB and community encroachment over the past decade that may limit the degree to which large old landfills such as the Werribee and Ravenhall ones are now suitable as the primary hubs. In view of the serious community opposition due to the perceived (and actual) increased risks entailed in such massive facilities for an extended period of many decades in close proximity to residential and commercial areas, such hubs are contrary to policy requirements and community expectations. Furthermore, there is no assessment or justification of net community benefit provided in the Application.

There are additional issues with the current Application for a 30+year Approval including the issue of the “piggyback Cells” which are counter to policy as discussed further below.

EPA Policy

As discussed in further detail in Part 2, EPA Policy is subject to all the principles and requirements of the State’s Environment Protection legislation, including the major principles outlined above.

A major part of the landfill policy is captured in the BPEM - *Siting, Design, Operation and Rehabilitation of Landfills*. In 2001 and reiterated in 2012 and 2015. This included the following:

“Mound landfills are to be avoided as their exposed nature requires significant litter controls and present a significant visual impact on the landscape. Further difficulties attached to these landfills are leachate seeps from the side of the landfill and the stability of the landfill cap.”

(EPA 788.3, p.12)

The reason for this policy is based in part on the “exposed nature” of landfills as discussed above. It recognises the importance of the “visual impact on the landscape” (further discussed below). It also acknowledges some of the increased infrastructure risks that create “leakage seeps” and instability of the cap. WREC considers this to be sound and in accordance with engineering and scientific understanding.

It is therefore strange to find that, contrary to this policy, EPA approved a Works Approval application in 2008 which allowed Wyndham Council to construct a waste cell (Cell 4A) to 44m AHD or 25m above the surrounding landscape.¹

It also appears that in order to hide this significant error in judgement an EPA spokesperson tried to redefine what a “mound” really is:

“This site, although having a component above the ground, is built within an active quarry site that is 20-30 metres deep and is thus not a mound landfill.” (Wyndham Weekly, 31-7-13).

There are many problems with this redefinition of what a “mound” is in the context of EPA policy:

- The EPA spokesperson told the newspaper that for it to be a “mound” it must be built on “flat ground”. There is nothing to indicate this in the BPEM.
- The reasons given in the BPEM, with which we fully concur, are that, primarily, it is the “exposed nature” of a mound landfill that is of considerable concern. The level of exposure is directly related to its height and whether it is built on flat ground or has a component below ground has no bearing on this.
- In all versions of the BPEM a mound is presented as a landfill *“where most of the landfill is located above the natural ground level”* (EPA 788.3, 2015, p. 12). The Wyndham waste landfill clearly meets this criterion: it is approximately 8 - 12m underground and already 25m above

¹ It is recognised that 2007 – 2009 was a difficult time for EPA and mistakes were made (see Ombudsman and Auditor General reports). The aim should be to ensure that such poor decisions are not repeated and do not set a precedent..

ground. Note there is no mention in the BPEM of it having to be on flat ground nor is the quarry “20 – 30m deep”, as claimed by the EPA spokesperson. The landfill has approximately 70% of the waste above ground and is clearly a “mound”.

- The implication from the EPA spokesperson appears to be that for some unsubstantiated reason EPA believes that a mound placed on a flat surface is less stable and more risk-prone, as well as less visually intrusive, than one that is built as an above ground extension of a below ground landfill. The reality would seem to be that a mound placed on top of an existing, recently active landfill (whether as a piggyback landfill or as a simple continuation of the landfilling process), would entail even greater risks than a mound simply placed on a flat surface, especially in view of the expected differential settlement of the below-ground waste as the mound presses down on it.

The attempt to redefine the meaning and intent of a “mound”, as attempted in by the EPA spokesperson, can only be classified as an unscientific and unsupported claim which threatens to bring into disrepute the carefully developed Best Practice Environmental Management guidelines (BPEM) relied on by EPA, Government and the community to protect the environment.

A later attempt to redefine a “mound” was made by Wyndham City Council in its Works Approval Application in 2014 for Cell 4C where it was claimed that “it is both an area landfill and a mound landfill”. EPA accepted this without additional comment, ignoring the contradiction between this and the BPEM.

WREC urges EPA to enforce its justified policy and avoid mound landfills by not allowing any landfills to go significantly above ground. “Significantly above ground” will still need to be defined on a site-specific basis and would need to be in line with EPA’s landfill design requirements of an accepted cap design with a 5% minimum slope to facilitate water run-off. In view of the BPEM it should also avoid “significant visual impact”. This would imply, on relatively flat surrounds, a height of approx. 3-4m above ground for the cap construction for a small cell and somewhat greater (to enable the 5% slope) for large cells. There should be no need to go above 6-8 metres in flat areas such as Wyndham and much of the Western Suburbs. This is best practice in mining rehabilitation according to past licencing and work plan requirements (i.e. rehabilitation should be to the levels of the surrounding topography).

As is clearly spelled out by the MWRRG:

"Landfills must not leave an unacceptable environmental legacy for future generations and their management must be best practice." MWRRG Strategic Plan p. 84; 20.1

EPA’s powers are substantial in this regard besides the power to refuse an Application:

"If the landfill operator does not comply with licence conditions, or the landfill poses an unacceptable risk to the environment or the surrounding community, EPA can revoke or suspend the landfill licence." (EPA Licensing Framework for landfills, 2009-10).

WREC is cognisant of the “dual power” situation with regards to some “planning issues”. In the case of issues of ‘amenity’ such as odour, height and visual amenity in general, these are often seen equally as

“Planning issues” and left to the appropriate planning authority to determine. However, in the case of landfills such issues are also within the ambit of EPA’s authority and hence responsibility.

Therefore WREC was pleased with the response by EPA to our initial concerns: “through the current landfill BPEM and associated statutory policy, EPA has powers to regulate amenity issues , including visual amenity”. It was also pleasing to know that “when we assess any future application for works approvals relating to Wyndham landfill, we will consider community concerns including the height and its impacts on the surrounding community” (Letter from John Merritt, EPA CEO, on behalf of the Minister, 30-8-13 - see in full in Annex 3) The visual amenity issue was also raised by the independent facilitator of the 20B Conference in her Report.

We urge EPA to consider such issues in the knowledge that the planning authority in this instance is also the proponent and has a clear conflict of interest, as discussed previously, which has grossly distorted the normal planning process for this facility.

Community Rights and Needs (EPA BPEM 788.3)

EPA’s BPEM 788.3 provides clear guidance regarding the importance and values of full and early community consultation:

Regional waste management groups are responsible for providing a framework for the orderly development of waste management facilities for both the public and private sectors. They are intended to provide a reliable system of waste management, including landfill airspace, within the region.

The community expects the amenity and safety aspects of a landfill to be addressed during operation and post-closure period. This should be considered at a very early stage, and where necessary, particular care should be used to construct bunds for visual screening, noise barriers and landscaping and to ensure that the landfill is designed and managed taking into account environmental and safety outcomes.

It is also important to liaise with the community very early in the planning stage. Communities will have different needs, abilities and interests in participating in decisions about the siting, design, operation and rehabilitation of landfills. Effective and early engagement enables identification of the issues that are important to the local community and environment that affect siting, design and operation of the landfill.

Engagement also unlocks the significant amount of local knowledge, often providing insights into how better environmental outcomes may be achieved. There may be community driven reasons why one site may be selected above others. Full community engagement is expected for any project that may have an impact on the community.” (5.1.1 Community Needs, p.11).

Unfortunately, throughout the last decade there has not been adequate consultation with the affected communities regarding waste management policies, processes and possibilities. Growing community dissatisfaction and dissent is already apparent as a result. This Application is contrary to the BPEM as well as Government policy (especially the commitment to

transparency, environmental justice and community engagement that the government reiterated in its response to the EPA Inquiry earlier this year.)

Despite its policy and BPEM, EPA has done little to ensure that this policy is reflected in practice and there has been little enforcement of this requirement. Perhaps the litmus test will be whether EPA is prepared to approve a Works Approval that will exclude community and third party rights for the next 30+ years (equivalent of a whole generation) at a time when the government expects such rights to be increased, not abolished (see further discussion below).

Wyndham City Council Policy

Wyndham has several planning and environment policies which the Works Approval application contravenes, including a waste management policy. Most of these are broad, generic and often vague, with few actual performance criteria. Most of these are not relevant to the landfill in any direct way although they often specify general requirements such as:

“Encourage development which adds value to the quality of environmental assets” (Waste Management Policy, 21.05-10 , p.30).

The *Wyndham Planning Scheme* includes a strategy to:

“Encourage the siting, design, operation and rehabilitation of landfills to reduce impact on groundwater and surface water.” (Planning Scheme 14.02-2 p. 4)

and

Positive re-focusing of Wyndham’s image and appearance, building on its rural land/open space and landscape qualities and ensuring that it is appealing to residents, investors and visitors alike. (Ibid, 21.04-3 p.2)

Of more relevance is the Wyndham Environment and Sustainability Strategy 2011 – 2015 and its Landfill strategy:

“The diversion of waste from landfill into the recycling stream or to reuse allows for a greater life of a landfill cell and reduces the potential of negative environmental impacts both from the production of raw materials and operation of the landfill”. (p.20).

However there is no actual strategy or action for expanding the height or size of the landfill. It could be argued that therefore there is no policy or strategy support for the current Works Approval in Council’s Environment and Sustainability Strategy. It is notable that in Council’s *Social Infrastructure Planning – 2040* (prepared 2009) there is no mention of waste management or waste infrastructure or the landfill, again showing there is no policy which supports Council’s Works Approval. The same is true for the many other reports such as the *Wyndham City Plan 2011 – 2015*; the *Growth Area Framework Plan 2010*; The *Wyndham Environmental Planning Atlas – 2004*; *Towards a Sustainable Wyndham – 2004 – 2007*, all of which fail to provide any support for the Works Approval’s increase in height above ground level (or any other expansion – indeed the few mentions that are given to the

landfill reiterate that the aim is to reduce waste going to landfill and to expand recycling and resource recovery, not landfill space).

Visual Amenity

Perhaps the most important Council policy issues, and one that has consistently been pointed out at community meetings, is the direct conflict between the Works Approval application's landfill height and Council's *Landscape Context Guidelines, March 2013*. The Guidelines are aimed at being:

"A strategic document aimed at assisting Council, other authorities and developers to safeguard the visual, natural and cultural heritage values of urban and rural landscapes when developing precinct structure plans, planning schemes and development proposals"

They are "designed to protect the characteristics that define Wyndham, such as . . . views across native grasslands to the You Yangs. (p. 1)

Considered one of the **"Key Sites of Significance"** :

"The You Yangs rise above the plain as the most dominant vertical feature" (p. 5)

"Some prime examples of viewlines from within Wyndham focus on the Brisbane Ranges, the You Yangs . . . The attractiveness of these views contributes to the quality of life for the communities and visitors who experience them." (p. 12)

Key Site No. 2 Includes *"Views of the You Yangs, Mount Anakie, Brisbane Ranges, conservation reserves (such as the future grassland reserves) and . . . provide a 'sense of place', opportunities for future residents to appreciate their regional location" (p. 20)*

"The 'openness' of the Lollypop Creek flood plain allows for widespread and long views of the waterway, 'rural' land and the You Yangs. It separates and buffers the rural and urban land uses and the adjoining Ramsar wetland. Views and buffers to the Lollypop Creek (and nearby Cherry Tree Creek) and its floodplain are vital for retaining 'sense of place' and 'naturalness' of Wyndham."(p. 30)

Cherry Tree Creek runs through the South West corner of the landfill site. Key Site 8 is mapped adjacent to the landfill (and partly overlapping – p. 56)



Figure 53: South-west view from Princes Freeway of Cherry Tree Creek, open agricultural land and the You Yangs (pre-waste mountain). (p. 41)

The Guidelines require that *“New estate design should allow for extended viewlines and viewsheds”* NOT waste mountains that obliterate such viewlines. (p. 12). The Guidelines require Council and developers to *“Strategically locate open space and orientate development to maximise views of . . . You Yangs, Brisbane Ranges and other distant landscapes”*(p. 21).

The “Waste Mountain” (or “Mount Werribee” as it is sarcastically called by residents in Little River) is already considered an eyesore and a major visual intrusion that obscures the iconic landscape of the Werribee Plains and the You Yangs – (See photos attached as Annex 4).

The Wyndham landfill, at the current height of 25-30 metres above ground, can be seen from a considerable distance and consists of waste regularly visible from the freeway and local residences.

It is important to remember that each cell is a working cell for several years, only to be replaced with another similarly sloped and visible cell for the next few years, and so on². In other words for the life of the landfill (at least another 30 years) there will be “mountain faces” with considerable waste visible for considerable distances and subject to greater odour emissions and other impacts than if kept at ground level.

There is no way that the Council would allow a commercial building of this height and size to obscure the landscape in this or other locations.

For the sake of very minor extra revenue Council is prepared to totally ignore its own policies and guidelines. To grant a Works Approval to an applicant who does this would normally be seen as unacceptable by EPA. The fact that in this case it is a Council giving itself a permit to do this should not alter EPA’s responsibility to recognise and respond appropriately to the failures of the Works Approval Application.

This responsibility was acknowledged in correspondence on behalf of the Minister for the Environment and the EPA in a letter from EPA CEO John Merritt in 2013 where it was stated that:

“through the current landfill BPEM and associated statutory policy, EPA has powers to regulate amenity issues including visual amenity, a key concern relating to the height of a landfill. In addition, we can influence the heights of landfills through regulatory measures relating to odour and leachate risk . . . when we assess any future application for works approvals relating to Wyndham landfill, we will consider community concerns including the height and its impacts on the surrounding community”. (EPA 30/8/2013 - see Annex 3 for the full letter)

² There is some uncertainty about the exact number of cells that are proposed. There is no finalised overall plan available for the site and the various site concept plans are inconsistent: some indicate there will be a total of 8 cells meaning a further 5 cells over the next few decades. However the most recent plan we have available, as part of the Application, Annex H, has reduced the size of the cells to more reasonable proportions (something probably intended with the earlier plans also) creating a total of 13 additional cells (including the cells in ‘Stage 7’ and ‘Stage 8’). However, Council has disguised the actual number of cells by designating them as “sub cells” (a newly invented category that is not clearly identified or regulated by EPA – A “cell” now appears to be comprised of 3 “sub cells” while EPA requirements are that each “cell” should operate for approximately 2 years. This time span would be correct for the “sub cells” but not the designated cells in the Works Approval application where the “cells” would have air space for approx. 6 -8 years. Clearly this is an incorrect interpretation of the term “cell” as used in the BPEM and related EPA documentation. In reality what is being referred to as “sub cells” should correctly be called “Cells” and be subject to the appropriate criteria for approval, construction and management required for a cell. NB: in the 2016 Audit and the site diagram (derived from Compass Consultants) the term used for the 3-cell area is “stage” (e.g. Stage 7 or Stage 8) which is far more acceptable nomenclature and should be adopted by EPA as the way to group cells.

Once again we find that, despite the assurances from the Minister, Premier and EPA's CEO, this BPEM and related responsibility has not been evidenced in EPA decisions. For the Cell 4C works approval in 2014 EPA suggested that the newly-formed CRG should make recommendations about height to the Council while in the next breath approving Council's height decision in full knowledge that the CRG, having not met at this stage and having no realistic power to make recommendations of this magnitude before any such discussion could be held, was totally irrelevant once EPA had formally approved the height proposal (another case of EPA "passing the buck").

4. No Need for Further Landfill Space at this Time

EPA is obliged to give serious consideration to the question of the "need" for further landfill space, whether in terms of a new landfill or the expansion of an existing Landfill (e.g. a new cell) in determining a Works Approval application. This is emphasised by VCAT:

"in the normal course of gaining regulatory approvals, the EPA would turn its mind to the issue of demonstrable need for a landfill and compliance with waste minimisation strategies during its consideration of a works approval application"

And

*"We understand from the reasons of Emerton J that in the normal course, the question of 'demonstrable need' would be one addressed by the EPA in the works approval application process and not by a responsible authority, or a tribunal acting in the role of a responsible authority, during a permit application."*³

We contend that the Applicant has failed to establish a need for expansion of the Wests Road landfill to 44mAHD. The establishment of such a need is required by the following:

- 4.1. The *Metropolitan Waste Management Strategy* (MWRRG 2012) outlines the Metropolitan Waste Resource Recovery Group's requirements to establish the need for a new landfill or the expansion of an existing one and for the MWRRG and by implication the EPA to refrain from granting new Works Approvals or to permit or schedule the development of new landfills or landfill cells ". . . until the closure or imminent closure of existing operating landfills in their relevant subregion has created a demonstrable need for new landfill space". (Part 3 p.9 with reference to EPA BPEM 778.1 – our emphasis).
- 4.2. The MWRRG Draft Strategy requires that
 - "scheduled landfills (and landfill cells) not currently operating only come into operation:*
 - *upon the closure, or imminent closure, of existing landfills*
 - *and when their closure has created a demonstrable need for new landfill space in that sub-region.*

³ From: Victorian Civil and Administrative Appeals Tribunal: *Barro Group Pty Ltd v Brimbank CC & Ors* [2013] VCAT 372 (28 March 2013), (47) & (48)

The policy and the Environment Protection Act 1970 require MWRRG to consider the potential to use landfills in surrounding regions.” (See also Sec. 50BB of the Environment Protection Act 1970 as amended 2016).

- 4.3. Furthermore the draft Statewide Waste and Resource Recovery Infrastructure Plan (SWRRIP 2015) notes that *“a shortage of landfill airspace does not necessarily require a new landfill: in some cases, efficient transfer to another facility may be the most cost effective and preferred environmental solution.”*
- 4.4. The Metropolitan Waste and Resource Recovery Group (MWRRG) has provided valuable guidance on this in its Metropolitan Waste Management Strategy (2012).

From this strategy it is clear that there is no shortage of airspace for waste landfill:

The availability of airspace in the entire metropolitan region is adequate to satisfy demand for many decades. However, most of this airspace is located to the north and west of Melbourne. (Strategy Part 3 p.7)

and

At present the current scheduled sites are considered sufficient to meet the demand for landfill space in the metropolitan region. (Strategy Part 3 p.9)

and

Even a conservative scenario, which assumes that there will be no reduction in waste to landfill over the Schedule period to 2017–18, does not indicate the need for any additional landfill sites. (Part 3 p.9)

and

The combined airspace capacity of Wyndham, Hanson and Boral (AKA Ravenhall or Cleanaway) putrescible landfill sites is in excess of 50 years. (Part 3 p.10)

- 4.5. “The geology, hydrogeology and patterns of development in metropolitan Melbourne are such that there is a relative abundance of sites that could be suitable for development of landfills. **Furthermore, the extraction rate from metropolitan Melbourne quarries is creating space about six times faster than it is being filled.** As such, it is likely that many potentially suitable quarry sites will never be used as landfills”. (Part 3 p.9 our emphasis).
- 4.6. The establishment of “need” requires a series of steps to be undertaken, generally in the following order:
 - 4.6.1. A general “need” in terms of a requirement for landfilling ‘waste’ as opposed to other options must consider:
 - 4.6.1.1. the likely amounts and types of ‘waste’ for a number of years into the future
 - 4.6.1.2. the alternatives to landfilling (e.g. waste minimisation, resource recovery, waste to energy) in accordance with the waste hierarchy and Government

policy as clearly outlined in both the “Towards Zero Waste” and its successor “Getting Full Value” as well as the Planning and Environment Act

- 4.6.1.3. issues of environmental impacts of the various options
- 4.6.1.4. issues of social impacts of the various options
- 4.6.1.5. issues of community acceptance of the various options
- 4.6.1.6. issues of cost effectiveness.

4.6.2. The overall principles outlined in the Environment Protection Act must be adhered to, including the Principle of Intergenerational Equity and the Precautionary Principle.

4.6.3. If a need for landfill (as distinct from more sustainable, higher on the hierarchy options) for an estimated quantity of waste is established the next step is to establish the appropriate way to meet such a last resort need, including:

- 4.6.3.1. The quantities of airspace required on a short, medium and long-term basis
- 4.6.3.2. appropriate siting – there have been major changes to the surrounding area since the initial landfill was established and the Works Approval does not provide an assessment of the current suitability of the location for such a large landfill nor does it address alternative siting possibilities
- 4.6.3.3. appropriate design – the issue of height is not even considered in the Works Approval, despite substantial community opposition expressed through meetings, submissions and a petition of more than 2,400 signatories. The Works Approval simply assumes that a design of a massive waste mountain is appropriate for this location based on information provided years ago and no longer accurate for the site due to major changes in the conditions (see below for further discussion);
- 4.6.3.4. appropriate (best practice) management - there is sufficient evidence in the various Audit reports to raise concerns about growing non-compliance issues (see attachment 1 Non-compliance Report)
- 4.6.3.5. rehabilitation – rehabilitation discussion in the Works Approval centres primarily around the technical requirements for capping (which remains largely ‘temporary’ capping) and fails to adequately consider the issues of landscaping, visual amenity, etc. Of equal importance is the failure to establish an adequate time line for the rehabilitation process to commence and finish, thereby creating a false expectation that the rehabilitation will happen rapidly instead of over a lengthy period of many decades during which some 8 – 10 additional cells will be operating without adequate rehabilitation and with considerable potential impacts on the surrounding community. Currently cells 2, 3, 4A and 4B only have “temporary” capping, and no landscaping (lots of promises, one or two plans but no action!), thereby creating visual ugliness to travellers on the

Geelong Road and visitors to this area in the City of Wyndham thus effectively reinforcing the belief that the West is Melbourne's sacrificial area instead of the vibrant modern growth corridor the State Government is promoting. There are no grounds for community trust in Council's rehabilitation intentions or in EPA's enforcement of acceptable rehabilitation outcomes beyond the minimal capping requirements (once the "temporary capping" is finally removed).

4.7. Lack of sound factual and evidence-based framework.

- 4.7.1. Such considerations must be evidence based within a sound factual and scientific framework .
- 4.7.2. It is our contention that this has not been provided in the current Waste and Resource Recovery strategy or scheduling. We believe that the process has been inadequate in that it:
 - 4.7.3. Was not evidence based and had limited scientific basis:
 - 4.7.3.1. It relied primarily on the estimates provided to the MWRRG and SV by the owners and/or operators of the facilities. There are several reasons why these might be inaccurate including:
 - 4.7.3.2. A desire by the owner to retain a large share of the waste landfilling business by exaggerating the airspace available in order to retain a primary role in the schedule
 - 4.7.3.3. A lack of clear indications of the rate of quarrying operations that are expected to create airspace (for those landfills relying on ongoing quarrying for the creation of airspace)
 - 4.7.3.4. A lack of any precision in the estimates of available air space
 - 4.7.3.5. An apparent lack of any independent audit of actual and expected airspace
 - 4.7.3.6. The equally difficult process of realistically estimating the rate of diversion from landfill to alternative management options
 - 4.7.3.7. Inability to independently assess what obstacles to diversion or landfilling might render estimates inaccurate
 - 4.7.3.8. A serious lack of consultation regarding community expectations about acceptable heights to which the waste might be tipped
 - 4.7.3.9. MWRRG and EPA were not cognisant of the community attitudes and the impacts that waste management facilities are having or are feared to have on the environment and the host community and hence any feasibility studies that were undertaken (and we are not aware of any in Melbourne's West) can be seriously unrealistic (as was seen in the case of the proposed Arthurs Seat waste landfill that was deemed "necessary" by the Peninsula WMG).

4.7.4. We contend that it is not sufficient to take the word of the landfill (or any other waste management facility) owners about their anticipated capacity or rate of processing the waste. This would best be established through an independent audit carried out annually under the auspices of one of the appropriate agencies (perhaps EPA would have the greatest expertise available for such a task, although other sources of such expertise could be overseen by SV or MWRRG instead).

4.7.5. The previous Government's policy, *Getting Full Value – the Victorian Waste and Resource recovery Policy* (April 2013 - endorsed by the current government), outlines important requirements for the implementation thereof, some of which are highly relevant to the consideration of "need". These include:

4.7.5.1. a comprehensive audit of existing infrastructure across the state, including current and future capacity, and current environmental performance;

4.7.5.2. identifying new infrastructure needs and timing for their development;

4.7.5.3. identifying and assessing possible precincts for infrastructure, along with necessary mechanisms to secure land through infrastructure/landfill schedules;

4.7.5.4. contingency planning for emergency events;

4.7.5.5. These are tasks that are yet to be undertaken and completed. They are crucial tasks for the development of the Strategy and for facilitating the desired outcomes of the Government's policy;

4.7.5.6. **Until these are completed the determination of both "need" and the appropriate way to meet such need cannot be adequately assessed let alone finalised. Specific to this Application is the fact that no evidence has been obtained and provided to show a need to provide such a landfill at the existing Wests Road landfill as distinct from other possible locations nor has it been established that there is a need for such a landfill to go to substantial heights above the surrounding ground level.**

4.7.5.7. We contend that EPA should refrain from granting any extended (more than 5 years) works approvals for contentious extensions (such as the height and extent of the Wests Road RDF) before the requirements of the State policy have been adequately addressed.

4.8. Risk of monopolies

In the preliminary work done by Sustainability Victoria (SV) an important warning was included (Draft Victorian Waste and Resource Recovery Policy , October 2012, p.21) which should be heeded by EPA in considering this application:

"Consolidation also poses risks that may need to be managed by Government. This includes the risk of monopolies and a lack of processing capacity in the event of a large facility closing due to commercial reasons or an emergency".

- 4.9. This is what is occurring for the Werribee and Ravenhall tips – they were established before the urban Growth Boundary expansions and were never sited or designed to be such hubs. Nor has there been any community consultation about turning them into such hubs (issues such as amenity, transport/traffic, etc. were not even raised at the local level until the community began to raise them very recently). If they are to continue to be acceptable as landfills within a growing and increasingly concerned community then the issue of size and height will become paramount. Such design issues have not been addressed, despite the requirements of the Government’s policy.
- 4.10. **In other words, the need for several massive mountains of waste, 24 – 40 metres above the surrounding landscape, has not even been considered, let alone justified, in contravention of the principles of environmental justice and intergenerational equity.**
- 4.11. A further “need” that must be considered in this specific Application is the need for such a distant time horizon. While conceptual plans and targets might be acceptable over a 20 – 50 year span specific plans are generally considerably less than this (e.g. 10 years for the MWMRRG). In the case of a Works Approval, requiring detailed plans, designs, standards, compliance issues, etc. such lengthy time periods are not practical. This is shown clearly in the Works Approval that is the subject of this submission. Throughout there are motherhood statements claiming the proponent will abide by EPA requirements (as though this was a voluntary concession on their part) and promises that they will consider and seek EPA comment on matters at some unspecified time in the future. The actual “works” for which approvals are sought are left vague and, in some instances, contradictory. In essence, there are very few “works” stipulated in the Application for EPA to assess. Primarily the Application is for 30+ years of approval for “works” that, in our view, may not even adequately meet today’s standards. But even if they do meet today’s standards that does not justify approvals of works that will not be undertaken for many years and for most of the future cells, several decades.
- 4.12. The primary argument for the need that has been presented has rested on the scheduling prepared by the MWRRG in their Implementation Plan and the designation of three landfills as “hubs” – which, as discussed above, is of questionable value for this purpose due to its limited accuracy and a failure to adequately implement policy and principles in the Act. It is basically a useful conceptual plan and subject to regular review (unlike a Works Approval which cannot be realistically reviewed to make retrospective amendments and changes several years after being approved).
- 4.13. The other arguments for such an extended time frame for this all-of-site or “global” Works Approval has been to claim that the Council (or any other proponent) requires 30+ years of “security” to attract investment for alternative waste treatment and resource recovery infrastructure.

That this is mere sophistry and the opposite of what they are really applying for can be seen in the clear distinction between land use planning and the role of the EPA along with the likely economic consequences of the Application:

- 4.13.1. Wyndham Council already has land use security with a perpetual planning permit (prepared by itself and endorsed by VCAT) to use the land for its landfill/waste management – no other land use can be undertaken without Council’s approval and planning permit amendment. EPA cannot provide Approvals for any works on this land that do not meet with the planning permit. No factory, residences, churches or hospitals or Youth Detention Centres can be built there without such planning amendments. Council has as much security as any investor can have. In reality however, Council’s Works Approval, while not adding to its landfill land-use security, seriously detracts from any alternative, higher order, resource recovery investment.
- 4.13.2. This is for two interrelated reasons: firstly it gives a message to the community and to potential investors that EPA and the Government are prepared to give lengthy Approvals for the next 3 or more decades to landfill as a primary waste management process. Secondly, to the extent that contracts are signed on the basis of such lengthy approvals, it ensures a supply of waste that will be primarily retained for landfill and hence not available to resource recovery investors. This will inhibit investments in resource recovery alternatives, totally contrary to what Government and EPA claim to want. **To the extent that such lengthy Approvals provide any additional security, it is to the landfill industry at the expense of security for the resource recovery sector and the community at large.**
- 4.13.3. EPA’s determination of this Works Approval will probably have a considerable impact on the speed at which investments in resource recovery eventuate. It will also impact on the credibility of the Government’s Resource Recovery policy and its seriousness about ensuring that waste management transitions from landfill as a primary method of managing waste to resource recovery becoming the primary method with landfill as the last resort option when all else has proven impractical.

5. Odour

Odour is regulated through the State Environment Protection Policy for Air Quality Management (SEPP-AQM) and through the Public Health and Wellbeing Act (2008).

The Public Health and Wellbeing Act (2008)

“Provides protection from nuisance, including emissions that are or are liable to be dangerous to health or offensive.

The Act states that the number of people affected should not be regarded when determining whether a nuisance is dangerous to health or offensive.

The State Environment Protection Policy for Air Quality Management (SEPP- AQM)

“Protects beneficial uses of the atmosphere including local amenity and aesthetic enjoyment.”

The SEPP (AQM) classifies odour as an indicator of local amenity and aesthetic enjoyment and establishes odour criteria for assessment modelling.

The Works Approval application falls far short of meeting the requirements of the odour legislation for the reasons outlined below:

5.1. Despite previous claims that “No verified complaints regarding odour . . . have been received at the site” there has been “verification” about odour escaping from the landfill in several forms:

5.1.1. There is a detailed account provided by Ms Connie Menegazzo, a resident within approx 1km of the landfill which verifies the wind direction and odour characteristics and times⁴. Council’s refusal to even attempt to verify it is a failure of due diligence and contrary to the requirements of their landfill licence and their responsibilities under the Local Government Act.

5.1.2. In addition WREC has available a number of statutory declarations from residents and local workers describing the landfill odours they have been subjected to.

5.1.3. But perhaps the most obvious falsity of the claim that there are no “verified” complaints is contained in the Non-compliance findings of the Auditor and Council’s own consultants (see Annex 1 for details) where gas emissions (including odorous gases) were found to be non-compliant on a substantial number of occasions.

5.1.4. It is also clearly acknowledged in the Applicant’s own Annual Performance Statements:

5.1.4.1. In the 2011/12 Performance Statement it was acknowledged that the landfill had failed to comply with the license requirement (L5) to “prevent emissions of landfill gas from exceeding the levels specified” in the BPEM (EPA 788.3); Nevertheless Council argued that “Offensive odours” (a component of landfill gas) were not discharged beyond the boundaries of the premises but no evidence for this claim exists because no odour audits were done. Nevertheless, this may well be true because at this point the landfill was not significantly above ground level. It is worth noting that this same situation also occurred the previous year according to the 2010/11 Performance Statement, indicating that non-compliant gas emissions appear to occur with some frequency.

5.1.4.2. In the 2012/13 Performance Statement much the same occurred. Council admitted it had breached its licence in a number of ways including excessive landfill gas emissions in excess of the BPEM and a failure to adequately cover the tipping face with adequate soil (primarily intended to reduce odour/gas emissions and litter) at the end of the day’s tipping on at least 2 occasions as well as having too large a tipping face.

5.1.4.3. The Meinhardt Risk Assessment Report (2011) concluded that in the case of landfill gas emissions “**the risk of impacts (is assessed) as high, which in turn was prioritised as ‘unacceptable and intolerable’.**” The Report calls for the implementation of a landfill gas monitoring program “to identify any potential LFG (LandFill Gas) migration pathways and to lower the existing risk to the surrounding receptors”. However, despite this “unacceptable and intolerable” level of risk of LFG escaping Meinhardt still concluded that the actual risk of “offensive odours” was “low”. Meinhardt accepted Council’s

⁴ Ms Menegazzo has training in odour detection and assessment – details provided to EPA in earlier submissions and discussions.

verbal statements that there had not been any odour complaints – no independent evidence was sought.

The evidence of excessive gas emissions in Meinhardt's work should have been adequate to require considerably more assessment and evidence gathering than the mere allocation of a "low" risk of odour moving beyond the site boundaries or the acceptance of verbal assurances from an Applicant's vested interest.

5.1.4.4. The subsequent Auditor Risk Assessment (2012) undertaken by Phillip Hitchcock (EPA accredited environmental auditor) outlines a substantial number of problems with the landfill cells' liners, capping, leachate and gas management systems, etc. (see Annex 1). With regard to LFG and odour these include:

5.1.4.4.1. A warning that the levels of "monocyclic aromatic hydrocarbons"⁵ "are a concern for Cell 3 (and) Cell 4A" (p. 22) and that "widespread surface emissions of methane (are) at unacceptable levels (i.e. Cells 1A, 1B, 2A, 2B and 3)" (p. 36). He concludes that Licence condition L5 "is not being complied with" (p.37).

5.1.4.4.2. However, he then goes on to admit that "It has been assumed that odour should not be a significant issue for the premises . . ." on the basis that "Council has indicated there have been no odour related complaints received". Therefore he concludes that the odour requirement, condition L1, "has been complied with". One wonders about the diligence of an "independent" auditor who is not prepared to seek independent evidence.

5.1.4.4.3. It is noted in the report that "Maximum predicted concentrations (of Landfill Gas) at off-site locations **are predicted to be above the design criterion contained in the SEPP (AQM)**", which is not only in breach of the SEPP and BPEM (and hence licence conditions) but also Council's own commitment (and responsibility) to protect the health and amenity of the community.

5.2. It is claimed that "*Dispersion modelling undertaken and a risk assessment concluded that based on modelling potential offensive odour is unlikely to occur at nearby sensitive receptors.*"⁶

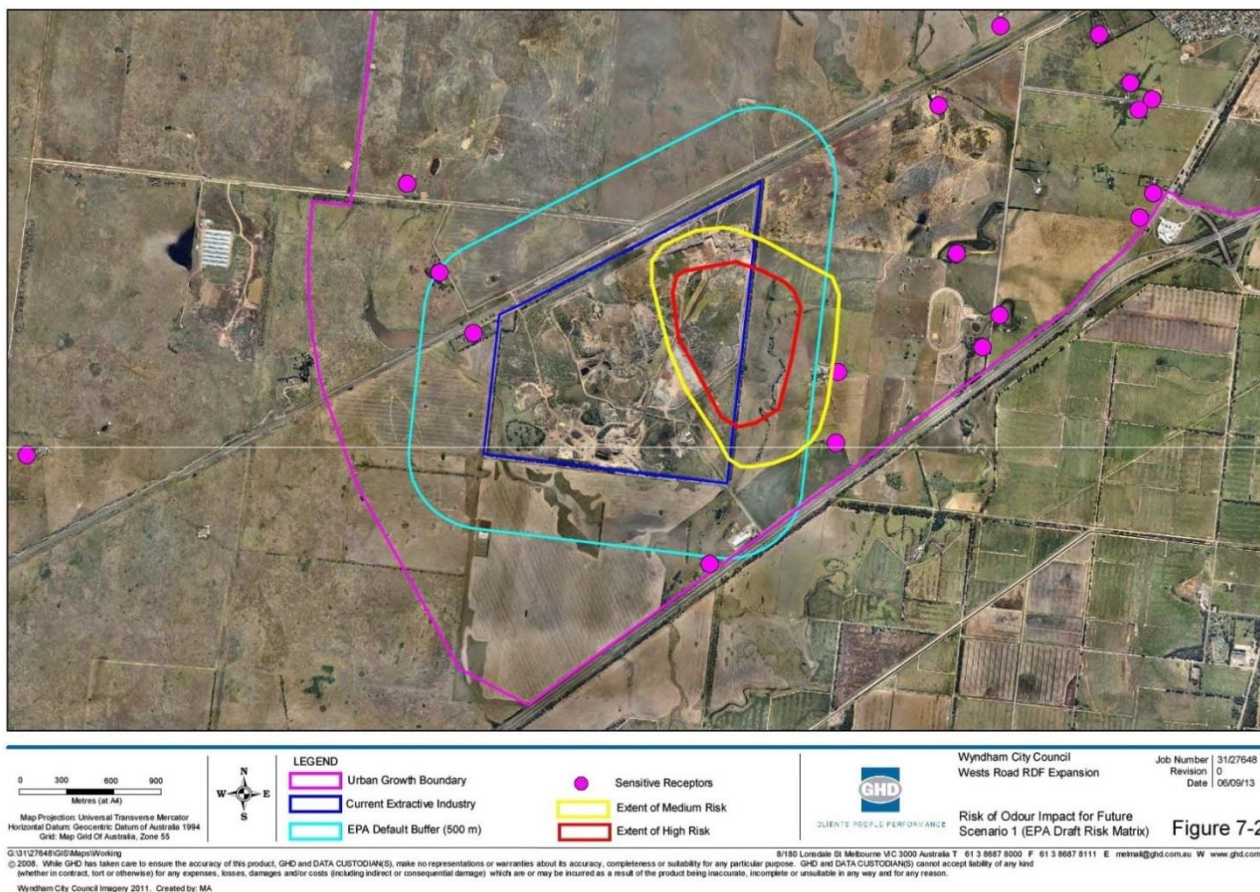
But the odour model drawn up by Wyndham Council's consultants, GHD (October 2013, Annex K "Odour Dispersion Modelling Assessment"), shows that there is at least a *medium risk*⁷ of odour travelling beyond the site boundary (including beyond the buffer zone and to nearest residences) contrary to licence and BPEM requirements:

⁵ Aromatic Hydrocarbons (there are many varieties) were so named because some of them had an odour (e.g. benzene). Equally important however is their toxic nature – a significant number of them are carcinogenic and/or mutagenic. Hence when these are emitted they can affect people's health as well as their olfactory senses. The GHD Odour Dispersion Modelling decided that "other emissions associated with landfill gas (emissions not obviously related to odour presumably) are not considered further in this assessment – it is unclear which gas emissions were therefore tested and which omitted.

⁶ Works Approval No. 72548, Wyndham City Council re Wests Rd Landfill EPA Application Form, 6 February 2014.

⁷ EPA (and VCAT) considers that a 'medium' risks means: "that mitigation is required before the (broiler) farm can proceed. Relocation of sheds on the site, reduction in farm size or use of stub stacks are the only potentially viable options open to the proponent" In the case of this WA application that should indicate that a reduction in size would be an appropriate requirement before any approval is given.

GHD Odour Map 7-2 showing risk levels (yellow = “medium risk”; red = “high risk”)



Note that the medium risk contour is beyond the 500m buffer and even the High risk contour is well beyond the site boundary – both contrary to the BPEM

5.3. A risk assessment is supposedly based on or inclusive of a worst case scenario, not solely based on assumptions of best case operations. While GHD claims it based its risk assessment on a worst case scenario they actually failed to do this. For example:

5.3.1. GHD defined the worst case scenario as being one where 600,000 tonnes per annum (tpa) would be dumped (GHD p. 22 – Future Scenarios 1 & 2) whereas it has already been estimated by the Applicant that the annual tonnage will be 640,000 tpa by 2040.(Cell 4C Works Approval Application Form p.10 – and Annex D)

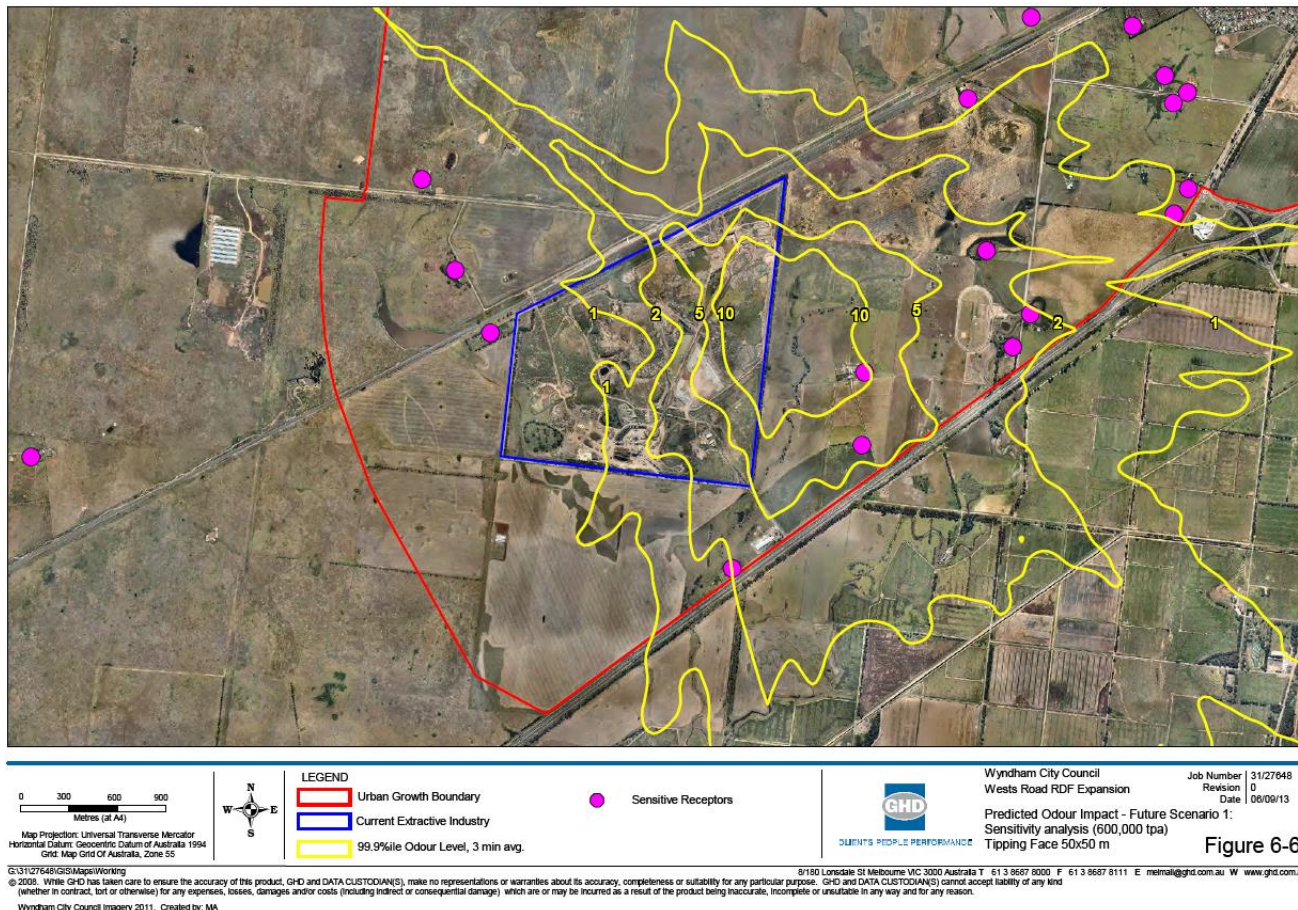
5.3.2. GHD assumed that one Odour Unit (OU) is not really imposing and that at least 5 OUs are required before people might be discomfited by odour. This is highly disputable and trivialises the situation. One odour unit has been proposed as an international measure of the level at which an odour can be detected, i.e. at which it becomes a reality and therefore has an impact⁸. The fact that 5 OUs might suit GHD’s conservative assessment (and those of other consultants who don’t live in close proximity to the Waste Mountain) does not mean that it can be ignored or seen as somehow “acceptable”. It is the local community that has to deal with the odour and their testimony has been clear – the tip has become noticeably smelly since it has been raised above ground (see earlier discussion and the testimonies provided in a separate odour submission to EPA in 2014, including statutory declarations).

5.3.3. GHD assumed that the tipping face will remain at 30m x 30m (EPA maximum dimensions) and won’t reach 50m x 50m, despite the fact that this has already occurred

⁸ For example, the Canadian Montreal Ministry of the Environment defines 1 OU as the threshold for odour detection and sets a standard where a 10U/m³ for a 10 minute period must not occur more than 5% of the time.

in the past – See Non-compliances acknowledged in the various audits and in the Works Approval Form, the Non-Compliance Report in Annex 1 below or the original references therein). GHD's Odour Map 6-6 (below) shows the considerably greater odour dispersion when a tipping face of 50m x 50m occurs compared with the EPA expected tipping face of 30m x 30m shown in Map 6-6 (above). WREC contends that Fig 6-6 might represent a "worst case" scenario with regard to the immediate tipping area but in reality there are substantial areas apart from the immediate tipping face that are substantial sources of odour due to not yet having a proper 300mm cover of soil (see the photos in Annex 4 of the areas surrounding the "30m x 30m" tipping face where considerable waste can be seen on the surface that constitute (but not with regard to the overall odour impacts).

- 5.3.4. Figure 6-6 shows that the 1 and 2 OU contours reach a substantial number of "sensitive receptors" and cover areas that are already zoned for substantial residential developments, well outside the buffer zones. The 5 OU contour covers several sensitive receptors as well as the freeway. Even the 10 OU contour includes a sensitive receptor and goes beyond the buffer zone (something that would generally be considered unacceptable and cause for refusing to grant a Works Approval).
- 5.3.5. An assumption that only the odour from the active tipping face is relevant is unacceptable and nonsensical, especially in view of the Risk Assessment's acknowledgement that significant gas emissions (in breach of the BPEM and licence conditions) have occurred and stem not only from the active tipping face but also from the poorly capped and lined earlier cells. This approach ignores LFG emissions from leachate collection systems and wells, pumping facilities, LFG gas burning and flaring. It also ignores the fact that for considerable periods the "active landfill face" (the area not covered by soil or with interim 'capping') is considerably larger than the actual "tipping face", thereby providing a considerably greater source of gas emissions and odour than GHD's modelling and reporting considers.



5.4. The GHD Report fails to model the cumulative impacts of odour sources other than the tipping face and leachate pond emissions⁹

5.4.1. The failure to consider or model the full odour risk is indirectly acknowledged by the authors (GHD) when they admit that: *“The risk contours relate to a single cell; if more than one cell were to operate simultaneously it could be that odour events would be more frequent than predicted”*. There is an unstated assumption here that the modelling did not need to take into account the odour emanating from other parts of the landfill, including such unlined and very poorly capped cells as Cells 1 & 2 (and possibly 3) and such recently filled high above ground with only interim capping such as Cell 4A).¹⁰ This is very poor modelling and creates seriously misleading under-estimates of potential odour problems.

5.5. WREC believes that the basis of the modelling and risk assessment are also highly questionable for several technical reasons:

5.5.1. The basic odour data for the study was obtained from only 4 sampling sessions over two days (28 June 2011 & 15 July 2011) from only 2 locations (see pp. 25-6). This is not a sufficiently representative sampling method. Sampling was only conducted for 8 minutes

⁹ An updated model that included the new leachate pond was provided for the Buffer Study but did not appear to have much impact on the overall modelling result (only 2.6% of odour was attributable to the leachate pond according to the model). Even where it is included in the subsequent risk matrix the result as reflected in fig. 6-6 is seriously contrary to SEPP requirements. If “upset conditions” such as infrastructure failure or human error were properly included (as required by a scientifically appropriate methodology and EPA guidelines) the risk matrix would be a considerable understatement of the odour risk and hence the breach of the SEPP requirements even greater..

¹⁰ Elsewhere in the Report GHD acknowledges that for their dispersion modelling it was decided that *“other emissions associated with landfill gas (emissions not obviously related to odour?) are not considered further in this assessment”* (GHD p.21) – it is unclear which gas emissions were therefore tested and which omitted.

per sample (a total of 32 samples from 2 sites on 2 occasions for each site). This is a totally inadequate frequency of sampling of the emissions and the locations, as can be seen by the recommended approach by the US Agency for Toxic Substances and Disease Registry:

“periodic monitoring is typically, though not always, conducted by collecting 24-hour averaged samples on either a 6-day or 12-day cycle. These frequencies ensure that ambient air samples will be collected on every day of the week over a long-term program.”¹¹

- 5.5.2. The Ambient Temperature was 7.8°C for the morning tests. This is a relatively low temperature and generally odour levels increase with temperature. It is therefore not representative of the general temperature or likely emission rate and testifies to the need for adequate seasonal measurements.
- 5.5.3. The data used for modelling was based on tests made well before the landfill went above ground (when dumping was 350,000 tpa). Given that height is regarded as a major problem in this application and a source of additional odour, this makes the modelling very questionable.¹²
- 5.5.4. GHD has used the 1 and 5 OU criterion to gauge the impact from landfilling¹³. However, this criterion was established (as a footnote to the Air Quality SEPP) for “intensive husbandry” **in rural areas**. The landfill is neither “intensive husbandry” nor is it located in a rural area. It is within the Urban Growth Boundary. There is some question as to the suitability of the “Broiler Farm Odour Environmental Risk Assessment (OERA)” to determine odour standards for a landfill located within the Urban Growth Boundary (not in a rural site).
- 5.5.5. No consideration was given to the odour dispersion in the event of “unusual” weather events, such as inversion layers (which ‘trap’ odour and significantly reduce dispersion and mixing and maintain higher concentrations of gases and odours). There is no consideration of the frequencies of such inversion layers, the increased concentrations that would likely ensue or the dispersion of the gasses. This is a serious omission in the modelling and risk assessment and further fails to provide the required “worst case” scenario.
- 5.5.6. No assessment of odour from the flares and/or burning of gas for electricity (source of acid gases, toxic micro-pollutants and odour).
- 5.6. Most importantly GHD fails to model or even seriously consider the impact that increased height might have on the creation or dispersion of odour and gases. Instead they make a totally unsubstantiated and scientifically unsound claim about the mitigating impact of Height on odour dispersion in the Wests Road landfill:

“The effect of an elevated landfill could be expected to reduce the predicted ground level concentration as, during neutral conditions, the odour plume from the tipping face would travel downwind in a horizontal trajectory (due to separation at the crest and the formation of a lee eddy). The plume centreline downwind would be elevated above the natural land surface

¹¹ ATSDR Landfill Gas Primer – An Overview For Environmental Health Professionals (2001) P. 46.

¹² It should be noted that GHD makes a major, and unsubstantiated, assumption that somehow the extra height will lead to less odour dispersion, not more. Without any scientific or other evidence to back this up we contend that the opposite is the case – see discussion below.

¹³ “In the absence of EPA guidance for environmental risk assessments for landfills, and upon advice from Council and ERM, this Broiler Farm OERA has been applied by GHD to this assessment” (GHD, Annex K, p.39..)

giving a lowered odour concentration at ground level resulting in a lower ground level concentration. Conversely, in stable conditions the odour plume will flow down and be dispersed around the sloped hill in one streamline down to ground level.” (GHD, p.36).

Perhaps for GHD it “could be expected” to perform in this manner, but to experts on the formation of eddies and air flows this would be unlikely in most circumstances and would need considerable study before such a claim could be seriously made, let alone relied upon. In view of the actual odour detected by residents, and the airflow modelling undertaken by GHD there is absolutely no basis for this claim. It is more likely that the eddies that form under “neutral” wind circumstances will actually continue in a slowly downward trajectory, thereby dispersing the odour to breathing level at about the distance it reaches sensitive uses. It is equally likely that in “stable conditions” the odour plume will flow outwards towards the ‘sensitive uses’ already in place and/or towards the freeway (as appears to have occurred on a number of occasions already (see the odour evidence report submitted in previous submissions).

The Report fails to assess GHD’s (unlikely) hypothesis and provides no test results of any wind or airflow data to even begin to test such a hypothesis.

The general evidence regarding airflows and turbulence indicate the following¹⁴:

- *“On clear days over flat terrain, thermal turbulence, as indicated by the fluctuations in wind speed and direction, shows diurnal changes because of day heating and night cooling. Turbulence is most pronounced in early afternoon when surface heating is maximum and the lower layers of air are unstable, and least pronounced during the night and early morning when air is stable.”*
- Stronger and more turbulent winds disperse odours more and therefore often act to dilute the impact. In contrast, low winds and low turbulence will generally maintain a heightened level of gas concentrations and odour.
- *“Thermal turbulence . . . is at a minimum during the night and early morning when the air is more stable.”*¹⁵ Therefore odour might be more noticeable in the light breezes from the South West in the evenings or early mornings.
- “Roll eddies” tend to occur where there are steep ridges (such as the 3:1 batter in the landfill) on the lee side - and will carry odour away from the source in the general direction of the prevailing wind – which is often towards the residences and/or the freeway.
- The waste mountain will increase mechanical turbulence and may create eddies. *“Mechanical and thermal turbulence frequently occur together, each magnifying the effects of the other”.*¹⁶

None of these known attributes of airflow around mounds give much indication of the actual airflows around the Wests Road landfill – they merely indicate the possibilities that any genuine odour modelling study would need to consider and obtain evidence for. The

¹⁴ Primarily sourced from http://www.firemodels.org/downloads/behaveplus/publications/FireWeather/pms_425_Fire_Wx_ch_06.pdf

¹⁵ Ibid p. 89.

¹⁶ Ibid

Works Approval application seriously fails this task and the GHD odour dispersion assessment is based on an assumption about the impact of height on odour dispersion that cannot be sustained and is possibly the reason for the many other omissions and failures of the modelling.

The most important impact of wind eddies may revolve around the impact on local grass fires (see fires section below).

5.7. The Risk Assessment and Odour discussion seriously fails to consider the potential impact on workers on the site and visitors to the site (such as residents bringing their waste). Regardless of the ambiguity of the term “sensitive receptors” this is a serious failure in both the gas/odour report and the Works Approval overall because:

5.7.1. The gas and odour dispersion modelling shows that there is a **High risk** of odour (and gas) covering a substantial part of the site, especially the working areas and the entrance for visitors (see Map 7-2 above);

5.7.2. The level of odour in some areas will be above 10 OUs which is considered high and could have considerable impacts on the receptors;

5.8. There are several indicative “Limitations” to the study that GHD acknowledges which further discredit the overall validity and acceptability of the Odour Study:

5.8.1.1. Because of the limitations of the modelling “*contours should be regarded as being indicative rather than definitive.*” (GHD, p.41);

5.8.1.2. “*This data does not take into account any seasonal variability in landfill odour emissions rates.* *The odour emission rates associated with landfill operation may vary over time, and can depend on factors such as the moisture content of the wastes (affected by rainfall), temperature, aerial extent of cells that have not been completed with effective capping and gas extraction systems in place; presence and effectiveness of gas extraction systems installed during the intermediate stages of the landfill, leachate level within the landfill, and nature of the wastes*” (GHD pp. 41-2). As stressed by ATSDR, seasonal variability is recognised as a major aspect of the many variables that must be modelled if the results are to be credible. All the matters that are mentioned here have not been modelled and have not been included in the risk assessment. This is likely to have created a seriously underestimated assessment of the odour contours and the risk of impacting the amenity of already existing residents as well as the many thousands of others expected nearby over the next few years (the Harpley estate alone expects to have 18,000 additional residents in 4,500 households over the next decade, all within 1-3km of the landfill).

5.8.1.3. These limitations, while recognised by GHD, have not led to any reconsideration of Council’s Application or the general complacency contained therein about the odour concerns. Yet it is very clear that the report’s largely ignored inadequacies arising from these “limitations” have already been realised at this landfill:

- The “Aerial extent” of cells not completed or effectively capped will be an ongoing, source of additional odour (possibly for 30+ years) as the landfill progresses substantially above ground – this has not been considered in the modelling or the conclusions;

- Seasonal variability, and impacts of climate change (and higher ambient temperatures) similarly already exist but have not been modelled or considered;
- The plan to have “sacrificial” horizontal gas collection pipes (during the “intermediate stages”) are proposed but considerably less robust under the substantial pressures created by the high mound of compressed waste and less likely to manage the odour over the time between deteriorating/cracking and the final installation of the vertical gas collection system¹⁷;

5.8.1.4. *Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.* (GHD p.50)

5.8.1.5. *“GHD has prepared this Report on the basis of information provided by Council, Environment Protection Authority (Victoria) and others, which GHD has not independently verified or checked (“Unverified Information”) beyond the agreed scope of work.”*

5.9. Modelling of the kind undertaken by GHD is inevitably a difficult and inaccurate process as recognised by most texts and studies of odour impacts with regard to landfills:

“The monitoring of the odor annoyance generated by a landfill area is difficult, since it is a multi-area-sources problem, with a discontinuous odor emission. . . . Odors of different kinds are released by the fresh deposits of municipal solid waste, by the landfill gas (LFG), by the leachate treatment plants, by flares and by some waste treatment works, like composting facilities. . . . But the monitoring of the odor annoyance generated by a landfill area is difficult. Problems appear already at the sampling level. . . . Very often, it is not possible to sample more than 1% of the total area, so one must assume that the distribution of the specific emission rate is homogeneous, which is not realistic.”¹⁸

5.10. Ultimately the best test of any model is whether it can be verified by reference to reality. A model that doesn’t conform to and/or explain reality is not an acceptable model. The GHD report clearly flies in the face of the current reality of the 44m AHD Wyndham landfill. This reality has been discussed above and clearly contradicts the model.

If reality doesn’t accord with the model it is the model that is wrong, not reality!

We agree with the US Agency for Toxic Substance and Disease Registry (ATSDR):

“Models ultimately provide estimates of emissions. Because the accuracy of these estimates cannot be quantified, modelled emission rates should be carefully scrutinized and viewed as somewhat uncertain.”¹⁹

The Odour Report by GHD and the comments and issues discussed above, show that the Works Approval application is seriously flawed and inadequate in its consideration of landfill gas/odour impacts. Even on the most conservative, best case scenario the modelling shows that there will be breaches of the SEPP and the BPEM and that there is an unacceptable level of risk to workers within the landfill and for residences outside. If a realistic scenario is considered then this situation becomes considerably worse.

¹⁷ This is not to imply that WREC considers the gas collection plans acceptable – see discussion below

¹⁸ J. Nicolas, F. Craffe, A.C. Romain “Estimation of odor emission rate from landfill areas using the sniffing team method”, *Waste Management* (2006), vol. 26, iss. 11, pp. 1259-1269.

¹⁹ ATSDR *Landfill Gas Primer – An Overview For Environmental Health Professionals*(2001) P. 41.

Besides the amenity and (hopefully temporary) health impacts of the odorous gases there is also the serious health risks that can be created by exposure to some of the toxic gases that emanate from landfills.²⁰

This situation is even more serious for RDF workers who may spend up to 18 hours a day in the *High Risk* areas of the facility. It would appear to be a significant OH&S situation that should be avoided.

One further issue with the odour report is the fact that, regardless of previous comments and criticisms of the odour ERA conducted in 2011 by Emission Testing Consultants (ETC) on behalf of GHD, GHD has trotted out this seriously flawed Report on 6 separate occasions (with only the very minor addition of 2 samples from the leachate pond in 2014 and with additional modelling based on this inadequate data):

- 2011 – GHD Audit of Landfill;
- 2013 – GHD WA Application on behalf of Council to EPA;
- 2014 – GHD WA Application on behalf of Council to EPA (May 2014 – amended from the 2013 version by the addition of 2 odour samples from the new leachate pond);
- 2015 – GHD “Odour Management Plan” prepared for Council (required by EPA);
- 2016 – We find it resubmitted again, with all its flaws, as the odour dispersion report in the current Works Approval for the next 30+ years!

6.1. The fact that GHD could continue to provide such an inadequate, poorly sampled, narrowly modelled and unscientific report, and be permitted to do so by Wyndham Council (and presumably EPA) is disturbing. If we can't ensure that the ERAs that consultants develop to guide sound, evidence-based, decision making then the whole Works Approval process fails to comply with the requirements under the Act and serves as a smokescreen behind which major non-compliances are likely to occur.

The odour risks and current and future impacts should by themselves be sufficient for EPA to refuse the Works Approval Application.

6. Mounds, Leachate and Infrastructure failure

There are a number of significant risk increases as a result of going higher above ground and creating a “waste mountain”. These include:

6. Increased exposure to external factors such as storms, erosion, etc.

6.2. An increased risk of rain and moisture ingress through the above-ground open faces of the landfill leading to increased leachate and gas production prior to effective management infrastructure being in place. The “interim capping” on Cells 3 and 4A has been in place for years instead of being finalised within a reasonable time period (preferably no longer than 12 months according to EPA)²¹. The time that the tipping and active area, as well as exposed sides and batters, of the landfill remain uncapped increases significantly as a result of the

²⁰ (see fn 5 above)

²¹ Personal discussion with EPA staff in 2013.

logistics involved in creating a waste mountain. This can be observed very clearly for Cell 4C where the sides of the landfill above ground are still not effectively lined and waste remains exposed (see photos attached);

- 6.3. A general increased risk of failure of the cap and/or liner systems due to increased stresses, pressures and external vulnerability. Waste near the bottom of the landfill is subject to considerably greater pressures due to the additional above ground mass;
- 6.4. A greater likelihood of differential settlement the higher a mound is constructed which can in turn create greater stresses on the liner system and gas and leachate infrastructure;
- 6.5. The increased surface area that is subject to wind and temperature variations (to a much greater extent than waste below or at ground level) creates greater stress on the landfill liner and capping which can cause desiccation of the clay liner with cracks that can enable the emissions of odour, landfill gas as well as ingress of oxygen to feed a fire;
- 6.6. An increased risk of Infrastructure deterioration and failure due to a greater mass of waste exerting greater pressure on leachate collection and gas collection pipes and related infrastructure. There is no acknowledgement, let alone assessment, of the additional pressures created by an extra 25m+ of waste on leachate and gas collection pipes, joins and seals; there is no assessment of methods to strengthen the infrastructure to deal with these additional pressures and there is no consideration of this in the Risk Assessments or any other documents in the Works Approval;
- 6.7. The increased risk of Leachate leakage as a result of infrastructure failure means an increased risk to the environment and health. The adjoining Cherry Tree Creek discharges into the RAMSAR site on the Western Treatment Plant and any contaminated groundwater or surface water would impact this important environmental asset. There is already an existing plume of “fugitive leachate” resulting from a growing number of non-compliances – at this stage it is unclear what risk this plume poses for the environment (the auditor has required further investigations). It is important that this be undertaken before any application is approved and any investigation needs to consult local expertise.²² Whatever the level of risk, it can be significantly reduced by keeping the waste at ground level instead of 25m above it.
- 6.8. The mound substantially increases the risk of litter problems (a 4m litter control fence doesn’t have much impact on a 24m high mound on a windy day);
- 6.9. The important issue here is not only the extent of increased risk but whether there is any “need” for imposing such an increase in risk on the community (however small some might consider it to be) and on the workers involved in operating or attending the landfill. As emphasised above (Sec. 4) no such needs exists.

7. Piggy Back Cells

- 7.1. The failure to provide details of the “piggyback” cells is a serious inadequacy in the Application. Piggyback cells are recognised as problematic and potentially increase the risks of problems with

²² “Local expertise” includes Melbourne Water’s Biodiversity Conservation Advisory Committee as well as experts from the West Melbourne Catchments Network and the Werribee River Association.

leachate and gas management including risks of infrastructure failure due to the compression of waste in the old cell from the extra mass placed on it by the piggyback:

“Piggybacking’ of liners over waste deposits can pose difficulties especially when considering the effects of settlement on a leachate collection and sealing system. . . . It is considered that ‘piggybacking’ would only be acceptable at sites that pose a very low hazard to the environment.(EPA, Scotland 2002).

“A piggyback landfill is not recommended for existing sites with leachate and groundwater contamination problems” (Robert Hauser, 1994).

“it is necessary to carefully consider the integrity of the liner system considering the important settlements (reactivated under the new cell load) that can develop. Indeed, the settlements can alter the sealing and the drainage functions of the liner system” (F.T. Ecogenos, 2014, Berlin, p.1 – our emphasis).

7.2. The issues may be manageable in some circumstances but EPA has no clear standards, guidelines or regulations with regard to piggyback cells and the risks they create. It is worth noting that EPA’s BPEM 788.3 makes it clear that: *“Closed landfills are not suitable sites for building or structures, as landfill gas emitted from the cap presents a safety risk and the capping of a landfill is not a stable platform to build on.”* (p. 50) – this would also apply to piggyback structures or cells.

7.3. In view of the risks of instability and issues with infrastructure failure, leachate problems, etc. there would need to be a considerable amount of detailed planning and safety considerations available prior to any approvals.

7.4. Of equal importance, to accept the increased risk would require the provision of evidence of the need for such a development. No such evidence has been provided or even attempted by the Applicant.

7.5. It should be noted that the cells to be piggybacked upon are Cells 1B, 2A, 2B and 3. These are also the cells currently being targeted for phyto-capping to better rehabilitate their inadequate capping as well as to trial the Phytocapping suitability for future cells. This is not addressed in the Works Approval.

7.6. The Application goes on to state that :

“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” (p.48 – our emphasis).

7.7. So why the urgency of obtaining a “works” approval now rather than in 20 years time, especially when the “works” for which works approval is requested have yet to be provided to either EPA or the community for comment or assessment?

7.8. The false claim by GHD in Council's Works Approval Application that

"Council does not require any additional planning permit for activities proposed in this Works Approval application" (GHD, p.5) is a further indication of the shoddy nature of this Application. At the 20B conference the fact that the piggyback cells were not part of the Planning Permit was raised and the RDF Manager acknowledged that a planning permit/amendment would need to be applied for by Council²³. **It is doubtful that EPA can give a Works Approval to any works that do not have appropriate planning permits.**

8. Fire:

"Landfill fires can cause significant impacts on local air quality through odour and smoke. They can also spread outside the landfill, triggering a grass or bushfire. Subterranean landfill fires may burn for many years before they are detected. The smell of smoke or the presence of carbon monoxide in the landfill gas may be the first sign that a landfill is burning and, in some cases, the surface of the landfill may collapse as a result of the fire creating a subsurface cavity. If this collapse is triggered by the passage of a vehicle over the cavity, it could be fatal for the vehicle's occupants. . . . Once started, landfill fires are difficult to extinguish, so the primary objective should be to prevent a fire from starting." (EPA 788.1, 2010, p.44);

And from the ATSDR:

"Underground fires are extremely difficult to combat and can burn for days or even weeks. The heat from the fire can cause chemicals to volatilize or break down and enter the environment. Consumer products in a landfill are the most likely source of chemical releases; these products may include pesticides, paints, solvents, cleaners, or chemical additives. These chemicals may be released in smoke from the fire."(ATSDR, 2001, p. 28)²⁴

8.1. The primary risks of and from fires at the Wests Road landfill can be summarised as:

- 8.1.1. Risk of either surface fires and/or subterranean or underground fires from a variety of causes including sparks from machinery, people smoking, smouldering waste mistakenly dumped, spontaneous combustion, chemical reactions creating heat that causes methane to combust, lightning strikes, etc.;
- 8.1.2. Risk of a fire spreading into the grasslands surrounding the site thereby significantly increasing the extent of the fire and endangering the surrounding community;
- 8.1.3. Risk of toxic gas emissions/smoke spreading to workers and local community;
- 8.1.4. Risk of fire damaging infrastructure, especially leachate collection systems and liners/capping, thereby giving rise to increased leakage and contamination;
- 8.1.5. Risk of external grassfire spreading to the landfill;

²³ This would presumably entail notification of neighbours and a period for comment.

²⁴ Agency for Toxic Substance and Disease Registry (ATSDR) *Landfill Gas Primer – An Overview For Environmental Health Professionals*(2001)

8.2. Landfill fires are more common than generally recognised by the community. “Each year in the United States an average of 8,400 landfill fires are reported to the fire service.”²⁵ According to a study in Northamptonshire, UK found that “Operator’s estimates of how many sites have sub surface fires at any time ranged from 50 – 100%, with most estimating that about 80% of all landfills in the UK have a deep seated fire at any time.”²⁶ In Finland “On average, there were 633 sanitary landfills in operation in 1990–92 in Finland. Annually, 380 landfill fires occurred, one-quarter of which were deep fires.”²⁷

8.3. Such fires can have significant impacts on the surrounding community and the workers on site, especially fire-fighters. For example:

8.3.1. It has been internationally established that landfill fires usually emit a dangerous toxic cocktail of gases often including formaldehyde, hydrogen cyanide, hydrogen sulphide, nitrogen oxides, benzene, dioxins and many others. While the concentrations of such toxins vary, depending on the type of waste in the landfill, proximity of receptors to the fire and the gas emissions, prevailing winds, etc. the risk is substantial and the cumulative effects on human health can be significant

8.3.2. *“In human terms, the uncontrolled atmospheric emissions arising from these fires, which often continue for years, are potentially lethal with well-proven acute and chronic health impacts”*²⁸

8.3.3. *“The Town of Kindersley declared a state of emergency Tuesday afternoon because of a fire at their landfill that’s been burning since Monday night . . . A “shelter-in-place” advisory issued Tuesday night remains in place with people living within one kilometre of the fire being asked to avoid going outside. . . At one point the fire was burning as high as five stories in the landfill . . . Garbage and recycling collection has been cancelled until further notice, and the Ministry of Environment has been contacted to do air quality tests in the area.”*²⁹

8.3.4. *“A study conducted on Swedish landfills showed that the amounts of dioxins emitted annually from landfill fires might exceed by 3 to 4 times the amount emitted by the existing Swedish waste incineration plants”. They found that “PCDD and PCDF concentrations exceeded by some 4 orders of magnitude the limit value of 0.1 ng(I-TE) m⁻³ for emissions from waste incineration plants. It also appeared that the maximum acceptable daily intake values for these compounds would be exceeded for the fire-fighters and landfill staff, if pressurised breathing equipment was not used.”*³⁰

²⁵ National estimates are based on NFIRS data (1996–1998) and the National Fire Protection Association’s (NFPA) annual survey, *Fire Loss in the United States*, cited in: Federal Emergency Management Agency United States Fire Administration, 2002, *Landfill Fires: Their Magnitude, Characteristics, And Mitigation*. (p. 17)

²⁶ Bates M 2004 “Managing Landfill Site Fires in Northamptonshire”, Research study by University College Northampton, October 2004, p. 3.

²⁷ *Ibid*, p. 7.

²⁸ Foss-Smith, P. (2012) *Understanding Landfill fires*, Waste Management World, <http://www.waste-management-world.com/articles/print/volume-11/issue-4/Features/understanding-landfill-fires.html>.

²⁹ *Crews make progress on Kindersley landfill fire*: <http://saskatoon.ctvnews.ca/crews-make-progress-on-kindersley-landfill-fire-1.1490555>

³⁰ Fischer, C. et al, 1999, *Gas Emission from Landfills: An overview of issues and research needs*, Swedish Environmental Protection Agency, Stockholm, 1999, p. 14.

8.4. Fires in Victorian landfills are also not infrequent (but not systematically recorded, investigated or studied):

8.4.1. On Friday 27th January 2012 a fire at the Wests Road landfill required 14 appliances and 6 other vehicles, 66 fire fighters for 219 fighter hours to extinguish.³¹

8.4.2. A review of landfill fires was commissioned by the Fire Services Commissioner in 2012 and used the Wests Road fire as one of 3 “case studies” (the other two were the Brooklyn landfill and the Knox Transfer Station) all of which had suffered a fire in 2012. The conclusions of the review were highly critical of some of the landfill practices. These criticisms included:

8.4.2.1. “waste management practices deemed necessary and appropriate for normal daily operation during the week are not adhered to on weekends and public holidays.” (p.6) and “This highlights the risks associated with not maintaining the normal waste management regime during all periods of operation and suggests a need for inclusion in licensing documents of more definitive minimum requirements for any period when a facility is operating.”(p. 7);

8.4.2.2. The BPEM recommendation to “Develop a fire management plan in conjunction with the relevant fire authority” had not occurred. “No evidence of any plans having been developed” (although Werribee has “meetings planned to commence the process”(Table 2, p. 7);

8.4.2.3. The BPEM recommendation to “Cover combustible wastes with inert material” was “Significantly better than in the past however the recommended maximum exposed areas are exceeded from time to time”;

8.4.2.4. The BPEM recommendation to “Construct a firebreak around the perimeter of the landfill to the satisfaction of the relevant fire authority” appeared to be ignored: “No evidence that fire authorities have been consulted or that they were aware of this suggested performance measure”;

8.4.2.5. The BPEM recommendation to “maintain at least 50,000 litres of water on site” was criticised: “The adequacy of water supplies is debatable. All sites had a water supply of some sort but none have appropriate arrangements for delivering water “to any point on the landfill.”

8.4.2.6. “At each of the fires in the review fire services had to call for additional resources in order to establish adequate water supplies for control and extinguishment of the fires.”

8.4.2.7. “At Werribee, fire service pumps made use of pondage water near the base of the landfill that probably contained leachates. The mix of leachates depends on the content of the landfill. Using leachate contaminated water supplies exposes all persons in attendance to the possibility of exposure to mists and sprays that may increase the potential for the development of health issues.”

³¹ Fire Services Commissioner Victoria, 2012, *Towards Improved Fire Management in Landfill Sites*, Review by I.R.S Services, July 2012.

- 8.4.2.8. The Review noted that at the Wests Road landfill “The substantial *area of uncovered waste when this image (p.33) was taken indicates that daily coverage of deposited waste is not always achieved.*” This has serious implications for both odour and fire risks.
- 8.4.2.9. The Review concluded that: “*It appears that fire at landfill facilities is not a major concern of operators, perhaps best demonstrated by a reluctance to invest in more appropriate water supply systems at landfill sites despite the stated performance outcome contained in the best practice documentation.*” (p.9)
- 8.4.2.10. The Review pointed to the difficulties for fire fighters due to the large size and height of many landfills (such as the Wests Road one): “*The area involved in fires at a landfill can be quite extensive. It can also be quite high, making the use of large streams of water essential in order to achieve coverage over these large areas.*” (p. 11 – our emphasis).
- 8.4.2.11. The Wests Road landfill is in a medium to high risk grassfire area: therefore the possibility exists of a grassfire spreading to the landfill. A grass fire in 2014 on Bulban Road threatened homes:
- 8.4.2.11.1. “The CFA is advising residents to stay close to shelter in case conditions change suddenly. . . The fire was controlled about 1.45pm near Bulban Road.
- 8.4.2.11.2. Earlier in the day, the CFA issued an emergency warning for the area, advising residents that they were in immediate danger.”³²
- 8.4.2.12. Despite these risks and universal EPA requirements to prevent any fire on a landfill site, one of Council’s major consultants proposed, and Council accepted, that the “rehabilitation” of the landfill should include revegetation of the waste mound and that “*Once an adequate cover of Plains Grassland species is established it may be necessary to implement a controlled program of environmental burns to control weeds and maintain grassland nutrient recycling processes*”³³ – a totally inappropriate way to manage a landfill! (or a new system of flaring off the methane perhaps!)

8.5. Fire and Climate Change:

- 8.5.1. The risk of increased fires as a consequence of climate change has been recognised “*The southeast of Australia is a hotspot for future increases in fire weather conditions*”³⁴.
- 8.5.2. “In southeastern Australia, drought factor – an estimate of fuel dryness – appears to be a significant factor in the observed trends. This observation is particularly noteworthy in

³² Fortunately the wind blew the fire away from the landfill. “Little River grassfire under control, residents on notice”, *Wyndham Weekly* 14-1-14: <http://www.wyndhamweekly.com.au/story/1794151/little-river-grassfire-under-control-residents-on-notice-gallery/>

³³ Draft 2012 Wests Road Landfill Works Approval supporting document, Meinhardt, *Rehabilitation Plan*, April 2011, p.9

³⁴ Clark, H., Lucal, C., Smith, P., *International Journal Of Climatology*, 2012

Victoria (e.g. Laverton, Melbourne and Mildura), where severe drought conditions have prevailed between 1996 and late-2010.”³⁵

8.6. The previous Works Approval Application (2014 for Cell 4C) had virtually nothing to say about the fire risk or management of such risk. Instead it claims that “*Fire is not considered to be a significant issue at the Site considering the current buffers and fire trail surrounding the Site*”³⁶

8.7. They claim this despite the fact that:

8.7.1. The landfill is in a Medium to High Grass fire Risk area;

8.7.2. Housing estates are planned and construction commencing increasingly close to the landfill. The Harpley and Riverwalk Estates are the closest at this stage and both within 3 km;

8.7.3. The buffer is only 500m which is inadequate when it comes to the spread of fumes and smoke from a fire;

8.7.4. The “fire trail” does not fully surround the site and relies on an external road reservation along the Eastern side with limited access to the site;

8.7.5. There was no “Fire Plan” in the initial EIP, only references to the need to have such a plan (as was also recommended by the Fire Commissioner’s Review in 2012). A fire plan was finally established due to EPA requirements, but has yet to be updated to take into account EPA’s requirement to include subterranean fires (of which one burned from late June 2016 until early 2017);

8.7.6. There have already been fires at the landfill (the 2012 fire is mentioned and dismissed as a “small fire” and possibly caused by arson according to a council officer, but without any actual evidence).

8.7.7. However the fire risk is designated as High in the actual Risk Assessment:

“The Risk Assessment concluded . . . High residual risk remained for the risk of fire outbreak” (Meinhardt 2011 “Wests Road Refuse Disposal Facility – Monitoring Program, p. 17; Annex H, p.1062).

8.7.7.1. The substantial (and unnecessary) height of the “land rise” adds to the risk and the difficulty for fire fighters, as noted by the Commissioner in 2012.

8.7.7.1.1. The increased difficulty in fighting a fire. For example: steep batters create instability, risk of slippage and risk of machinery slipping or tipping. This was acknowledged in the Fire Services Commissioner Review of the Werribee fire: “Heavy machinery was used to move waste at and near the top of the face but **the batter face is considered too unstable for work by the machines**”³⁷;

³⁵ Ibid.

³⁶ Environmental Auditors Pty Ltd, Mr Phillip Hitchcock, *Revision of Initial; Risk Assessment and Monitoring Plan*, p. 43; Annex H, p. 43).

³⁷ Fire Services Commissioner Victoria, 2012, *Towards Improved Fire Management in Landfill Sites*, Review by I.R.S Services, July 2012, p. 31.

- 8.7.8. A mound landfill suffers Increased exposure to the elements and hence a greater vulnerability to lightning strikes;
- 8.7.9. A mound landfill is considerably more vulnerable in the event of a grass fire from outside the landfill due to both the increased surface area and exposure as well as the increased wind eddies that would result from the fire-produced additional winds and the slope of the mound;
- 8.7.10. In June 2016 a subterranean fire was detected at the Werribee landfill. This continued to burn, reaching temperatures of 200°C - 250°C. It was still not extinguished by Christmas, 6 months later. In February temperature testing indicated it was under control but there was insufficient evidence to be assured it was extinguished. By April it appeared that the fire had been extinguished although it was considered wise by RDF management to continue to monitor the area.

8.8. The Works Approval Application fails to adequately consider the risks of fire that exist for any landfill and that are exacerbated for mound landfills. These risks increase as the landfill increases in size, in height, in surface area and exposure. There will also be an increase in intensity of operation due to substantially increased quantities of waste per day and per hour – a situation that creates additional pressure on staff, equipment and infrastructure and hence the increased likelihood of human error.

9. Other Community impacts

In addition to the points raised above there are some impacts, again not acknowledged or dealt with in the Works Approval application, that need to be considered here:

9.1. Hours of operation:

As mentioned in Section 6, off-site odour impacts will vary depending on the occurrence of poor dispersion conditions, and these conditions occur more frequently in early morning (1 am to 6 am). However, this is not considered in either the Council's Planning Permit (where such matters are usually dealt with) nor in the Works Approval application, despite the acknowledgement of this as an issue in the supporting document by GHD:

"It is considered that a significant reduction in off-site impact could be obtained by restricting landfilling operations to daytime only (6 am – 4 pm), i.e. abolishing the overnight tipping practice.

GHD does not guarantee that the implementation of this measure as suggested above would reduce the predicted odour impact sufficiently to comply with SEPP (AQM) at the site boundary, but it is expected that they would result in a significantly reduced off-site odour impact. Further modelling would need to be carried out to predict the effectiveness of this mitigation measure". (GHD p. 49).

Verbal information provided from the landfill management at Wests Road indicates they intend to operate the landfill from 1 am onwards and are looking at the possibility of a 24-hour opening.³⁸

This raises some serious issues with regard to noise and traffic – **neither of which have been dealt with in the Works Approval.**

While issues of noise and traffic are not a major concern during day-time hours they become more significant when they are 24/7 in duration. The proposed increases in the size of the landfill and the daily intake of waste combined with the proposed working hours will:

- Exacerbate Wyndham’s already serious traffic problems;
- Create noise nuisance after hours, primarily from the evening and early morning traffic but also from operational noises that will increase and travel further;
- As discussed above, increase odour impacts;
- Have a further detrimental impact on land use options. The value of adjacent residential land is known to be lowered as a result of proximity to a waste landfill in several studies³⁹. This impact will be greater the more obvious and intrusive the landfill becomes. In addition the uses appropriate within the designated buffer zone will similarly be constrained more as the landfill becomes more intrusive;
- The requirement to provide lights on the tip for OH&S and other operational reasons will only serve to make it even more obvious that this is a waste mountain (see photo in Annex 4) and will add further to the stigma.

9.2. Stigma:

All of the impacts raised above serve to create a major stigma for the whole municipality.

Wyndham already has the Treatment Plant which serves the majority of Melbourne residents and which, until Melbourne Water made great progress in reducing the odour, was stigmatised in most of the rest of Melbourne as the “shit farm” and a smelly, undesirable place. The stigma persists even though Melbourne Water has been successful in removing the odour problem.

These efforts to remove this stigma have been considerable and residents are understandably concerned that a new stigma will be created by the current situation with the ‘waste mountain’. It is already becoming apparent within the community that drivers coming from Geelong are increasingly complaining about the odours from the tip and this, along with the visual ugliness of such a mountain of rubbish, intended to continue to grow for several decades at least, have raised justified concerns about the new stigma that residents will have to face.

While Council focusses on the economic benefits most residents are concerned about the many negative aspects. There is a growing conviction that instead of providing a net community benefit the Works Approval, and all that accompanies it, will create a very substantial net community disbenefit.

³⁸ Another problem with 24/7 operations is the difficulty of enforcing the requirement to place soil cover over the waste at the end of the day – there will be no “end of the day” so a more fastidious and regulated system of applying soil cover will be required and must be enforced (especially in view of the failure to provide adequate soil cover and minimised tipping faces in the past).

³⁹ Western Region Environment Centre, *Landfill and Land Value – an overview of the evidence*, January 2014

It becomes a matter of “Environmental Justice” and fairness to ensure that such a stigma is not created this time around. **The landfill can operate without creating such a stigma if it remains at a reasonable size and low height and over a mutually acceptable time span.**

9.3. Anti- Competition Issues:

There are several issues relating to the quarrying and landfill industries relating to anti-competitive practices that need to be taken into account, including:

- There is a legislated need to rehabilitate quarries (outlined in licence requirements). The rehabilitation process generally requires the filling of the quarry hole and subsequent landscaping to ensure that the original landscape and contours are re-established as far as practical. While clean fill can be used for such purposes, there is considerable sense in using residual municipal waste to save alternative resources. It helps to meet both the rehabilitation and waste management requirements. In this context the waste can be seen as a ‘resource’ for quarry rehabilitation (assuming the waste is genuinely “residual” after full application of the waste hierarchy). This raises the issue of promoting a monopoly/oligopoly for a few landfills at the expense of many others similarly desiring such waste for quarry rehabilitation. The MWRRG has had to consider this ‘monopolisation’ and has itself commented on the need to retain “competitiveness”. Enabling landfills to grow above the surrounding landscape is to artificially increase the available airspace for a few while denying the rehabilitation benefits to everyone else. Whatever “economies of scale” might be hypothesised for such an approach it is clearly anti-competitive as well as economically detrimental due to the loss of the rehabilitative component of waste landfilling.
- The MWRRG received 41 expressions of interest for rehabilitating quarries through waste landfilling in 2012-13. None of these were placed on the schedule because there was already an over-abundance of airspace in the existing scheduled landfills, largely due to the increasing height of the 3 major landfills. But if landfills remained below or at the surrounding ground level some of these 41 quarries could be provided with waste for purposes of rehabilitation instead of creating waste mountains and community outrage. Some might even be better located to become ‘Hubs’.
- The fact that quarrying activities are creating airspace at 6 times the rate of municipal waste generation underscores the need to rethink the support of a small oligopoly instead of a more fairly and evenly distributed (and environmentally more just) waste landfilling schedule and that enables establishing some community trust in landfilling as genuinely being the last resort.

9.4. Problems With Leachate:

We have not discussed in detail the existing problems with leachate management but we urge EPA to recognise the inadequacies of the current leachate management processes which have led to

continuing breaches of the licence and BPEM (as indicated in the 2016 Audit report). The leachate problems are due to:

- 9.4.1. Inadequate leachate management –*“leachate levels in cells in excess of trigger levels, with significant leachate heads potentially causing increased mass flux through the base of the cells”*⁴⁰
- 9.4.2. *“The leachate pond had little to no available capacity”; (which caused) “part of cell 4C.being used for leachate storage”*⁴¹;
- 9.4.3. *“no systematic method of recovery or place to put excess leachate”*
- 9.4.4. *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;*⁴²
- 9.4.5. *“Plans for “current design for new leachate pond is for it to be located on 2A, which has no side lining”*. We have concerns about this and will wish to comment on it, should it proceed, when the detailed plans become available in the future Works Approval.

We contend that the issues with leachate management, additional storage and the continuing non-compliances (as detailed further in Annex I) must be satisfactorily and fully rectified before any major expansion of the landfill can be considered

9.5. Community Sense of Belonging:

There is growing recognition of the importance of a ‘sense of place’ in promoting wellbeing in a community. This sense of place and community pride will be undermined by the visual, odorous and intrusive imposition created by a waste mountain in a community, especially when expected to be tolerated for many decades and with the threat of operating long hours or even 24/7.

10. Risk and Environmental Justice

“Government is committed to environmental justice, including principles of inclusion and equity”

The State Government has increasingly emphasised the need for “Environmental Justice” consideration in decision making and legislation. It is intended that this form part of the Principles governing the Act and subsequent regulations and practices as part of a “whole of government” approach to environmental policies and regulations. This is made clear in the Government’s “reform agenda” in response to the recommendations of the Inquiry into the EPA earlier this year:

⁴⁰ Australian Environmental Auditors *Werribee Landfill Audit Report 2017*, p.6

⁴¹ *Ibid*, p.29

⁴² *Ibid*, p.51

“Government is committed to environmental justice, including principles of inclusion and equity” (Government Response to the Independent Inquiry into the EPA, 2017, p.13).

The recommendations included the following which the Government supported (*Ibid*, p. 9):

- *“Intragenerational and intergenerational equity*
- *“the importance of the polluter pays principle”*
- *“Evidence-based decision making that accounts for the precautionary principle”*
- *“Accountability and access to decision making, noting the importance of procedural fairness, transparency and access to information”*

We welcome these changes and expect that community trust in the EPA will improve considerably if these recommendations are fully implemented and subsequently enforced.

In addition there is considerable emphasis placed on the EPA being a “science-based regulator” (sometimes also referred to as “evidence based” and/or “risk assessment” based).

We agree – but one of the difficulties with this is the assumption that such science, evidence or risk assessments will be of adequate standards and scientific rigour. As mentioned with regard to the odour risks above, seriously inadequate sampling methods do not make for good science, evidence or input to modelling and risk assessments. EPA has yet to convince the community that it is capable of adequately assessing the validity of the science, evidence and risk assessments presented to it by proponents and their consultants, which inevitably have a vested interest in collecting and interpreting such evidence.

In addition, when assessing the level of “risk” there is a range of interests and biases frequently entailed in the process.

10.1. Whose risk and acceptability?

“The notion of tolerability or acceptability immediately raises the question of tolerable or acceptable to whom?”⁴³

This raises important issues of Environmental Justice:

- Who should bear the risk?
- Whose values should determine the degree of ‘risk’, the seriousness of the consequences or the level of ‘tolerance’ that should be applied?

In 2007 GHD reported in its risk assessment for the Tullamarine Prescribed Waste Landfill that a “*Minor*” consequence is one where “*significant injury*” occurs and “*medical treatment is required from which recovery is expected*”. In contrast, if community “*outrage*” leads to media attention or *permit refusals* it is to be classified as a “*Major*”

⁴³ Andrew Hopkins (2004), *Quantitative risk assessment: a critique*, National Research Centre for Occupational Health and Safety Regulation, working Paper 25, p. 11.

consequence! They went on to indicate that PCBs and Dioxins underneath residences is a “minor consequence” (GHD 2007, *LNAPL Management – Contingency Plans*, p6 Table 3 & p8 Table 5). It is very clear from the local community’s reaction that it was not nearly as sanguine about the seriousness and risk as GHD was.

- The problem is, and will probably continue to be, that formal risk assessment requires substantial, and often controversial value judgements about the seriousness of a consequence and such judgements will inevitably be influenced by the attitudes and experiences of those making the judgements along with any vested interests they might have, including personal safety issues (such as living nearby with one’s family) as well as pecuniary, political and other such vested interests.
- This can be partially overcome if the community is directly involved in undertaking and determining the assumptions of risk assessments as an important component of improving environmental justice and community rights – but this has yet to occur. The Australian “standards” for risk assessments pay some lip-service to consultation/engagement but generally the community is excluded from the process and the assumptions and beliefs on which the outcomes are based are those of people not directly affected.

As Hopkins (2004) said

“no specific death can be regarded as acceptable simply because the death rate or risk of death is (classified) acceptably low” (ibid, p. 16)

Others have similarly cautioned against placing a weight on risk assessments that they cannot genuinely carry, with potential consequences:

*“the marked limitations of analytical models and quantitative methods must be recognized or major damage can be done to the cause of system safety”*⁴⁴

and

*“the cautionary and precautionary principles need to be seen as rational risk management approaches,”*⁴⁵.

Hopkins states it is generally the case that, far from utilising Risk Assessments, the courts of law will work on the basis that:

“At law, employers must drive risks down as far as is reasonably practicable, and there is no level of risk which, a priori, can be said to be acceptable” (Hopkins 2004, ibid, p. 23).

This is analogous to the Victorian Worksafe hierarchy for managing risk, which expects prevention as the first option and only mitigation where prevention is totally impossible (or “impractical” in instances where the risk is relatively low).

⁴⁴ R Bea, “Human and organisational factors in quality and reliability of engineering systems”, Proceedings of Seminar on Managing Safety in Hazardous Processes, Melbourne, November 1999, p. 5.

⁴⁵ Terje Arven, ‘Selective critique of risk assessments with recommendations for improving methodology and practise’, *Reliability Engineering & System Safety*, Volume 96, Issue 5, May 2011

This is the expected approach for EPA: as recommended by the Inquiry into the EPA . The Government has endorsed this by requiring the EPA's role be *"a proactive and strategic EPA focussed on preventing harm to human health and the environment"* (Victorian Government Response to the Independent Inquiry p.6).

Preventing harm should be interpreted as requiring that EPA does not approve any proposal where the risk is higher than "low" (such as "medium", "high, or "very High"). Where very substantial mitigation methods can be applied, their efficacy in substantially reducing the risk must be accompanied by very sound, evidence-based arguments along with effective engagement undertaken with those having to bear the risk, before a project can be permitted with such risks. The onus of proof should, as a matter of justice, lie with the proponent desiring to create the risk, not with the community that expresses concern about the perceived risks it is expected to endure.

If EPA is to be a science-based regulator aimed primarily at prevention then its approach to risk assessment must move beyond the acceptance of superficial and narrow consultant-produced assessments, and instead apply strict standards of scientific risk assessments when considering such assessments for landfill works approval applications. In addition it must recognise the importance of community inclusion in determining the acceptance or otherwise of the risk. Without this there is unlikely to be, or be seen to be, environmental justice.

10.2. Global WA excludes community rights

Clearly a Works Approval is a precursor to obtaining a licence (see Part 2 for additional discussion of this). A Works Approval Application must contain the requirements for the construction and operation of the facility including all technical details, materials, management and operating procedures, etc. It is also subject to community consultation (unlike the Licencing process). Once the Works Approval Application's design and construction have been determined by EPA to be satisfactory only then can a licence be issued; i.e. the licence follows the successful and compliant construction and enables the facility to commence operation.

In summary, it is the role of the Works Approval process to provide and assess the detailed planning, design, management, etc. of the landfill, while the licence is the instrument for permitting and monitoring the compliance of the landfill construction and operation. It is worth noting that the recent changes to EPA's licencing guidelines accord with this:

"These changes have led to landfill licences being less prescriptive and require licence-holders to better identify and manage the environmental impacts of their landfill operations" (EPA Licence Guidelines - EPA 1323.2, 2011) – hence a greater need for a Works Approval to provide the details.

It is equally clear that this process applies not only to new landfills but also to new cells (or other construction that creates a potential risk to the environment and/or community).

This is acknowledged in the Metropolitan Waste and Resource Recovery Group's *Metropolitan Waste Management Strategy* (2012) where it is noted that it is incumbent on the MWMG and EPA to refrain

from granting new Works Approvals or to permit or schedule the development of new landfills or landfill cells⁴⁶. . . until the closure or imminent closure of existing operating landfills in their relevant subregion has created a demonstrable need for new landfill space” (Metropolitan Waste Management Strategy (2012) Part3 p.9, with reference to EPA BPEM 778.1⁴⁷ - our emphasis).

10.3. Potential legal and administrative problems

The waste management industry, especially the landfill sector, is undergoing major changes (mostly for the better) at present and into the next few decades. These changes are partly the result of better understandings of the risks posed by landfill practices, as well as rising community expectations about the environment and the sustainability of our society.

The Government has responded to this, as have government agencies such as Sustainability Victoria (and EPA to a lesser extent), by designating landfill as **a last resort option only**, in distinct contrast to current practice where it still appears the first option when it comes to waste/resource investment and management decisions. Consequently, as Government policy starts to be implemented there will be considerable changes in the use and structure of landfills with the inevitable improvement in landfill siting, design, management and post-closure requirements. These will require Licence amendments which will need to be determined through Works Approval processes for future landfill cells and subsequent licence amendments.

However, if a company already has a Works Approval for the whole site it will become difficult to retrospectively enforce the investments in the newer (and potentially more costly) infrastructure requirements the Government and EPA have. A company may well argue that their existing Works Approval enables them to continue with the designs and practices that EPA saw fit to approve many years earlier. While EPA may decide to be more specific in their licencing by designating new requirements for new cells this should, under current regulations, still be preceded by a Works Approval Application to provide the appropriate assurances about the need for and proposed designs of the new cell(s).

The current practice of requiring a Works Approval for each new cell as the most convenient way for EPA to manage the improvement of landfill siting, design, management and post-closure would seem a safer, less resource intensive and inclusive process than global approvals⁴⁸.

Furthermore, because of the requirement to establish the *need* for an additional landfill or a new cell in an existing landfill⁴⁹ there will be a need for some form of assessment prior to every new cell proposed to be constructed.

⁴⁶ A landfill cell is defined as an engineered void for depositing waste with a volume capable of containing approximately 2 – 2.5 years’ waste. This is further indicated in EPA 1323.3 (p.55) where it is stipulated that a “Trigger” for rehabilitation of a cell is “two years have elapsed since commencement of filling (Landfill BPEM)”. The newly-created large “cells” with “sub cells” for 2-2.5 years now become cells that hold 3 times this volume or 6-8 years of waste.

⁴⁷ EPA 778.1 has now been replaced by EPA 788.3 (2015) but the same requirements for new landfill cells can be seen on pp. 5-6.

⁴⁸ It is recognised that in several instances EPA has provided such global Works Approvals (e.g. Wollert) but it is our submission that this is in accord with neither policy, regulations/BPEMs nor community expectations.

In addition it is incumbent on EPA to ensure that any proposal for a new cell or other new infrastructure will meet the requirements of the BPEM and other environmental regulations. Hence the need for a substantial assessment process (currently known as the Works Approval) will continue regardless of any global Works Approval issued by EPA.

The question remains: if there is no further Works Approvals required for subsequent cells then how can this assessment occur or meet the legislative and regulatory requirements?

If this was to occur it also raises the further questions of how landfill owners/operators can appeal EPA decisions and, even more importantly, how the community can be involved in such considerations (as required by the BPEM and EPA's "Community Engagement Strategy")? There appears to be no satisfactory legislative basis for answering these questions (see Part 2 for further discussion of this).

10.4. The exclusion of the community and other stakeholders

The Government waste management and resource recovery policies and the Strategies developed by Sustainability Victoria and the MWRRG place significant emphasis on the need to develop community trust in waste management and resource recovery practices in Victoria. They speak about the need for a "social licence to operate" and the requirement for early consultation to enable effective community involvement in the decision-making process. These policies can be seen in:

- the new Landfill BPEM and its community engagement requirements
- SWRRIP, 2015
- MWRRIP, 2015 - 16
- EPA Engagement Strategy

The problem with the proposed global works approvals is that they actually serve to **exclude** community and other third parties from the process once the global WA has been accepted (whether by EPA or via VCAT).

There are no community rights of involvement with licencing or amendments to licences - these only reside in the Works Approval regulations and will be extinguished once the initial 'global' Works Approval application is approved. There is no requirement for further community engagement, consultation or possibly even adequate access to information, let alone an opportunity for effective consultation and influence on decision-makers or rights of appeal. While 'guidelines' for consulting/informing the community may be made through the BPEM, this is far removed from the requirements proposed in the SWRRIP.

This runs counter to Government policy for no justified purpose.

(see more detailed discussion in Part 2)

⁴⁹ This is clearly established in the legislation as well as the requirements/regulations governing the scheduling of landfills and/or extensions (e.g. EPA *Waste Management Policy (Siting, Design and Management of Landfills)*; MWMRRG *Metropolitan Regional Waste Management Plan* (2009, Part 3, S. 1.2.1; S. 4.1). See also Part 2 of this submission.

10.5. Excessive time horizon

The Landfill Licencing Guidelines (p.35) require EPA to satisfy itself that *“the proposed cell would not be in conflict with sensitive receptors and land zoning”*. Most of the proposed cells, leachate ponds, LFG collection systems, etc. proposed in this Application will not be constructed for 10 or more years. Proposals such as Phytocapping and piggyback cells many years into the future have not been discussed except as a possibility **It is not possible for EPA to make the required assessments of this Application so far into the future** (especially when the ‘works’, as distinct from promises and proposals, are not intended to be submitted for many years, and for some cells and related infrastructure, such as additional leachate infrastructure and piggyback cells, for several decades).

The inadequacy of the Application and its inappropriate time horizon can be seen in the avoidance of providing design details, construction and management details and merely providing promises and possibilities into the future.

It can also be seen in the vague, non-specific language used: words such as *“expected”* (45 times), *“may”* (100+ times) *“will be”* (100+ times), *“assumed”* (18 times) and *“anticipated”* (22 times) abound in the Application due to the extended time line and the vague design proposals and promises.

It is worth noting that there has not been an EES, nor other studies to indicate the suitability of a landfill and Waste Hub in this location for this length of time, let alone one of this size and height.

The Application indicates that Government policies to focus on resource recovery instead of landfill are not a priority for the Applicant regardless of the policies of EPA and the expectations of the community. The use of vague wording and the underlying approach of general promises to obey the law further undermine community confidence in the landfill assessment process.

This is an industry in transition and EPA should be especially cautious in giving Works Approvals far ahead of requirements and needs. This was acknowledged by EPA in a letter regarding the Ravenhall landfill in 2014:

*“In the long term, consistent with the State Government's objective to minimise landfilling, and having regard to the development of resource recovery alternatives that will compete with landfilling as a waste management option, we anticipate activity at the site will transition from landfilling to a broader mix of waste management facilities. **It is not possible to know when the transition will take place or the precise nature of the future mix of waste management facilities. EPA will therefore be prudent in considering any long term landfilling approvals”*** (Letter from EPA.23/5/2014 – our emphasis; see copy in Annex II).

Such prudence is wise and will be appreciated in years to come.

We submit that the lengthy time horizon, while possibly having some value for conceptual planning, creates serious problems, incompatibilities with policies and contravention of environmental justice when applied to a Works Approval and should therefore not be approved on these grounds alone.

11. Summary and Conclusion

11.1. The Application is seriously flawed because

- 11.1.1. The sampling for the studies was seriously inadequate, especially for the odour assessments.
- 11.1.2. Its various odour, leachate and groundwater Risk Assessments fail to consider “worst case” scenarios, are not comprehensive and fail to consider the whole of the facility and the potential impacts of adding the additional cells to the existing facility. This is especially evident in the odour assessments but is similarly reflected in the leachate impacts on ground water where potential accumulated impacts are ignored in favour of only modelling Cell 4C in isolation. This is unscientific and contrary to Risk Assessment standards and makes the odour assessments highly unreliable.
- 11.1.3. Conservation and biodiversity issues arising from fugitive leachate have been ignored and the importance of Cherry Tree Creek as a recipient of potentially contaminated surface and ground water, with potential impacts on the Treatment Plant and Ramsar site is not recognised or assessed in the Application;
- 11.1.4. It fails to establish the need for creating a mammoth waste mountain instead of keeping the waste close to ground level and therefore fails to justify the increased risks entailed in building such a ‘waste mountain’. The alternatives to doing so are neither considered nor assessed.
- 11.1.5. It fails to provide adequate fire risk assessments or an adequate fire management plan.
- 11.1.6. It fails to assess the infrastructure risks arising from the additional height above ground and the pressures and vulnerabilities arising therefrom (unlike other Works Approval such as the Arthurs Seat application where such risks were recognised and assessed).
- 11.1.7. It fails to indicate or assess hours of operation, traffic implications, etc.
- 11.1.8. There has not been any community consultation prior to the development of the Application. The CRG - established after considerable community protests and after the Application was drafted - has not been allowed the opportunity to consider the Works Approval (the documents were only provided after they had been submitted to EPA and without any opportunity to be considered by the CRG or for discussions to be held with elected councillors).
- 11.1.9. The growing list of non-compliances (as outlined in Annex 1) make it clear that the landfill is not up to “best practice” standards.
- 11.1.10. It fails to adequately show the designs of the “works” being applied for nor does it provide the “works” details required for a Works Approval under the Environment Act
- 11.1.11. Fails to accord with the Waste Hierarchy and other Principles of the EP Act
- 11.1.12. It is not in accordance with government waste and resource recovery policy,
- 11.1.13. It is not in accordance with community attitudes and expectations

11.1.14. It is not in accordance with the Planning Principle of Net Community Benefit

The information provided in the body of this submission, along with the brief summary of the known non-compliances and past record of the Applicant shows the failure of the licence holder to measure up to the criteria to be applied by EPA in the assessment of this Works Approval Application (as stipulated in the EPA publication 1323.3 *Landfill Licencing*, 2016, Appendix 8, p.35).

There are better, more sustainable Resource Recovery processes instead of landfill and these have been increasingly adopted around the world. Our future should not be determined on the basis of the short-term profits for the landfill industry. It should be determined by the needs of the community and the possibilities for more sustainable options within a practical time frame. This is not achieved by giving the landfill industry a 30 – 50 year approval to continue with out-dated practices instead of the resource recovery alternatives that now form the basis of government policy and community expectations.

We therefore ask EPA to ensure there is:

1. No 30-year+ expansion. If an expansion is considered acceptable then an approval of a further 5 years in advance (2 cells) should be the maximum period;
2. No Exclusion of community from decision-making as would occur if EPA approves the Application in its current form;
3. Recognition that there is no established “need” and **No Net Benefit** for providing such a long-term approval when there are proven more sustainable Resource Recovery processes instead of landfill which EPA should recognise as the real need;
4. Effective and early community involvement in the decision-making process;
5. Full transparency and accountability;
6. Rapid reduction in landfilling and a rapid phase-out of above-ground landfills, especially within the current and future Urban Growth Area;
7. Government commitment (at all levels) to substantially expedite alternatives to landfill e.g. Waste to Energy, pyrolysis, composting and other forms of recycling and recovery.

WREC is not suggesting that the Wests Road landfill be closed, merely that its annual acceptance rate be limited to 2008 levels and that the height of the landfill be contained within a 5m to 6m range above surrounding ground level. We propose a comprehensive and inclusive review where alternatives are developed to enable these limitations to be achieved.

Annex 1 – Non Compliance Report – 2013 - 2017



Wests Road Waste Landfill

Non-Compliance Report 2013 - 2017

PART 1 – Summary of non-compliances from Works Approval Application

PART 2 – Extracts from Meinhardt Risk Assessment & Hitchcock Audit

PART 3 – Issues Raised and Conclusions

**Prepared by Harry van Moorst
Western Region Environment Centre
December 2013 – updated April 2017**

Introduction

EPA Criteria for assessment of a new landfill cell or sub-cell are spelled out in: “Criteria for assessment of landfill cell notification by EPA”, *Landfill licensing*, Publication 1323.3, Sept. 2016 Appendix 8, p.35:

“The notification of the requirement for a new landfill cell will be assessed by EPA using the criteria listed below. These criteria will be considered in addition to the information provided in the notification by a landfill licence-holder.

- 1. The past environmental performance of the licence-holder.*
- 2. The past regulatory compliance of the licence-holder.*
- 3. The history of progressive rehabilitation of existing landfill cells (see Appendix 20) and the status of rehabilitation of used cells.*
- 4. The level of utilisation of existing landfill cells.*
- 5. The landfill classification (see Landfill BPEM).*
- 6. The community and operational need for the proposed cell, including the consistency of the proposed cell with regional waste management planning.*
- 7. The dimensions, capacity and anticipated life of the cell.*
- 8. The types of waste to be deposited in the cell.*
- 9. The consistency of proposed wastes with licence conditions.*
- 10. The location of the proposed cell is within the licensed landfill footprint.*
- 11. Planning approvals held and relevant planning conditions.*
- 12. The pre-settlement height of the cell does not exceed the planning approval.*
- 13. The proposed cell is supported by surrounding infrastructure.*
- 14. The proposed cell would not be in conflict with sensitive receptors and land zoning.”*

The information provided in the body of this submission, along with this brief summary of the known non-compliances and past record of the Applicant show the failure of the licence holder to measure up to the criteria to be applied by EPA in the assessment of this Works Approval Application.

Non Compliance Report

Over the past few years there have been an increasing number of non-compliances with, or breaches of, the licence requirements of the waste landfill. While some of these may seem minor, and the risks may be “acceptable” to the consultants/auditors, this information needs to be publicly available. It is ultimately the community that must decide what level of risk it is prepared to take.

From an environmental and community perspective these breaches of the minimum standards required by EPA are of serious concern.

Structure of this Report

This report is comprised of three sections: the first is a brief summary of the breaches of the EPA landfill licence and is based primarily on the summary contained in the (draft) Works Approval for Cell 4C and the current Works Approval Application. The second is a more detailed exposition of breaches and problems with the landfill as determined by the consultant company Meinhardt in 2011 and the Auditor in 2012. The third is a brief summary of the implications and concerns raised by this evidence.

PART 1

Below is a summary of the detected/admitted non-compliances, derived from auditors’ reports and Wyndham Council’s Performance reporting for the 2013 Works Approval application (signed off by Wyndham Council’s, 31/10/13):

1. 2010-2011: One non-compliance reported:

- 1.1. Landfill gas exceeded BPEM limits: *“due to landfill gas surface emissions on Cell 1B . . . where the side wall liner meets the landfill cap”*

2. 2011-2012: Two non-compliances reported:

- 2.1. The licence condition “you must not contaminate land or groundwater” was breached and testing *“confirmed the presence of minor groundwater contamination with elevated levels of ammonia, bicarbonate, TOC, iron and manganese observed over the last three consecutive monitoring events. It was assessed that current risks associated with the onsite groundwater impacts appeared low”*. – Council is discussing “with auditor” to prevent this.
- 2.2. The licence condition “you must prevent emissions of landfill gas from exceeding the levels specified in (BPEM – 788)” – the levels were exceeded in November/December 2011 (no indication of how many instances)
- 2.3. *“In subsequent monitoring undertaken in January 2012 and April/May 2012 (in Cell 3) exceedances of the Landfill BPEM Action Levels for surface emissions, subsurface gas migration and underground services have been reported”* – apparent causes are the

inadequate compaction at the edge against the walls and “with areas outside the radius of influence of the existing gas extraction system”.

2.4. “A draft Remedial Action plan has been prepared for the site”.

3. 2012 – 2013: ‘Six’ non-compliances reported:

- 3.1. Non-tested “clean fill” was accepted contrary to licence conditions. *“Council is developing a clean fill acceptance procedure”* – why now and not in 2008?
- 3.2. Litter beyond the boundaries contrary to Licence conditions. *“Litter was observed beyond the premises boundary along Wests Road in April 2013”*
- 3.3. Failure to cover the day’s waste at the tipping face with 0.3m soil. *“On two occasions the active tipping face area was identified to be excessive by the EPA and Auditor’s assistants”*. [Yet in the next breath the auditor claims that *“No excessive litter or odour issues have been identified”* despite statutory declarations by a number of residents to the contrary (also see 3.6.2 below)].
- 3.4. Licence condition “you must prevent emissions of landfill gas from exceeding the levels specified in (BPEM – 788)” was breached: *“Landfill gas concentrations above BPEM action levels (were) identified . . . in subsurface, surface emissions of methane and LFG (LandFill Gas) in subsurface utility pits”* and *“Elevated LFG levels were identified within onsite services”* However, the impacts of these *“subsurface gas migrations . . . are considered to be low”*.
- 3.5. Council will attempt *“to achieve compliance with the Landfill BPEM by September 2014”*
- 3.6. Breaches of Licence condition requiring progressive rehabilitation of the landfill cells in accordance with BPEM 788.1 *“on four occasions”*:
 - 3.6.1. *“Landfill cap on cell 1A requires upgrade and repair;”*
 - 3.6.2. *“Soil cover on cells 1B, 2A, 2B, 3 and 4A has been insufficient to prevent unacceptable LFG emissions and minimise leachate generation”;*
 - 3.6.3. *“Council will develop and implement a rehabilitation plan which conforms to the requirements of EPA Publication 788.1 by the end of February 2014”;*
- 3.7. Licence condition “you must not contaminate land or groundwater” was breached four times:
 - 3.7.1. *“Minor leachate/LFG impacts to groundwater by elevated levels of ammonia, bicarbonate, TOC, iron and manganese have been observed”;*
 - 3.7.2. *“The groundwater impacts are most likely confined to the site boundaries”;*
 - 3.7.3. *“The existing leachate pond will be upgraded and lined”* and a new leachate pond is currently being constructed for Cells 4A and 4B.
- 3.8. *“No verified community complaints have been recorded relating to the current operations of the landfill”* (according to Council’s information provided to the auditor – no independent data was available).

4. 2013-2014: 5 non-compliances reported:

- 4.1. Odour emissions in breach of licence
- 4.2. Litter emitted outside the premises onto adjacent farmland
- 4.3. Landfill gas concentrations above BPEM requirements in breach of licence found in bores, at surface levels and in utility pits
- 4.4. Cells 1A,1B,2A,2B,3 and 4A not rehabilitated according to BPEM (i.e. all 6 cells)
- 4.5. Leachate emissions contaminating groundwater

5. 2014-2015: 8 non-compliances reported:

- 5.1. Failure to inform EPA in a timely fashion of odour and noise complaints
- 5.2. Odour emissions in breach of licence
- 5.3. Unacceptable noise in breach of licence
- 5.4. Litter emitted outside the premises on farmland
- 5.5. Fire at the tipping face
- 5.6. Failure to properly cover waste on Cell 4C in breach of licence
- 5.7. Landfill gas concentrations above BPEM action levels
- 5.8. Leachate contamination of groundwater

6. Complaints 2014-15 (as reported in Council Application pp12-13)

Noise: - 10

Odour: - TOTAL 20

- Acknowledged coming from tip - 11 (NB: 4 of these were largely due to police disturbance of cap and waste searching for “evidence”)
- Likely coming from tip - 2
- Source “unidentified/unsure” - 4
- Source wind direction indicates not coming from tip - 3

7. Complaints 2015-16 (as reported in Council Application pp14-15)

Noise: - 0

Odour: - TOTAL 22

- Acknowledged coming from tip - 10 (NB: 1 of these spread over 5 days: 7/4/16 to 11/4/17)
- Likely coming from tip - 5
- Source “unidentified/unsure” - 4
- Source wind direction indicates not coming from tip - 3

8. EPA Notices and Inspections Since 2014 (as reported in Council Works Approval Application pp10-11)

8.1. Pollution Abatement Notices: 2 in 2015; 1 in 2016: involved excessive leachate levels in Cells 1B to Cell 4A and excessive landfill gas emissions (especially methane levels), inadequate waste cover, insufficient gas extraction wells, need to connect leachate sumps.

8.2. Penalty Infringement Notices: 2 in 2015 – fines totalling \$14,965

8.3. Additional Non-compliances detected:

8.3.1. ‘Elevated methane emissions continuing from Cell 4A’

8.3.2. “Blockages” in Cell 1A gas extraction system (subsequently fixed)

8.3.3. “Uncovered waste observed that was not part of the tipping face”

8.3.4. Excessively steep batters on Cell 4A and “no aerators or sprays used on leachate pond to increase evaporation”

PART 2

The Meinhardt Risk Assessment (2011)

The Risk Assessment undertaken by Meinhardt in 2011 was limited to groundwater and leachate data). It formed the basis of a subsequent revision of the Risk Assessment by the Council-appointed auditor (Mr Phillip Hitchcock) in September 2012 (see further below).

3.2 Surface Water

3.2.1 The risk assessment concluded that there was a medium residual risk of impacts to surface water, with the risk prioritised as unacceptable but tolerable. (p. 10)

3.3. LEACHATE

3.3.1. Risk Assessment

Risk assessment concluded that the risk of impacts from the generation of leachate from the RDF is medium.

3.4. LANDFILL GAS

3.4.1. Risk Assessment

The site Risk Assessment identified the residual risk of impacts as high, which in turn was prioritised as “unacceptable and intolerable”.

An appropriate LFG monitoring program is to be implemented at the site to identify any potential LFG migration pathways and to lower the existing risk to the surrounding receptors. It will also assist with improving the conceptual model at the site, which will require regular review.

3.5. RDF OPERATIONS

3.5.1. Risk Assessment

The Risk Assessment concluded low level residual risks for most of the operational side of the RDF, such as generation of offensive odours, litter, noise, dust and vermin outbreaks. High residual risk remained for the risk of fire outbreak and medium for generation of leachate and stormwater contamination.

The Auditor (Phillip Hitchcock, ER Environmental Auditors) Risk Assessment (2012)

This Risk Assessment was prepared as a revision of the Meinhardt assessment and was based on more extensive data including gas emissions and surface water data. The following issues are amongst the more important ones raised in this review:

Problems with the landfill cells

(p.11 Table 2)

Capping of cells 2A, 2B and 3:

“Not clear (understood to be interim capping layer only)”

Cell 1A has “0.25m to 1.8m of clay”, no base liner, no side liner, no leachate management system.

Cells 1B, 2A and 2B slight improvement (*“Some [leachate] extraction conducted periodically, but apparently not on a specific leachate management plan.”*)

(p. 15)

“sumps L1, L3 and L4 . . . potentially damaged” – cracks, etc. – to be replaced with HDPE pipes – evidence of the degradation that inevitably occurs.

(p.22 re Table 5)

“The information provided in the table above can be summarised as follows:

- There is a lack of leachate data for Cell 1A;
- L1, L3 and L4 have potential blockage issues which need to be resolved;
- The survey details (top of collar) needs to be confirmed for L6 and L7;
- Leachate heads are unacceptably high in Cells 1B, 2B and 4A potentially promoting an unacceptable leachate flux through the base of the cells to groundwater;
- The data for L2 indicates that monocyclic aromatic hydrocarbons, 1,2 dichloroethene, methyl ethyl ketone and acetone are a concern for Cell 3;
- The data for L6 and L7 indicates that monocyclic aromatic hydrocarbons, 1,2 dichloroethene, methyl ethyl ketone and acetone are a concern for Cell 4A;
- The waste cell to groundwater separation distance is low at Cells 1B, 2B and 3. The separation distances are minimising the potential for contaminants to attenuate as leachate migrates vertically through the base of the waste cells into groundwater;
- There is evidence of groundwater mounding to the south (S9) and south east of Cell 1B (S4). This indicates that leachate may be migrating vertically from the south eastern portion of Cell 1B at relatively significant levels;
- Groundwater monitoring data indicates that:
 - leachate from Cells 1A, 1B, 2A, 2B, 3 and 4A is contaminating groundwater;

- leachate contaminated groundwater may be migrating beyond the southern boundary (central and eastern portions) and eastern boundary (southern portion only). The lateral extent of any offsite migration needs to be defined through additional groundwater monitoring wells and contaminant fate / transport modelling. (auditor's emphasis)

(P. 24)

*“There is evidence that leachate is contaminating groundwater and that leachate contaminated groundwater is migrating beyond the boundaries of the Site to some extent. Further investigations are required to further assess the lateral extent of leachate contaminated groundwater. Once this work is completed, this significance of leachate pollution of groundwater with respect to risks to the environment and human health will be assessed. **“The Auditor considers that Condition L4 and Condition DL1 of the Licence are not being complied with.”***

(P. 36)

“In brief, the table above indicate widespread surface emissions of methane at unacceptable levels (i.e. Cells 1A, 1B, 2A, 2B and 3) and relatively isolated evidence of subsurface methane migration at unacceptable levels (i.e. B10 and B20).”

“The two rounds of surface emissions monitoring indicate that the landfill gas extraction infrastructure in Cell 3 resulted in a reduction of methane emissions, but not to the extent that the relevant EPA Publication 788.1 action level was met across the Cell.”

“Compass has reported that leachate may be emanating from some sections of the cap.”

“On the basis of the above, the Auditor considers that Condition L5 of the Licence is not being complied with.” (P. 37)

(P.40)

“Council records indicate that a total of 136,336 tonnes of material was received as ‘clean fill’ during 2010/2011.”

“Environmental management protocols in the ‘clean fill’ area are unclear (e.g. sediment control).”

“Based on the above, the Auditor is uncertain as to whether or not the land component of Condition DL1 is being complied with.”

(P. 40) 5.3 Odour:

“It has been assumed that odour should not be a significant issue for the premises . . .”

“Council has indicated there have been no odour related complaints have been received since the preparation of Meinhardt (2011a)”

“Based on the above, the Auditor considers that Condition A1 of the Licence is being complied with.”

(p.44)

“wastes (i.e. weighbridge, waste transfer station, recycling, green waste separation, waste placement protocols). No records have been provided which allow an independent party to verify that these procedures are being implemented.”

“Based on the above, the Auditor is uncertain whether Licence Conditions WA1 and WA2 are being complied with.”

NB: especially in light of the “clean Fill” situation

“It is noted here that the EPA visited the Site on 17 July 2012 and identified inadequate cover over two batters where wastes had been deposited (northern and eastern) as well as an excessively large active tipping area. Both of these issues were rectified by 25 July 2012.”

5.9 .3 Waste Cell Rehabilitation

“At present, only Cells 1A and 1B have a final capping layer, with Cell 1A known to have issues (i.e. inadequate thickness, potential for ponding of water due to deformations) and the construction details for Cell 1B unclear. Cells 2A, 2B and 3 have temporary capping layers and the adequacy of these layers is not currently clear.

It is understood that Council intends on constructing temporary capping over Cell 4A (currently active) within the next 18 months.

“On the basis of the above, the Auditor considers that Condition L6 is not being complied with.”

(P. 45)

- “Condition 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 the cell heights are less than the approved pre-settlement contour plan.

“Council has commissioned Landair Surveys to conduct a survey of the active waste disposal areas. No survey contour plan, which is required under EPA Publication 1323.2, has been provided. The survey report indicates that a total of 409,760m³ of airspace was consumed between 7 July 2011 and 28 June 2012. Council weighbridge records indicate that 403,593.26 tonnes of waste was received during the 2011-2012 financial year.”

“The Auditor is not aware of an approved pre-settlement contour plan, however, this should be confirmed with EPA (auditor’s emphasis).”

“Based on the above (i.e. no survey contour, uncertainty regarding pre-settlement contour plan), the Auditor considers that Condition L8 of the Licence is not being complied with”.

(p.54)

6. Monitoring (P. 54)

“The monitoring requirements should be reassessed:

- On an annual basis (at least);
- In the event that monitoring data significantly differs to historical data (e.g. increased extent and/or magnitude of contamination, different nature of contamination);
- In the event of a materially significant complaint from the community.”

(p. 64)

“Council should notify EPA that it is not conforming with conditions L4, L5, L6, L8 and DL1 of the Licence, namely:

- *Condition L4: Waters contaminated by leachate must not be discharged beyond the boundaries of the premises.*
- *Condition L5: You must prevent emissions of landfill gas from exceeding the levels specified in Best Practice Environmental Management (Siting, Design, Operation and Rehabilitation of Landfills) (EPA Publication 788).*
- *Condition L6: You must progressively rehabilitate landfill cells in accordance with Best Practice Environmental Management (Siting, Design, Operation and Rehabilitation of Landfills) (EPA Publication 788).*
- *Condition L8: You must ensure that an independent annual survey is conducted for each landfill cell to:*
 - *Determine the quantity of waste deposited and verify the amount of landfill levy payable,*
 - *Demonstrate the need for any new cells, and*
 - *Confirm the cell heights are less than the approved pre-settlement contour plan.*
- *Condition DL1: You must not contaminate land or groundwater.”*

Other points indicated by the Auditor:

- Gas collection is very limited for most cells
- Gas was often flared
- expectations of 95% destruction efficiency
- no accurate data

7. 2014 - 2016 Audit Report

This is the most recent Audit, covering the period 2014-16 and made available in March 2017. This is a very brief presentation of some of the major concerns with the performance and non-compliances of the landfill. It should be noted that many of the findings of this audit reflect the concerns expressed by the earlier audits mentioned above, often indicating the failure to respond to the Audits in a timely manner (e.g. progressive remediation, leachate issues).

Here are some of the concerns:

(Audit p.5)

- *“some of the previous auditor recommendations have not been fully implemented including progressive rehabilitation and achieving compliance with LFG surface emission requirements”*
- *“subsurface LFG monitoring continues to show LFG above action levels beyond the site boundary”;*
- *“surface emissions LFG monitoring also routinely show levels in excess of action levels; leachate recovery from the sumps has been and continues to occur sporadically”;*
- *“The depth of leachate within Cells 1B, 2A, 3, 4A and 4B continues to be in excess of agreed trigger levels, with significant volumes of leachate likely to be present”.*

(Audit pp. 5-6)

The risks were found to be as follows:

For land,

- Very High - with regard to LFG due to:
 - large areas of the site require final capping and rehabilitation (Cells 1B, 2A, 2B, 3, 4A and 4B have intermediate cover only);
 - no side wall lining in Cells 1B, 2A and 2B;
 - Cell 1A is unlined;
 - known LFG migration across the northern site boundary in the vicinity of Cell 2B; and
 - the remaining perimeter LFG monitoring bores indicate minimal subsurface migration through the natural geology.
- Very High – with regard to leachate due to:
 - known leachate levels in cells in excess of trigger levels;
 - potential rupture or leakage of leachate system;

- no systematic method of recovery or place to put excess leachate currently (design plans have been developed and approved for another leachate pond and council are pursuing other leachate solutions such as discharge to sewer);
 - no side wall lining in Cells 1B, 2A and 2B;
 - Cell 1A is unlined;
 - current design for new leachate pond is for it to be located on 2A, which has no side lining; and
 - potential flow of leachate onto land from breach of cell.
- Medium - with regard to litter, noise, vibration, sediment erosion, chemical storage and vermin.

For atmosphere,

- Very High - with regard to LFG due to:
 - large areas of the site require final capping and rehabilitation (Cells 1B, 2A, 2B, 3, 4A and 4B have intermediate cover only);
 - known LFG migration across the northern site boundary in the vicinity of Cell 2B.
- High - with regard to odour and dust; and
- Medium – with regard to noise, vibration.

For surface water,

- Medium – with regard to sediment infiltration due to:
 - erosion of the cap during high-rainfall periods whilst site has areas of intermediate cover.
- Medium – with regard to mixing of leachate due to:
 - potential impact to surface water ponds via ruptures or overflows;
 - potential of illegal dumping of waste into surface waterways;
- Low – with regard to chemical storage and use; litter.

For groundwater (Segment C water based on TDS),

- High – due to:
 - final cap on Cell 1A requires improvement (unlined);
 - intermediate cover only on Cells 1B, 2A, 2B, 3, 4A and 4B (three of which have no side wall liners, Cells 1B, 2A and 2B); and
 - known leachate levels in cells in excess of trigger levels, with significant leachate heads potentially causing increased mass flux through the base of the cells.

For amenities,

- Low for noise and vibration due to:

- the operation of trucks and machinery with potential for windblown litter, dust, noise and vibration can be managed via suitable working hours and typical management control (e.g. use of dust carts, distance to nearest receptors).
- Low for litter, odour and dust due to:
 - management controls including use of dust carts, perimeter fences, litter fences at the tipping face, litter patrols and use of daily cover.

(Audit p.41)

“A total of 37 odour complaints from nearby residents were received during the audit period.”

(Audit p.42)

“The LFG monitoring has demonstrated that migration through the natural subsurface geology is occurring; this is largely confined to elevated LFG concentrations along the northern boundary adjacent to Cell 2B. Efforts should focus on additional extraction of LFG across the area of identified migration, as well as to progress the capping and rehabilitation of the completed areas of the site, including appropriate revegetation”.

and

The bores “do not and meet the recommended maximum spacing requirements of Table B.2 of BPEM, which indicates a maximum spacing of 50 m (Fissure or fracture flow-dominated permeable strata (e.g. blocky sandstone or igneous rock) no development within 250 m).”

(Audit p.44)

“surface emissions monitoring (is) reporting a steady or increasing trend in surface emissions during this audit period. However, surface emissions levels still significantly exceed action levels at numerous locations across various areas of the site and significant rehabilitation and final capping works are required to prevent these” and

“(WCC has) installed additional LFG extraction wells, including two additional extraction wells in Cell 2A, 8 additional extraction wells in Cell 2B and 9 additional extraction wells in Cell 3, which has also assisted to some extent in reducing LFG surface emissions across these cells. Surface level emissions in excess of action levels are though still routinely seen across the site”.

A total of 124 readings of emissions to atmosphere above the Action Level (1000 ppm) were reported with the worst exceedances in the most recently constructed and filled Cell (4A) with 47 exceedances, the highest being 36,000ppm (Cell 1A, the oldest was second worst with 32 exceedances).

PART 3 Issues raised by the non-compliances:

(NB: this section has not been updated with information from the 2014-16 Audit)

1. The gas emissions involved are recognised health hazards (including carcinogens) as well as amenity hazards:

1.1. LFG (LandFill Gas) composition (p. 23):

- Hydrogen sulphide (0.21 g/min)
- Trichloroethylene (0.02 g/min)
- Vinyl Chloride Monomer (0.015 g/min)
- Volatile Organic Compounds (7.4 g/min)
- Benzene (0.03 g/min)

1.2. “Maximum predicted concentrations at off-site locations are predicted to be above the design criterion contained in the SEPP (AQM)”, which is not only in breach of the SEPP and BPEM but also Council’s own commitment (and responsibility) to protect the health of the community.

1.3. The Risk Assessment “concluded that for normal operations all existing identified sensitive receptors would be located in a low risk location for odour impact . . . The medium risk contour extended beyond the existing EPA buffer zone by . . . approximately 100m . . . to the east of the site.”

1.4. It is not simply a question of odour (as an amenity concern) but of community health. These compounds can have a cumulative impact on the surrounding air and water quality due to their toxic nature.

1.5. This level of risk (“medium”) may suit the auditor but is not sufficient for the community when there is no justification for us to accept such a risk. The risk is increased by going substantially above ground and this has only commenced in the last 12 months, after the data for the current audits.

1.6. Previous “risk assessments” have assumed the following odour risk (from Works Approval WA105546 - 2008):

No	Environmental Hazard	Impact	Risk	Risk Pathways	Existing Controls	Revised Likelihood	Residual Risk
		c Increase of surface water turbidity impacting aquatic flora and fauna	L			Rare	L
4	Generation of offensive odours	Loss of amenity	M	<ul style="list-style-type: none"> • Aerobic conditions • Waste type • Vegetation • Climate • Wind direction • Buffers • Monitoring 	<ul style="list-style-type: none"> • Maintain aerobic conditions in water storage areas • Use of daily cover • Promptly investigating and responding to complaints • Distance to receptors (>500m) • Wind direction predominantly southerly and northerly, closest offsite residents are to the east and west • Regular monitoring at the site boundary undertaken 	Not Likely	L
5	Excessive litter accumulation	a Loss of amenity	M	<ul style="list-style-type: none"> • Daily cover • Litter fences or cages • Compaction 	<ul style="list-style-type: none"> • Daily collection of litter, particularly along the access road • Secure perimeter fence • Daily cover • Mesh fence around site boundary; • Mesh litter net located above the tip face; • Portable litter cages intercept likely litter pathways; 	Not Likely	L
		b Sickness or death of flora and fauna	M	<ul style="list-style-type: none"> • Regulatory signage and site rules • Vegetation • Wind direction 		Not likely	L
		c Degradation of land and water ways	M	<ul style="list-style-type: none"> • Buffers • Monitoring 		Not Likely	L

- 1.7. The odour Risk Level in the table above is classed as Low (L or “Not Likely”) – yet the actual occurrence of odour (as an indicator of fugitive Landfill Gas emissions) is evidenced on a number of occasions by the same auditors/consultants in their non-compliance reports, e.g. as shown above in 3.6.2;
 - 1.8. The “Existing Controls” in the table above, such as the use of daily cover, have not been adequately applied:
 - 1.8.1. There were several non-compliant situations discovered by the auditor and/or EPA with regard to inadequate daily soil cover (and possibly many others not discovered or reported)
 - 1.8.2. The wind direction assumptions are inadequate – it is when the wind does come from the South West to North West that residents and travellers on the freeway, respectively, are most likely to notice the odours – and they have
 - 1.8.3. The expected “control” of “*promptly investigating and responding to complaints*” has not occurred in our experience – many complaints have been made by residents over the past 12 months without any acknowledgement, let alone actual responses to control odours;
 - 1.8.4. Therefore the “Existing Controls” are largely non-existent and do not justify reducing the risk rating.
 - 1.9. It must be recognised that landfill odour is largely an indicator of fugitive gases in general. Therefore the risk likelihood for odour would equally apply to the gaseous substances (volatiles) escaping from the landfill. As mentioned, some of these are highly toxic and the consequences of heightened concentrations could be very severe.
 - 1.10. Therefore a more honest and realistic risk level would be: “Very likely” and “High”. Appropriate design and operational changes for an amended risk assessment must follow.
- 2. The contamination of the ground water should also not be so easily dismissed:**
- 2.1. The destination of contaminated groundwater will ultimately be the Ramsar site at the Western Treatment Plant and the Bay.
 - 2.2. While an auditor might consider the leachate leakages a low risk because of a “low” concentration and “small” amounts, environmentally-minded people might consider this an unjustified and unnecessary risk to our environment, especially as such contaminants can accumulate as well as have an immediate impact on our waterways as they flow slowly towards the Ramsar site.
 - 2.3. Furthermore, in view of the growing frequency of such contamination, and the increased risk created by going increasingly above ground, there is no cause for complacency instead of preventative action.
- 3. The failure to “progressively rehabilitate” the landfill means that capping is “interim” (for many years) and inadequate.**

(P.39)

“Only an interim capping layer has been placed above Cells 2A, 2B and 3 on the basis that Council intends to continue filling above these cells in the future. The nature of the interim capping is unclear (i.e. thickness, compaction). Also, the proposed timeframe for filling above these cells is unclear.”

- 3.1. This raises serious risk of future escalations of air, surface water and groundwater contamination.
- 3.2. It is contrary to “Best Practice” requirements to leave landfill cells with only interim capping for more than 12 months yet in the Wyndham landfill several cells have had interim capping for 5 years or more.
- 4. The large amount of what was supposedly “clean fill” (more than 130,000 tonnes) was untested and may have included unacceptable waste or waste that should have been declared and dealt with properly.**
 - 4.1. As “clean fill” it is permitted to be stockpiled instead of covered and controlled as “industrial” or “municipal” waste.
 - 4.2. In this instance it has been piled up without any waste management controls.
 - 4.3. While this may have been an oversight it could also have been a way for an unscrupulous contractor to dispose of contaminated soil under the guise of clean fill, thereby avoiding the levies that should apply. This clearly needs immediate attention (and evidence of successful testing of any future “clean fill” before acceptance).

Conclusion

The Wests Road “waste mountain” is far from being “Best Practice” despite Council’s claims to the contrary. There have been serious breaches of the licence conditions and non-compliances with the BPEM, the SEPP and the EPA Licence which should raise concerns within Wyndham Council as well as the community of Wyndham and beyond.

Ultimately, for the sake of financial gain, Wyndham Council is permitting a major increase in the risks associated by waste landfills through both their existing failures and even more so by their massive expansion above ground and the proposed expansion. This combination will turn the landfill into an environmental hazard and community shame.

It is of considerable concern that this situation has existed and deteriorated since 2008 with very little public acknowledgement and limited remedial action. The belated aim to become compliant by the end of 2014 hardly created confidence when initially made and can be seen to have failed to eventuate as evidenced by the 2014-16 Audit.

The tragedy is that this disgraceful situation is being created by the community’s own representatives in Council despite the absence of any real need: there are a number of existing quarries that are suitable to take any waste that cannot be accommodated in a ground level, properly managed and safe Wyndham landfill.

Annex 2 – EPA Letter recognising need for prudence re lengthy time frames for Approvals

Mr Luke Shannon
General Manager Planning and Development
City of Melton
PO Box 21
MELTON VIC 3337

Our Ref: 5003998

Dear Luke

BORAL PLANNING APPLICATION P2091/97

Thank you for meeting with EPA and our portfolio partners on 14 May 2014 regarding the planning application for extended landfilling activity at the Boral site. I am writing to confirm some observations and comments made by EPA at that meeting, recognising that our comments may assist Council with its consideration of this matter.

As you are already aware, the Boral site is an important strategic site for current and future waste management activity in Victoria. This is confirmed in the draft Statewide Infrastructure and Resource Recovery Plan and the Metropolitan Waste and Resource Recovery Strategy. The site currently combines quarrying operations with a putrescible waste landfill and an open windrow composting facility.

The current Works Approved area allows for approximately 5-10 further years of landfilling. In the long term, consistent with the State Government's objective to minimise landfilling, and having regard to the development of resource recovery alternatives that will compete with landfilling as a waste management option, we anticipate activity at the site will transition from landfilling to a broader mix of waste management facilities. It is not possible to know when the transition will take place or the precise nature of the future mix of waste management facilities. EPA will therefore be prudent in considering any long term landfilling approvals.

Critical to Council's consideration will be the issue of appropriate buffer distances to accommodate landfilling or the activities that may supersede landfilling in the future. The application of a 500m buffer to a facility of this scale adjacent to existing and emerging communities is overly simplistic and requires a greater level of scrutiny before a more suitable buffer can be identified. Should EPA receive a Works Approval application for this site, we would require sophisticated modelling to analyse the unique characteristics of this site including the topography, meteorological data, the precise location of forecast active cell operations, existing complaints



Lvl 3, 200 Victoria Street
Carlton
Victoria 3053
GPO Box 4395
Melbourne Victoria 3001
T: 1300 EPA VIC
F: 03 9695 2610
DX 210082
www.epa.vic.gov.au



data, etc. EPA would thoroughly review that information before determining a suitable buffer. The outcome may be that the buffer will need to be a complex shape with distance-to-source varying significantly.

You may also be aware that EPA has an ongoing compliance program relating to the site. Extensive engagement with the local community has been occurring and all complaints data has been made available to the affected communities. Statutory Notices have been issued on both the landfill and composting operations. All of this information will help inform any future Works Approvals and consideration of appropriate buffer distances.

Given the complexity of this site, it's strategic importance, current community dissatisfaction and potential development at the boundary, it would be preferable if the matter could be considered more holistically with EPA, Council and other stakeholders working cooperatively to identify a long term plan. Ultimately it is a decision for the applicant. However, I am confident that a more consultative approach is in the interests of all stakeholders.

I trust this information assists with consideration of this complex matter. Should you require any further information, please contact me directly.
Yours sincerely



TIM EATON
ACTING DIRECTOR
KNOWLEDGE STANDARDS AND ASSESSMENT

23/5/2014

Annex 3 -EPA Letter re Visual Amenity Powers

Our Ref: MC004095

Mr Harry van Moorst
Director
Western Region Environment Centre
PO Box 464
WERRIBEE VIC 3030

Dear Mr ^{Harry} van Moorst

Re: Landfill Heights

Thank you for your submission of the 28 June 2013, regarding the future of landfills, with a particular focus on the Wyndham landfill. I am also responding on behalf of the Premier of Victoria and the Minister for Environment and Climate Change, and I apologise for the delay in doing so.

As discussed at our recent meeting, through the current landfill BPEM and associated statutory policy, EPA has powers to regulate amenity issues including visual amenity, a key concern relating to the height of a landfill. In addition, we can influence the heights of landfills through regulatory measures relating to odour risk and leachate risk.

In addition, when we assess any future application for works approvals relating to Wyndham landfill, we will consider community concerns including the height and its impacts on the surrounding community.

Yours sincerely

JOHN MERRITT
CHIEF EXECUTIVE OFFICER

30/8/2013



Lvl 3, 200 Victoria Street
Carlton
Victoria 3053
GPO Box 4395
Melbourne Victoria 3001
T: 1300 EPA VIC
F: 03 9695 2610
DX 210082
www.epa.vic.gov.au



Annex 4 – Photos of Wests Road Landfill

The tipping face (supposed to be 25m x 25m and covered progressively as tipping face moves)





Tipping face greater than 25m x 25m – note the uncovered waste adjoining the tipping face



Waste mountain viewed from buffer zone to the east of RDF (2013)



Waste mountain viewed near entrance to RDF (2014)



Waste mountain viewed from Little River – partially obscures views of Melbourne CBD



Waste mountain showing steep batter and visible waste



Waste mountain showing steep batter and visible waste



Waste mountain viewed from freeway (at "Western Gate to Werribee") showing lights late at night



Flooding adjacent to landfill site 2017



Flooding adjacent to landfill site 2017



Submission Part II



Environmental
Justice Australia

Submission Part II

Introduction

Part II of this submission has been prepared for Western Region Environment Centre by Environmental Justice Australia.

It endorses the arguments in Part I that the Wests Road Refuse Disposal Facility (**Wests Rd RDF**) works, if approved, will (or, given the lack of detail in the application and many other unknown factors due to the extended time frame for which the approval is sought, may) endanger the quality of the environment; and that this will unreasonably and adversely affect the interests of the Wyndham community, and will be inconsistent with waste management policy.

The submission further contends here that works approval should be refused because approval would be inconsistent with:

1. the works approval and licensing regime of the *Environment Protection Act 1970* (Vic) (**the Act**);
2. the Act's legislative principles; and
3. statutory policy.

1. Inconsistency with the Act's works approval and licensing regime

Subsection 19A(1) of the Act prohibits the carrying out of works on 'scheduled premises' (including premises for the discharge or depositing of waste as in the present case) without a works approval, licence or a requirement specified in a notice given by the Environment Protection Authority (**the Authority**), as the case may be.

Section 20 of the Act governs the licensing of activities such as the depositing or discharge of waste that, subject to the exception in subs 20(7C), are intended to be conducted upon completion or substantial completion of the works that are the subject of the works approval.

With respect to the present application, Wyndham City Council (**the Council**) is required to apply for a works approval to enable the construction of the extension of the Wests Road RDF. If approval is granted, the Wests Rd RDF would be used for landfill for at least the next 30 years.⁵⁰

The Authority is empowered – and obligated - to decide the works approval application under subsection 19B(7), and accordingly is required to decide the application in accordance with the Act.

The works approval and licensing regime in the Act clearly distinguishes between works approvals and licences. The regime operates on the basis that proposed works require thorough consideration in relation to their potential impacts.

While the Act contains no express definition of ‘works’ or ‘works approval’, in the vast majority of situations – including the context of the present application – works approval is an essential precursor to consideration of whether any licence is to be granted. For example, section 20(5)(b) (licensing of certain premises) provides:

(5) The Authority shall not deal with an application which—

...

(b) except as provided in subsection (7C) relates to a matter in respect of which—

(i) a works approval has been obtained and, in the opinion of the Authority, the works have not been satisfactorily completed in accordance with that works approval; or

(ii) a works approval is required to be obtained and has not been obtained and the works have not been completed or substantially completed—

and shall advise the applicant accordingly.

The Act and subordinate legislation (including specific policies such as the Waste Management Policy (Siting, Design and Management of Landfills) (No. S264, Gazette 14/12/2004) (**Landfill WMP**)) clearly contemplate the level of detail required in a works approval process to be significant, and more substantive than that required for, for example, a licence amendment.

Further evidence is available in the Authority’s guidelines. The Landfill WMP defines a landfill cell as ‘a compartment within a tipping area in which waste is deposited, and enclosed by cover material.’⁵¹ Both the Works Approval Application Guideline (EPA Publication 1307.10, April 2015, 14.3), and the Landfill Licensing Guideline (EPA Publication 1323.3, September 2016, pp7-11) state that if the operator has works approval and a licence, new cell construction only requires a licence amendment.

⁵⁰ Based on Metropolitan Waste and Resource Recovery Implementation Plan 2016, p51: Wests Rd landfill has the potential to operate beyond 2046. The Council’s application proceeds on the basis of sub-cells (eg 5A, 5B, 5C), each of which is about the size of what a cell was in the past. This application is therefore for the equivalent of 12 old-size cells, which at the rate of each sub-cell filling up in about 2.5 years, takes us to at least 2047.

⁵¹ On the basis of note 50 above, and the arguments in Part I of the submission, we contend that the meaning of ‘cell’ should encompass what are referred to in the application as ‘sub-cells’. Hence it is not only plans for each cell, but also for each sub-cell, that should come under rigorous scrutiny in the works approval process.

The Licence Management Guideline (EPA Publication 1322.7, 15 September 2016) further states:

During the lifetime of your EPA licence you may need to do one or more of the following:

- Modify or expand your operations: You must not undertake any *significant changes to the activities at your premises without a works approval*. For example, *if you want to increase your annual production rate or change the wastes discharged from your site, you may need to obtain an EPA works approval*. (p2, emphasis added)

Elsewhere in that Guideline, it is stated:

WM1.4 Maximum deposit of wastes

You must not deposit more than <x> tonnes of waste on the premises per year.

This condition specifies the maximum amount of waste you may deposit on your land. *Deposit of wastes in excess of the capacity of the land to accept represents a substantial hazard to the environment. The capacity is determined at the works approval stage*. (pp42-43).

As documented in Part I of the submission, and assessed against the requirements of the works approval and licensing regime, the Council's application contains insufficient detail to satisfy the standard required of a successful works approval application.⁵² The lack of detail is particularly egregious because the approval sought is for such a long time period.

To grant approval over an extended period would also be in itself inconsistent with the works approval and licensing regime. In order for the applicant to be able to provide sufficient clarity about potential impact of the works, there must be some degree of contemporaneity between the works approval decision and the contemplated impacts. Where the actual works (or at least a significant part thereof) proposed will not be constructed until some years hence, that contemporaneity does not exist. This produces a situation that is both unfair and not within the intended ambit of 'works approval' as the concept is explicated under the Act.

We therefore submit that the Authority does not have discretion to grant a works approval in the form that the Council is requesting here, and any attempt by the Authority to do so is not authorised by the Act.

Subsection 19B(5) also imposes certain requirements on both the applicant and the Authority in regard to a works approval application. The procedure for making such applications is contained in s 19B, and specifically subsections 19B(1) and 19B(2):

19B Works approval

(1) An application for a works approval shall be—

(a) made in accordance with a form and in a manner approved by the Authority;

⁵² See also Wyndham City Council Refuse Disposal Facility Works Approval Application - EPA 20B Community Conference Report (PCB Consulting, March 2017) (**s 20B Conference Report**), pp4-5, 9-10, 13. However, our submission does not confine itself to the issues identified and recommendations made in that report.

(b) forwarded with the prescribed fee; and

(c) accompanied by such plans, specifications and other information and a summary thereof as may be required by the Authority within 21 days of receiving the initial application.

(2) The Authority shall not deal with an application which does not comply with subsection (1) and shall advise the applicant that the application does not comply with subsection (1).

Consistent with our point above that the Authority does not have the power to issue a works approval in the form requested, and our arguments in Part 1 that the application lacks sufficient detail, we contend that the Authority ought to have refused to entertain the application. By doing so here and in other cases, the Authority has created an expectation in project proponents and unnecessary distress and anxiety amongst impacted communities.

2. Inconsistency with legislative principles

The Authority's decision-making with respect to the works approval application is subject to the general obligation to make any decision in accordance with the purpose of the Act.⁵³

Subsection 1A(1) of the Act contains a clear statement of the Act's purpose. This is to 'create a legislative framework for the protection of the environment in Victoria having regard to the principles of environment protection', being those principles set out in sections 1B-1L. Further, subsection 1A(3) provides that in the administration of the Act, regard should be given to those principles.

The Authority is accordingly required to have regard to, and apply, the principles of environment protection set out in the Act. We further refer to the Authority's own guideline, 'Application of the environment protection principles to EPA's approvals process' (EPA Publication 1565, June 2014) (**Principles Guideline**).

We take issue with the Principles Guideline's assertion that because the legislative principles provide the basis for developing statutory policy, 'in most cases there is no need to refer directly to the principles themselves' (at 1.3). However, we note that in any case, the Principles Guideline goes on to state that the Guideline is most applicable to works approval situations, especially those on the 'standard track' pathway (at 1.3).

Further, the Principles Guideline makes an exception to the general assertion that there is no requirement to refer to the principles directly – where 'there are complicated issues or unusual circumstances that are not adequately addressed by the specific requirements of relevant statutory policies' (at 1.3). We submit that even if the Guideline's exceptionalist stance is correct, the current works approval application, due to its proposed long-term nature, is one of those exceptions.

⁵³ Applying section 35(a) of the *Interpretation of Legislation Act 1984* (Vic) to the construction of subsection 19B(7) of the Act.

We therefore refer to several of the principles below, and outline how approval of the application would be inconsistent with them.⁵⁴ We further note that the Principles Guideline (pp5-6) states that where a principle is directly applicable, the Authority will look for evidence of the applicant's consideration of the principle. In this respect, the arguments below also provide further support to our argument at #1 above, and in Part I more broadly, that the application contains insufficient detail to be approved.

The following principles are particularly important in the present context. We apply these principles without limiting ways in which others in Part 1 of the Act might also be relevant to the present application.

Section 1B – Principle of integration of economic, social and environmental considerations

- (1) Sound environmental practices and procedures should be adopted as a basis for ecologically sustainable development for the benefit of all human beings and the environment.
- (2) This requires the effective integration of economic, social and environmental considerations in decision making processes with the need to improve community well-being and the benefit of future generations.
- (3) The measures adopted should be cost-effective and in proportion to the significance of the environmental problems being addressed.

Application of the section 1B principle in this case involves considering whether the proposed landfill extension works accord with sound environmental practices and procedures as a basis for ecologically sustainable development.

As Part I of this submission details, the Council's proposal offends against this principle due to its likely effect on local community and consideration of the benefits of future generations.

Approval of the present application would also not be sound practice, because it would be inconsistent with past practice and convention with respect to the Wests Rd RDF, in which previous works approvals have been sought for the construction of new individual or very small numbers of cells, rather than simply seeking to amend the licence as is implied in the current application.

Further, to grant approval for multiple cells far in advance of their construction is to confront a significant risk that cell requirements and standards will change over the time period, thereby undermining the soundness of the assessment process. Assessing works approval applications against standards is difficult enough even when the works proposed are to take place in a short time period.

For example, the Report of the Independent Inquiry into the Environment Protection Authority (Ministerial Advisory Committee, 2017, p158) discusses the *Dual Gas* case, in which VCAT considered applications for review of the Authority's decision to approve plans to develop a power station that would use a mix of natural gas and gasified brown coal.

'Four objectors, including Environment Victoria, sought a review of this decision by VCAT on the grounds that the power station project would be inconsistent with the SEPP (AQM). Dual Gas objected, seeking a restoration of the full capacity. VCAT found that the Dual Gas project

⁵⁴ The approach in this section of our submission is consistent with the Principles Guideline, p5.

complied with SEPP (AQM) requirements, noting that the project met the requirement for 'best practice' having regard to the definition of best practice in the SEPP (AQM) and comparable industry activity. VCAT noted that 'best practice' does not require a comparison with all other types of electricity generation

...

Importantly from the perspective of the inquiry, VCAT also noted that the task of considering '*... whether the use of the works proposed for the [Dual Gas project] will be inconsistent with the SEPP (AQM) or can be made consistent through the imposition of appropriate works approval conditions ... is made harder here because the SEPP (AQM) contains some provisions that are qualitative rather than quantitative. Some provisions of the SEPP (AQM) adopt or apply broader based environmental objectives and policies, at a time when some of those policies are themselves in a dynamic state of change or political uncertainty'. . . Indeed, there were changes in policy positions of both the Australian and Victorian governments during the proceedings.*' (emphasis added)

Another key factor in conducting accurate assessment according to sound practice is the growing urgent Victorian commitment to waste reduction and to renewable energy, including from waste. Part I of this submission documents the lack of attention paid by the application to renewables/waste recovery.⁵⁵

There is only one – brief – mention in the Council's application:

'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.' (p64)

It is also clear from subsections 1B(2) and (3) that considerations about sound economics and cost-effectiveness are intended to be taken into account in applying the principle. However, it should not be the role of the Authority to determine works approvals or other environmental matters on the basis of proponents' desire for profitability (see also Principles Guideline, p7). Nevertheless, we note that certain aspects of Authority communication with respect to previous Council applications, and the Council's processes of communication (eg the recent section 20B conference) tend to make appeals along the lines of 'the need for industry certainty'.

As a specific example:

'As a commercial enterprise within a free market economy, the Council operates the landfill in a competitive market' (EPA Victoria Works Approval Assessment Report Application SO 1001548 lodged by Wyndham City Council Proposal: Cell 4C - Extension of Municipal Waste Landfill at Wests Road, Werribee June 2014, p15).

These appeals are not simply irrelevant, but also counter to the Act.

⁵⁵ See also s 20B Conference Report, pp 5, 12-13.

It is nevertheless important to consider the broader economic and industry context, because this entails a real financial risk to both the Authority and the Victorian Government. To grant works approval for such a long time period carries significant financial risks stemming from contractual relationships. For example, if conditions or required standards change and cell construction is unable to proceed – or indeed, becomes clearly unnecessary – the landfill operator – Wyndham City Council – may be able to enforce contractual obligations. The risk of the Authority or the Victorian Government becoming liable for substantial damages is heightened.

We submit that this potential risk scenario is just one example of the type of detailed modelling that should be required in the application before the Authority can even begin to consider whether to grant works approval.⁵⁶

A second example concerns the logic employed by the Council to explain why approval for such a long time period is sought. At the section 20B conference, for instance, the Council presented the following arguments:

- Provision of long-term security for Council investments, especially re resource recovery and alternate technologies⁵⁷
- Enhancement of opportunities for third party investments
- Provision of long-term secure feedstock for other technologies
- Provision of certainty re the facility's financial contribution to Council
- Ensuring the facility can be a key waste management hub as per state planning.

Some of these points contradict each other (eg aspects of the first compared to the last). In addition, the Council assured the public that 'a whole of site [works approval] application does not lock in landfilling for the next 30 years'⁵⁸ – in which case, as the Council already has a planning permit for the whole site, why not apply for works approval for each sub-cell as and if required?

With reference to the Principles Guideline (pp5-6), the application provides no modelling of the possible changes to rates of sub-cell filling – or even the need for new sub-cells – over the next 30 years (for example, via projections of likely volumes of resource recovery and the growth of these markets).

Specifically with respect to this environment protection principle, the Council should 'conduct a comparative analysis of competing concerns and implications, based on clearly stated criteria, assumptions and values, taking into account relevant spatial scales and timeframes' (Principles Guidelines, p7). Instead, the Council has failed to provide any modelling of how it is anticipated that residual waste may decrease at Wests Road RDF, over the next three decades.

⁵⁶ See also s 20B Conference Report, pp 10,13.

⁵⁷ See also s 20B Conference Report, p5.

⁵⁸ s 20B Conference Report, p5.

Section 1C – The precautionary principle

- (1) If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
- (2) Decision making should be guided by -
 - (a) a careful evaluation to avoid serious or irreversible damage to the environment wherever practicable; and
 - (b) an assessment of the risk-weighted consequences of various options.

In the context of works approval applications, the precautionary principle focuses on the risks of serious or irreversible damage to the environment that could result if the works were to go ahead, even where these risks are not a matter of scientific certainty. Applying the principle here involves carefully evaluating, so far as practicable, the potential serious or irreversible damage resulting from the proposed landfill extension, and also assessing the risks involved in each of the available options.

As Part I of this submission details, the Council’s proposal offends against this principle. In addition, as outlined at #1 above, approving the proposal for the next 30 years fails to take into account likely significant changes in the waste management sector, and accordingly, the degree of need for landfilling.

Section 1D - Principle of intergenerational equity

The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.

The application of this principle in the present case requires the Authority to consider whether the proposed landfill extension would have adverse effects for the health, diversity and productivity of the environment which would be detrimental to future generations.

As Part I of this submission details, the Council’s proposal offends against this principle. We also refer to our argument below (section 1L) concerning community participation rights, which we submit are also relevant to the principle of intergenerational equity, given that more than one generation will effectively be denied the opportunity to participate in future decision making about the Wests Rd RDF.

Section 1I – Principle of wastes hierarchy

Wastes should be managed in accordance with the following order of preference -

- (a) avoidance;
- (b) re-use;
- (c) re-cycling;
- (d) recovery of energy;
- (e) treatment;
- (f) containment;

(g) disposal.

The application of this principle to the Council's proposed landfill extension requires that consideration be given to other methods of dealing with waste in priority to containment in a landfill. This means that it is necessary to take into account key factors which are likely to have a bearing on the extent to which containment of waste will be a priority or be needed in the future, such as advances in waste management technology, and increasing levels of avoidance, re-use and recycling.

Again, as outlined at #1 and the discussion of section 1B above, approving the proposal for the next 30 years will fail to take into account likely significant changes in the waste management sector, and accordingly the need for landfilling.

Further, as the Principles Guideline states (p8), the Authority will look for evidence in an application that:

- the applicant has considered the possibility of adopting options at higher levels in the wastes hierarchy, and has not rejected them without adequate investigation and analysis
- the applicant's proposal is at the highest level in the wastes hierarchy that allows an outcome consistent with statutory policy and best practice, involves acceptable risk, and is 'practicable', that is, relevant and reasonably available and affordable
- the applicant is advancing a proposal at a lower level in the hierarchy that it believes is significantly superior in overall terms (based on environmental risk and practicability considerations), and has documented the investigations and analyses undertaken to reach this conclusion.

We submit that the application does not contain evidence that meets the requisite standard. Although we note that the Authority will allow a departure from the wastes hierarchy if it can be shown to produce a significantly superior outcome, this is only permitted if the applicant can justify the departure, using a comparative assessment of the options. This has not been provided in the current application.

Section 1L – Principle of accountability

(1) The aspirations of the people of Victoria for environmental quality should drive environmental improvement.

(2) Members of the public should therefore be given—

(a) access to reliable and relevant information in appropriate forms to facilitate a good understanding of environmental issues;

(b) opportunities to participate in policy and program development.

The current Act requires, in general, at least some degree of meaningful community participation via the principle of accountability.⁵⁹ Presently there are limited and piecemeal opportunities for effective community engagement with harm prevention, regulatory and enforcement processes – shorthanded from here on as ‘community participation rights’.

The Principles Guideline (p15) suggests that in relation to the works approvals process, the principle of accountability operates through the provisions of the Act that provide opportunities for the public and other third parties to comment on an application when it is advertised, and to request VCAT to review the Authority’s decision on the application.

The key legislated opportunity for communities lies in section 19B(3)(b), where they may make written comments on an application for works approval. However, there are other points in the regulatory process where communities have no opportunity for input, such as with respect to most licences. If the Wests Rd RDF works approval application is successful, the Authority still must sign off on any required licence amendments for each new cell (s 20A), but communities will have no opportunity to participate in this process (including any review or appeal) because a works approval has already been granted (s 20). Further, where only the Authority is engaged in the regulatory process, such as the licence amendment process, it may not rigorously scrutinise the issues.

If the current works approval application is successful, third party rights to review will effectively not exist for at least a generation – thereby, arguably, also contravening the principle of inter-generational equity (s 1D), and being inconsistent with the Aarhus Convention.⁶⁰ The Aarhus Convention is generally regarded as a very good benchmark of whether a system has adequate community participation and access to information.

More broadly, public rights to information, community participation and access to justice in environmental matters are inter-related. A wide scope of such rights is particularly critical in order to achieve environmental justice for communities that bear an unfair burden from Victoria’s pollution.

The future incorporation into the Act of a general duty not to pollute, as committed to by the Victorian Government, will also require broader rights of community participation. Communities have rights and responsibilities not only not to pollute, but to fully and genuinely participate in the framework that upholds the general duty – thereby facilitating community ownership of the responsibilities implied under the duty. Given Government commitment to shifting the Act and the Authority to having a stronger harm prevention focus, it therefore makes sense that there is enhanced

⁵⁹ See also s 1G(1) (principle of shared responsibility), and the Landfill WMP Clause 10(3) (on implementation of policy responsibilities):

The Authority will employ statutory and non-statutory instruments and measures in implementing the policy, including:

- (a) licences, works approvals and notices issued under the Act;
- ...
- (g) landfill monitoring and auditing;
- (h) environmental monitoring and auditing;
- (i) economic instruments, including financial assurances;
- (j) *consultation with communities and other stakeholders* (emphasis added).

⁶⁰ *Convention on Access to Information, Public Participation in Decision-Making, and Access to Justice in Environmental Matters* (‘Aarhus Convention’), adopted 25 June 1998, 2161 UNTS 447 (entered into force 30 October 2001).

community participation in the works approval/licence processes – rather than reducing what limited rights currently exist.

Conclusion concerning environmental principles

The Act's stated purpose and its principles of environment protection should not be treated as mere 'motherhood statements'. They are intended to have real effect. We submit that applying the principles in the present case, whether individually or cumulatively, militates strongly against the granting of a global works approval of the kind sought.

3. Inconsistency with statutory policy

As we have outlined in #1 above, approval of the Council's application would be inconsistent with the Act's works approval and licensing regime. This inconsistency is partly due to the fact that the Council's application does not provide the level of detail required by statutory policy, specifically, the Landfill WMP.

Approval would also be inconsistent with section 20C of the Act, which requires the Authority to have regard to policy so that the authorisation and any condition in, or relating to, the authorisation is consistent with all applicable policies (subs 20C(2)). The Authority may refuse to issue an authorisation if in its opinion the issue would be contrary to, or inconsistent with, any applicable policy (subs 20C(3)(a)(i)).

The Landfill WMP is a key applicable policy. For example, Clause 10(1) of the Landfill WMP requires the Authority to pursue and apply the objectives, principles and intent of the policy in making decisions and devising programs that may affect current or proposed landfills.⁶¹

As outlined in Part I of this submission and in #1 and #2 above, approval of the application would contravene the objectives of the policy, which are as follows:

- (a) protect the environment, including human health and amenity, from risks that may be posed by the disposal of waste to landfill;
- (b) encourage innovation, cleaner production, resource efficiency and waste reduction, including promoting and facilitating the diversion of waste from landfill, in accordance with the wastes hierarchy; and
- (c) minimise the development and use of landfills, consistent with the policy principles.

The principles of the Landfill WMP are the same principles outlined in #2 above, and accordingly, approval of the application would mean that the Authority has not pursued and applied them.

⁶¹ See also Policy Impact Waste Management Policy (Siting, Design and Management of Landfills) (EPA Publication 968, December 2004), p20.

Similarly, for reasons previously outlined, approval of the application would run counter to the intent of the policy, which includes that:

Clause 9(1)

the siting, design and management standards established for landfills in Victoria provide the highest practicable level of protection for the community and environment, including local amenity and aesthetic enjoyment.

Clause 9(4)

wastes shall only be deposited to landfill if there is no other practicable waste management option higher up the wastes hierarchy that does not lead to inferior outcomes in terms of the protection of people and the environment.

Clause 9(5)

the number of landfill sites exempt from licensing be progressively reduced and replaced with a system of resource recovery and waste transfer facilities to service local communities.

Clause 9(6)

while certain parts of the environment will continue to be used for landfilling purposes in the foreseeable future, with consequent limitations on future beneficial uses, the development and use of landfills be cooperatively and strategically planned to minimise the adverse impacts of landfilling wastes.

Clause 9(8)

scientific information, models, research and other knowledge will inform decisions that affect landfill operations made by people, governments and organisations and will be communicated in a manner that meets the needs of stakeholders.

'Best Practice Environmental Management: Siting, Design, Operation and Rehabilitation of Landfills' (EPA Publication 788.3, August 2015 (**Landfill BPEM**)) is another key applicable policy. The Landfill BPEM states that:

'Mound landfills are to be avoided as their exposed nature requires significant litter controls and present a significant visual impact on the landscape. Further difficulties attached to these landfills are leachate seeps from the side of the landfill and the stability of the landfill cap.'
(p12)

The Wests Rd RDF is a mound, and the current application would exacerbate the undesirable aspects of mounds identified by the Landfill BPEM. Approval by the Authority would therefore contradict best practice as required by statutory policy, and therefore contravene section 20C of the Act.

At the very least, if the Council is seeking approval for works on, and extending, a mound, more stringent risk assessment and details of proposed risk management are required in the application. The standard of the application must be even higher when, as here, the approval sought is for such a significant time period. As outlined in Part I, this standard has not been attained.

APPENDIX C

REFERRAL RESPONSES RECEIVED IN RESPONSE TO CONSULTATION

- C.1 - Sustainability Victoria (Pre-application)
- C.2 – Sustainability Victoria
- C.3. - Department of Health and Human Services
- C.4 - Wyndham City Council (Planning Department)
- C.5 - Metropolitan Waste and Resource Recovery Group
- C.6 - Melbourne Water
- C.7 - Earth Resource Regulation

From: David Robinson
Sent: Monday, 26 September 2016 5:04 PM
To: Karen Wilson (Karen.Wilson@sustainability.vic.gov.au)
Cc: David Robinson
Subject: CRM: Re: Wyndham City Council - Wests Road RDF WA application
Attachments: 160704 EPA WA Wyndham_pre acceptance advice FINAL SV.pdf

Hello Karen

EPA has received (today) an application from Wyndham City Council for the extension of its landfill at Wests Road, Werribee.

Previously we received a draft on 20/6/10. We referred this draft to you on 22/6/16 and you advised that "SV considers that the works approval application is broadly consistent with the directions of the State Infrastructure Plan and should not be refused by the EPA under Section 50C." Now that we have received the final application, could you assess this application to check that it is still broadly consistent with the SWRRIP and that EPA can accept the application. The application can be accessed from the link forwarded below. I am also attaching the comments (dated 4/7/16) that you provided to us on the draft application. Please note that EPA has 21 days to decide to accept the application.

Regards

David Robinson
Project Manager - Works Approval
Development Assessments

Environment Protection Authority Victoria
200 Victoria Street, Carlton VIC 3053 | GPO Box 4395, Melbourne VIC 3001 | DX 210082
☎ 03 8458 2457 | M 0476810570 | E david.robinson@epa.vic.gov.au | www.epa.vic.gov.au
Follow us  

A healthy environment that supports a liveable and prosperous Victoria.

From: files@ghd.sendthisfile.com [mailto:files@ghd.sendthisfile.com]
Sent: Friday, 23 September 2016 4:18 PM
To: David Robinson
Subject: Attn: David Robinson, Wyndham City Council - Wests Road RDF



Sender: kaitlin.richards@ghd.com
Recipient: approvals.applications@EPA.vic.gov.au; david.robinson@epa.vic.gov.au; mehrdad.tezengi@wyndham.vic.gov.au; Simon.Clay@wyndham.vic.gov.au; Marisa.Supple@ghd.com; Mark.Koller@ghd.com
Upload Date: 2016-09-23 01:15:29.0

Subject: Attn: David Robinson, Wyndham City Council - Wests Road RDF
Message: Please find the link below to download the works approval application for the extension of operations at the Wests Road RDF, sent on behalf of Wyndham City Council.
The following information is also provided:
- a copy of the summary of responses (completed checklist)
- a signed copy of the supporting information
- a WAA fee payment receipt

Use the following links to download your file(s).

<https://ghd.sendthisfile.com/FCRJifxc2Xidtq66WtwqgJv4>

Note: These files will expire in 14 days from the time this email was generated.



Level 28
Urban Workshop
50 Lonsdale Street
Melbourne VIC 3000

sustainability.vic.gov.au

Twitter: @sustainvic
ABN 62 019 854 067

11 October 2016

Mr David Robinson
Development Assessments Unit
EPA Victoria
200 Victoria Street
Carlton VIC 3053

Dear David

Wyndham City Council, Wests Road RDF landfill expansion Works Approval Application

I refer to your email of 27 September 2016, seeking input from Sustainability Victoria (SV) on Wyndham City Council's application to expand landfilling operations of the West Road Refuse Disposal Facility (Wests Road RDF) in Werribee.

SV notes that the Wyndham City Council is seeking works approval for four new cells (5, 6, 7 and 8) as well as three piggy-back cells on top of closed cells 1B, 2 and 3. SV notes that cells would be progressively developed as a series of sub-cells, with each sub-cell expected to provide approximately two years airspace. SV understands the West Road RDF is currently licenced to accept putrescible and solid inert waste, conditions that are not expected to change.

Overall, SV considers this proposal to be consistent with the Statewide Waste and Resource Recovery Infrastructure Plan (SWRRIP). The continued operation of this landfill has been identified as important to the management of residual waste from the Metropolitan region, and potentially other Victorian waste regions. Specifically, the expansion of the Wests Road RDF is consistent with the SWRRIP for the following reasons:

- Infrastructure hub of state importance

As highlighted above, the Werribee Landfill (Wests Road RDF) is identified in the SWRRIP as a hub of state importance; it is a critical part of Victoria's waste and resource recovery infrastructure due to the amount of municipal residual waste currently going to this site (10% of municipal waste from metropolitan Melbourne) as well as the site's proximity to major transport routes. This site also provides long-term disposal security to the state, with an estimated 60 years of potential landfill airspace.

- Listed on the Metropolitan Waste and Resource Recovery Implementation Plan's Infrastructure Schedule

The purpose of the Metropolitan Plan's Infrastructure Schedule (Part B- Landfill) is to ensure that Melbourne has adequate landfill capacity to safely manage residual waste, while also ensuring that the development and use of landfills is limited to that required. The Schedule provides the proposed sequence of filling of available sites for the next 30 years. The Metropolitan Plan, gazetted on 6 October 2016, highlights that the region



would not have sufficient landfilling capacity if any of the four major landfills, one of which is the Wests Road RDF, ceases to operate prior to nominated closure date. It is specified that the Wests Road RDF has scope to operate beyond 2046.

- Protection of strategically important infrastructure in the land use planning system

The SWRRIP seeks to achieve the identification and subsequent protection of suitable sites for waste infrastructure within local planning schemes. SV applauds Wyndham City Council's intentions to better define the Wests Road RDF's buffers (in accordance with the landfill BPEM) by amending the Wyndham Planning Scheme, which will assist in the ongoing protection of Wests Road RDF from encroachment of other incompatible land uses, and ensure the surrounding community is not impacted by landfill activities.

SV notes the nearest residential dwelling, located 180 metres to the west of future cell 7, and the Council's acquisition of this property.

- Resource Recovery

The SWRRIP seeks to reduce reliance on landfill by encouraging the uptake a resource recovery. Whilst not the subject of this application, SV acknowledges Wyndham City Council's commitment to increasing the recovery of resources throughout the municipality, noting the goal to establish the Wests Road RDF as a precinct focused on resource recovery, with only residual waste being landfilled.

SV also notes that co-location of recovery and reprocessing infrastructure with landfills, as occurring at the Wests Road RDF site, is consistent with the SWRRIP. While not essential, co-location enables buffers to be efficiently utilised, particularly for organics processing facilities, and enables the recovery of materials from waste immediately prior to disposal.

Thank you for the opportunity to comment on this works approval.

Yours sincerely



Karen Wilson
Manager, Waste and Resource Recovery Planning

Pre-acceptance of application for works approval - Assessment of consistency with the Statewide Waste and Resource Recovery Infrastructure Plan

Application

Sustainability Victoria (SV) understands that Wyndham City Council has submitted a works approval application to the EPA seeking to extend the existing Wests Road Refuse Disposal Facility (RDF). The extension site is located at 470 West Road, Werribee.

The landfill is classified as a Type 2 municipal waste landfill (as per Table 4.1 of EPA Publication 788.3), and the proposed waste types to be accepted within the extended landfill are consistent with their current EPA licence.

Objective

Under Section 50C (1a) of the *Environment Protection Act 1970* (EP Act), *the Authority may refuse to consider an application for a works approval or an application for the issue or amendment of a licence in relation to a waste management facility if (a) the operations of the facility could be inconsistent with the State-Wide Waste and Resource Recovery Infrastructure Plan or a relevant Regional Waste and Resource Recovery Implementation Plan.*

SV's assessment is intended to support the EPA to consider whether the proposed operations of the facility could be inconsistent with the Statewide Waste and Resource Recovery Infrastructure Plan (State Infrastructure Plan) in accordance with Section 50C. This information is not intended to be used to inform EPA's works approval application assessment. SV requests the application to be referred to SV for further consideration if the application is accepted by the EPA.

Summary of assessment

SV considers that the works approval application is broadly consistent with the directions of the State Infrastructure Plan and should not be refused by the EPA under Section 50C. SV notes that:

- a. If the application is accepted, SV requests that the EPA refers the application to SV for review.
- b. SV advocates optimal resource recovery and the transition towards an integrated waste and resource recovery system – whereby landfills will only receive and treat waste streams from which all materials that can be viably recovered have been extracted. It would be desirable for the proponent to further articulate how it will maximise resource recovery from residual waste and take into account activities that support implementation of the State Infrastructure Plan.
- c. If the application is accepted for consideration by EPA, SV looks forward to assisting the EPA consider potential licence conditions to help progress the Victorian Government's waste and resource recovery agenda.

Scope of the State Infrastructure Plan

1. The State Infrastructure Plan describes the current waste and resource recovery system at the state level and models projections for future trends in waste generation, recovery and landfilling over the next 30 years (effectively till 2043-44). It sets out the Victorian Government's strategic direction for the management of waste and resource recovery infrastructure, seeking to maximise the diversion of recoverable materials from landfills and support increased resource recovery.
2. The State Infrastructure Plan addresses solid waste streams (putrescible or inert) only and therefore SV's comments are limited to the management and resource recovery activities linked to these waste categories.
3. The types of infrastructure that support Victoria's waste and resource recovery system are listed under Table 4.1 of the State Infrastructure Plan. Landfills are described as 'disposal infrastructure', established as the final repository of waste materials.
4. The State Infrastructure Plan describes 23 existing waste and resource recovery hubs of state

significance. These hubs currently undertake activities or manage one or more material streams significant at the state level.

5. The decision-making guide for statutory decision makers (in this case the EPA) under Section 1.6.2 of the State Infrastructure Plan has been used as a basis for this assessment.

Consistency with the State Infrastructure Plan

Of pertinence to this application, it can be useful to consider whether the proposed extension will:

- Maximise diversion of recoverable materials from landfills – SV notes that there are resource recovery activities occurring at the site and that the Council is committed to increasing recovery. However, those aspirations are not the subject of this application, and the State Infrastructure Plan recognises that there remains a need for landfills to manage residual waste. The proposal responds to this need.
- To support increased resource recovery – the State Infrastructure Plan requires that planning and scheduling for new landfill airspace is based on volumes of residual waste streams, and demonstrable need for additional airspace. The RDF was scheduled by the Metropolitan Waste and Resource Recovery Group in their 2009 Strategic Plan, with an expected closure date post 2040. The 2009 Strategic Plan remains in force until such time as the Draft Metropolitan Waste and Resource Recovery Implementation Plan is approved. The State Infrastructure Plan also advocates for prioritising sites with long term mechanisms to preserve against encroachment. SV understands that the Council are active in protecting the RDF against encroachment, via their Wyndham Vale Buffer Study.
- Achieve quantities for re-processing – the landfill precinct has been identified as a hub of state significance under the State Infrastructure Plan. The hub's role is identified, in part, as receiving significant volumes of residual municipal solid waste, with a potential airspace for approximately 60 years. The proposal is consistent with this description.

DEPARTMENT OF HEALTH & HUMAN SERVICES
50 Lonsdale St
MELBOURNE VIC 3000

Lvl 3, 200 Victoria Street
Carlton
Victoria 3053
GPO Box 4395
Melbourne, Victoria 3001
T: 1300 EPA VIC
DX 210082
www.epa.vic.gov.au

Reference: 510939

16/12/2016

Dear Sir/Madam

Re: APPLICATION FOR Works Approval 0001002260

EPA Victoria has received the above application from WYNDHAM CITY COUNCIL in relation to premises situated at 470 WESTS RD, WERRIBEE VIC 3030. I enclose a copy of the application for your comment.

We ask that you particularly consider the following issues in relation to this proposal:

The Landfill at 470 Wests Road Werribee is a waste hub of state wide significance accepting waste from many parts of Melbourne. The landfill currently receives domestic and commercial waste, demolition material, shredded tyres, uncontaminated fill and food and garden waste.

There has been no request to expand the size of the current landfill site, no request to change the type of waste it currently receives and no request to accept prescribed industrial waste (including asbestos).

Note that a copy of the application has not been enclosed with this email, for all information and supporting documents on this application, please visit:
<http://www.epa.vic.gov.au/our-work/licences-and-approvals/public-participation/featured-applications/wyndham-landfill>

This application has also been referred to EPA's EPHU unit who will forward on to you their risk assessment for your consideration.

Please advise EPA in writing, within 21 days of the date of this letter, if the approval of this application is likely to endanger the public health in any way, and outline any objections or recommendations.

Should your department object to the issue of this application, EPA is obliged to refuse the application.

If you need additional information or assistance, please contact David Robinson on (03)84582457.

Yours faithfully

A handwritten signature in black ink that reads "David Robinson". The signature is written in a cursive style with a large, prominent initial 'D'.

David Robinson
Assessing Officer
Development Assessments
EPA Victoria



Department of Health & Human Services

50 Lonsdale Street
Melbourne Victoria 3000
Telephone: 1300 650 172
GPO Box 4057
Melbourne Victoria 3001
www.dhhs.vic.gov.au

Our Ref: WA1002260

Your Ref: 510939

Quentin Cooke
Team Leader
Development Assessments
Environment Protection Authority
GPO Box 4395
MELBOURNE VIC 3001

Dear Mr Cooke

Works Approval application WA1001548: Wyndham City Council – Extension of Werribee Landfill at 420 Wests Road, Werribee Victoria.

Thank you for referring this application to the department for comment under Section 19B of the *Environment Protection Act 1970*. This is to extend the Werribee Landfill (established 1976) across new Cells 5, 6, 7, 8 and the top of previously filled Cells 1B, 2 & 3 at this site.

The Department understands that:

- In 2014, a works approval was granted to extend this landfill over Cell 4C (WA1001548, your reference 1001548).
- This facility has had non-compliances of their licence (ES492) conditions for landfill gas emissions, odour and leachate contamination.
- Condition 9 of the Town Planning Permit relevant to this application states that “odour emissions from premises must be controlled so as to not cause a nuisance (as defined under the *Health Act 1958*) to nearby properties”. It should be noted that the *Health Act 1958* was repealed 1 January 2010 by the *Public Health and Wellbeing Act 2008*. The proponent should address this permit’s discrepancy.

The department does not object to this application on public health grounds provided the Environment Protection Authority Victoria is satisfied that all relevant State Environment Protection Polices and environmental guidelines are met, especially for the management of offsite odour and landfill gas emissions and groundwater.

If there are any queries regarding this matter, please contact Bradley Peel of the Environmental Public Health Program on 9096 0456 and/or Jason Issa in your Environmental Public Health Unit.

Yours sincerely

Vikki Lynch
A/Manager Environmental Public Health

6/1/2017

Wyndham City Council - Refuse Disposal Facility (RDF)
Werribee Landfill Extension

- Application to extend landfill across the site (new Cells 5, 6, 7, 8 and top of previously landfilled Cells 1B, 2 & 3) to maximum approved height of 44 mAH (Australian Height Datum) about 24 metres above ground level.
 - Major Melbourne regional waste facility.
 - Environmental public health risk acceptable, provided all State Environment Protection Policies (SEPPs) and environmental guidelines are met, especially regarding management of odour, landfill gas and groundwater.
- 3 January 2016,**
Environmental Public Health Unit (EPHU)

Respondent	Wyndham City Council
Address	470 Wests Road Werribee
DHHS Region	West
DHHS REHO	Zoe Smith
DHHS reference	WA1002260
EPA's Development Assessment Unit (DAU) Reference	510939
Date received	16/12/2016
DHHS Response due	6/1/2017
Fast Track?	No
EPA DAU Contact	David Robinson
EPA WA manager	Quentin Cooke
EPA EPHU Assessing Officers	Troy Palmer/Jason Issa
Meet with EPA (DAU)?	Informal discussions between EPA's EPHU & DAU
Type of Industry?	Landfill extension
Separation distance	<ul style="list-style-type: none"> • Nearest sensitive use residential dwelling encroaches within recommended 500 m buffer distance from future Cell 7. Proponent (Council) recently purchased this property. Under sale agreement, resident will be allowed to remain in property in immediate future. Cell 7 has not yet been quarried; it may be a further 15-20 years before landfilling commences here. As the owner of the closest residential property, proponent can manage occupancy of house to satisfy separation distance requirements.

	<ul style="list-style-type: none"> • Buffer distances maintained due to council amending planning scheme for the surrounding area to prevent sensitive uses within this buffer.
Referrals	DHHS REHO. No response
Media interest	Yes
Community consultation	<p>Wests Road Refuse Disposal Facility (RDF) Waste Management Community Reference Group (CRG) was established in 2013. This is represented by councillors, council staff, the Metropolitan Waste & Resource Recovery Group (MWRRG) and community representatives.</p> <p>Council held community information session 28 July 2016; 40 people attended. Main concerns: little progress on landfill alternatives; litter management; height of current & future landfill activities & associated visual amenity impacts; needed landscaping on/around RDF to improve screening; use of income from facility.</p>
History	<ul style="list-style-type: none"> • Site started accepting waste around 1972. • Commissioned as landfill in 1976 under EPA Licence ES400. • Holds EPA waste discharge licence 12483, allowing for solid inert waste, putrescible waste & shredded tyres to be deposited to land. • Site includes green waste processing facility operated by Veolia. • April 2014 - Works approval WA1001548 (EPA/DAU reference 1001548) issued for landfill extension - 100,000 m² (10 ha) putrescible waste (Type 2) landfill cell (Cell 4C). In its response, DHHS noted that: <ul style="list-style-type: none"> -facility had previous non-compliances of their licence (ES492) conditions for landfill gas emissions exceeding investigation levels and for contamination of land and groundwater -maximum predicted off-site odour level exceeded SEPP for Air Quality Management (AQM) design criterion. However risk assessment concluded that for normal operations, existing identified sensitive receptors would be in a low risk location for odour impact. • 18 June 2014: Planning permit (WYP1221/07.03) issued for expansion of existing RDF into Cells 4, 5, 6, 7, & 8 to maximum height not exceeding 44mAHD, in accordance with order issued by VCAT .
	<ul style="list-style-type: none"> •

Issues Risks & Correspondence

Item	Comments
Noise	<ul style="list-style-type: none"> • Noise complaints received in 2014. Reversing beepers and mufflers replaced on the compactors. No complaints since then. • April-June 2016 noise monitoring (Compass Environmental) did not identify any noise impacts from RDF's day or night operations. • An acoustic report found compliance with SEPP N1.
Stormwater and Groundwater	<ul style="list-style-type: none"> • Cells will not be lower than 11mAHD to maintain a buffer distance of two meters to ground water. • Site lies within Cherry Tree Creek catchment which extends about 11 km north of facility. Creek flows through south west corner of site through unquarried area. Site to be quarried to 20 metres of its boundary except in area around creek which is protected and will maintain a 100 metre buffer for future landfilling activities. • Proposal ensures stormwater is diverted from the final cap to minimise onsite water and potential for contamination.

	<ul style="list-style-type: none"> • Stormwater management aims to minimise surface water entering landfill area and contributing to leachate generation to help reduce potential erosion of landfill area and surrounding areas. • All new stormwater drains and storage ponds to be designed to contain and control rainfall for 1 in 20-year storm event. Sediment control also considered with design of sub cell cap. • Groundwater does not contribute to or interact with surface flows until the watercourses merge downstream from the site and flow through the wastewater treatment plant. • Groundwater monitoring showed elevated levels of total organic carbon, ammonia, bicarbonate, manganese, and iron confined to site boundaries, appearing to be associated with landfill operations. Proponent deemed this a low risk addressed by repairing leachate sumps and using a new leachate pond. • Cell liner performance of seepage will be no greater than 10 L/ha/day.
Leachate	<ul style="list-style-type: none"> • Leachate removed from Cells 1B to 4B and continues. Automatic pumps replaced sucker truck to improve leachate extraction from these cells. • Leachate & potentially contaminated waters currently directed to onsite leachate evaporation pond south west of cell 2A. • Leachate management plan (July 2015) implemented. Design of second leachate pond to replace old unlined pond (now decommissioned) completed. • There are currently two leachate ponds fitted with aerators. These ponds can also discharge to the Werribee Wastewater Treatment Plant. • If additional leachate treatment required, future leachate ponds will be constructed with one metre of compacted clay and 2 mm high density polyethylene (HDPE) liner, as per leachate management system. • A new lined leachate pond (8 ML) commissioned in 2014; construction of 2nd leachate pond ~1 ha (~12 ML) due to begin soon. • Offsite disposal of leachate still required; council considering connecting to sewer for leachate disposal & building more ponds to address capacity.
Vermin	Addressed in operations manual.
Landfill gas	<ul style="list-style-type: none"> • Plans for gas collection in 4C and all subsequent cells to prevent discharge of offensive landfill odours offsite. This consists of a gas extraction system made of horizontal gas collection pipes typically spaced 5-10 m apart vertically and 30-40 m apart horizontally as cell is filled with waste. Pipes consist of perforated HDPE pipes laid at slope to prevent leachate drainage. As pipes are laid they will be progressively connected to the vacuum pump to extract landfill gas. Once filling of the cell is completed, the vertical landfill gas collection system will be installed comprising of regularly spaced vertical gas bores to work with the remaining horizontal pipes.
Odour	<ul style="list-style-type: none"> • Odour sources at site include general waste at Transfer Station, leachate pond(s) and tipping face. Main odour source is tipping face, i.e. area of landfill where waste is deposited each day. Smaller (25 x 25 metres) tipping face to be used, to achieve less off-site odour. • Predicted maximum odour concentration at cell ground level is 3.8 OU/m³ which is

	above the design criteria of 1 OU/m ³ for off-site locations, contained in the SEPP (AQM). It was assessed that for normal operations, all existing identified sensitive receptors are located in a low risk location for odour impact. Medium risk odour contours extended beyond the existing EPA buffer zone by a small amount (~100 m) to the east of the site. This land if designated within the urban growth boundary is considered suitable for non-sensitive land uses such as industrial use.
Dust	Current quarry operations, extraction & crushing, likely to be greater potential source of dust emissions.
Fire	After 2012 fire, changes made include: <ul style="list-style-type: none"> • Dedicated 10,000L tanker at the tip face • 24 hour site presence during the summer fire restriction period. • Daily inspections of the tip face to ensure it is covered with soil. • Fire management plan completed with CFA. • Upgrade mains water supply into site and increase incoming supply from a 50 to a 225 mm line.

Notes

- As required under *EP Act 1970*, Metropolitan Waste and Resource Recovery Implementation Plan (MWRRIP) was prepared by MWRRG (October 2016). This plan contains a landfill schedule showing the proposed sequence of filling of available landfill sites for at least next 10 years and a program for landfill replacement and rehabilitation. The MWRRIP lists RDF having a nominal closure date of post 2046.
- Proponent (Council) to follow new cell approval procedures for each future sub-cell as per EPA publication 1323.3 *Landfill Licensing Guidelines*.
- Facility has three main operations: 1. Landfill, 2. Transfer Station (located on former Cell 1A; after segregating recyclables, remaining waste deposited at tipping face), 3. Green Waste Processing Facility.
- Landfilling follows onsite quarry activity. After areas have been quarried, quarry holes are progressively filled with waste.
- Quarrying operations of site covered by Department of Economic Development Jobs, Transport and Resources (Energy and Earth Resource Division).
- Site is in area classified as having low risk of earthquake occurrences, is not located within an area of potable water supply, groundwater recharge or identified by the *Water Act 1989* as a groundwater Supply Protection Area.
- BPEM¹ guidelines state it should be at least 100 metres from any known fault lines which is accurate.
- **Condition 9 of Town Planning Permit** states that “odour emissions from premises must be controlled so as to not cause a nuisance (as defined under the *Health Act 1958*) to nearby properties”. This legislation was repealed and replaced with the *Public Health & Wellbeing Act 2008*. This has been communicated to EPA’s Development Assessment Unit (Dennis Corbett), who will address with colleagues & proponent (Council).
- On top of Cells 1B, 2 and 3, which were previously landfilled, waste is to be placed in specially constructed “piggy back” cells. A liner is required to landfill municipal waste on these old cells as they are lined with a one metre thick compacted clay liner, which does not comply with current cell lining standards as per landfill BPEM.

¹ EPA Victoria Publication 788.3 August 2015. *Siting, design, operation and rehabilitation of landfills. Best practice environmental management.*

- Wyndham Renewable Energy Facility (WREF) operated by LMS Energy Pty Ltd onsite, to generate electricity from landfill gas. Biogas (landfill gas) power generating operations not RDF activities and not governed by RDF's EPA licence 12483 & Planning Permit WYP1221/07.03. LMS holds EPA Waste Discharge Licence 81008 for operating 1.8 MW waste to energy power station. LMS plan expanding to at least 4 MW.

Common non-compliances of licence conditions, complaints & notices relevant to health:

Note notified non-compliances have been addressed by proponent.

2009-2013: often found landfill gas emissions exceeded allowed levels

2013-2016:

- Odours observed beyond site boundary due to works to extend gas extraction system.
- Litter found on farmland east of premises
- Landfill gas found above BPEM action levels, fixed by 19 new gas extraction wells and ongoing balance of the gas extraction system.
- Leachate quality
- Improper rehabilitation of older cells.
- Small area of tipping face caught fire due to flammable material or hot ashes in waste stream.
- Exposed wastes requiring cover.

Mr. Peter Van Til
WYNDHAM CITY COUNCIL
45 PRINCES HWY
WERRIBEE VIC 3030

Reference: 510887

15/12/2016

Dear Mr. Van Til

Re: APPLICATION FOR WORKS APPROVAL 1002260

EPA Victoria has received the above application from WYNDHAM CITY COUNCIL, in relation to premises situated at 470 WESTS RD, WERRIBEE VIC 3030. I enclose a copy of the application for your comment.

The application relates to land administered under your planning scheme and is referred to you under the provisions of the *Environment Protection Act 1970* as the responsible authority under the *Planning and Environment Act 1987*.

Please advise us in writing within 21 days of the date of this letter if:

- (i) the proposed works are allowed by the planning scheme, with or without conditions;
- (ii) a permit is required under the *Planning and Environment Act 1987* for the proposed works;
- (iii) a permit has been issued under the *Planning and Environment Act 1987* for the proposed works;

If a permit has been issued please provide a copy to EPA.

- (iv) you are considering an application for a permit under the *Planning and Environment Act 1987* for the proposed works; or
- (v) the proposed works are prohibited by the Planning Scheme.

We would also appreciate advice on whether you support or object to the application, or if any conditions you wish to be included.

If you need additional information or assistance, please contact David Robinson on (03)84582457.

Yours sincerely



David Robinson
Assessing Officer
Development Assessments
EPA Victoria



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 38 353 903 860

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

18 June 2014

Signature for the Responsible Authority



Peter Van Til
Town Planning Manager

**PLANNING
PERMIT**

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

ADDRESS OF LAND:

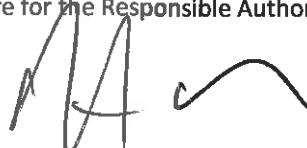
Land Title: V 8499 F 397, V 8406 F 478, V 6358, F 513, V 8227 F 869, V 7914 F 107
Land Address: Wests Road WERRIBEE VIC 3030

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

18 June 2014

Signature for the Responsible Authority



Peter Van Til
Town Planning Manager

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

- 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.

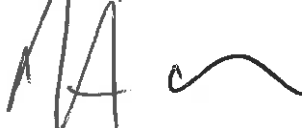
Once approved, the odour management plan shall be endorsed and form part of this permit.

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

18 June 2014

Signature for the Responsible Authority



Peter Van Til
Town Planning Manager

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

- 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.

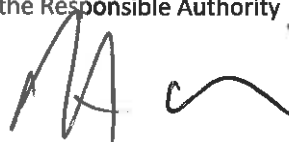
Once approved, the landscape plan shall be endorsed and shall form part of this permit.

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

18 June 2014

Signature for the Responsible Authority



Peter Van Til
Town Planning Manager

**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

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:

Date

18 June 2014

Signature for the Responsible Authority



Peter Van Til
Town Planning Manager

**PLANNING
PERMIT**

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

ADDRESS OF LAND:

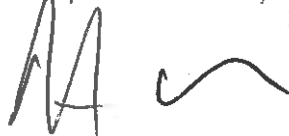
Land Title: V 8499 F 397, V 8406 F 478, V 6358, F 513, V 8227 F 869, V 7914 F 107
Land Address: Wests Road WERRIBEE VIC 3030

- 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

18 June 2014

Signature for the Responsible Authority



Peter Van Til
Town Planning Manager

**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

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

**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

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

18 June 2014

Signature for the Responsible Authority



Peter Van Til
Town Planning Manager

**PLANNING
PERMIT**

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

ADDRESS OF LAND:

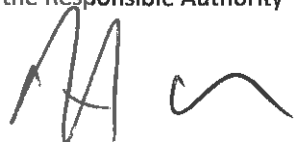
Land Title: V 8499 F 397, V 8406 F 478, V 6358, F 513, V 8227 F 869, V 7914 F 107
Land Address: Wests Road WERRIBEE VIC 3030

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 participate 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

18 June 2014

Signature for the Responsible Authority



Peter Van Til
Town Planning Manager

**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

- 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.

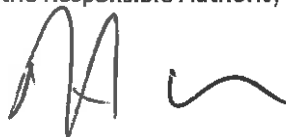
41. This permit will expire if the development permitted by this permit is not commenced within two years from the date hereof or is discontinued for a period of two years. The time within which the development must commence may on written request made before or within three months after the expiry of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

18 June 2014

Signature for the Responsible Authority



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.

DRAWING: M:\0851\02\3076\4276_425_A1A8-8686P4\1151921_26831_C:\DWG\LAST_SAVED_ON_27/06/2014_3:11:00 PM\1151921_26831_C:\DWG\LAST_SAVED_ON_27/06/2014_3:18:25 PM BY CHRIS BENTLEY



- ### LEGEND
- - - SITE BOUNDARY
 - CURRENT CELL BOUNDARIES
 - - - PROPOSED CELL BOUNDARIES
 - ▭ EXISTING BITUMEN ROAD
 - ▨ EXISTING PRIMARY TRACK
 - ▧ EXISTING SECONDARY TRACK
 - ▭ EXISTING BUILDING
 - ▭ EXISTING LEACHATE POND
 - ⊙ EXISTING TREE
 - GROUNDWATER MONITORING BORE
 - ⊕ LEACHATE SUMP
 - ⊕ LANDFILL GAS BORE
 - ⊕ SURFACE WATER SAMPLING POINTS
 - ⊕ LEACHATE AND LANDFILL GAS BORE

**Planning and Environment Act 1987
Wyndham Planning Scheme**

Plan2...of...4.....
 Permit WYP 1221/0704
 Signature for the Responsible Authority
 Date/...../.....

REV	DESCRIPTION	DATE	INT/APP
P2	PRELIMINARY ISSUE	27/06/14	CMB/RA
P1	PRELIMINARY ISSUE	13/06/14	CMB/RA

Level 1, 2 Dornville Avenue
Hawthorn Vic 3122

fmg
ENGINEERING
Incorporating
BURNS HAMILTON

P 03 9815 7600
F 03 9662 3879
ABN 58 083 071 185
fmgengineering.com.au

CIVIL | STRUCTURAL | ENVIRONMENTAL
 GEOTECHNICAL | BUILDING ASSESSMENT & FORENSIC |
 SOIL & MATERIAL TESTING | HOUSING | COMMERCIAL |
 PROJECT MANAGEMENT | SURVEY

CLIENT: WYNDHAM CITY COUNCIL
 PROJECT TITLE: WESTS ROAD REFUSE DISPOSAL FACILITY
 SITE ADDRESS: WYNDHAM VALE, VIC. 3024

DRAWING TITLE: DETAIL PLAN - SHEET 1
 SCALE: 1:2000 @ A1
 DATE ISSUED: 10/06/2014

DRAWN: CMB	DATE: 10/06/2014
DESIGNED: RA	DRAWING NO: S10121-206831
CHECKED: RA	REV: P2
C101	

REFUSE DISPOSAL FACILITY SITE PLAN - CELLS 1B, 2A, 2B & 3

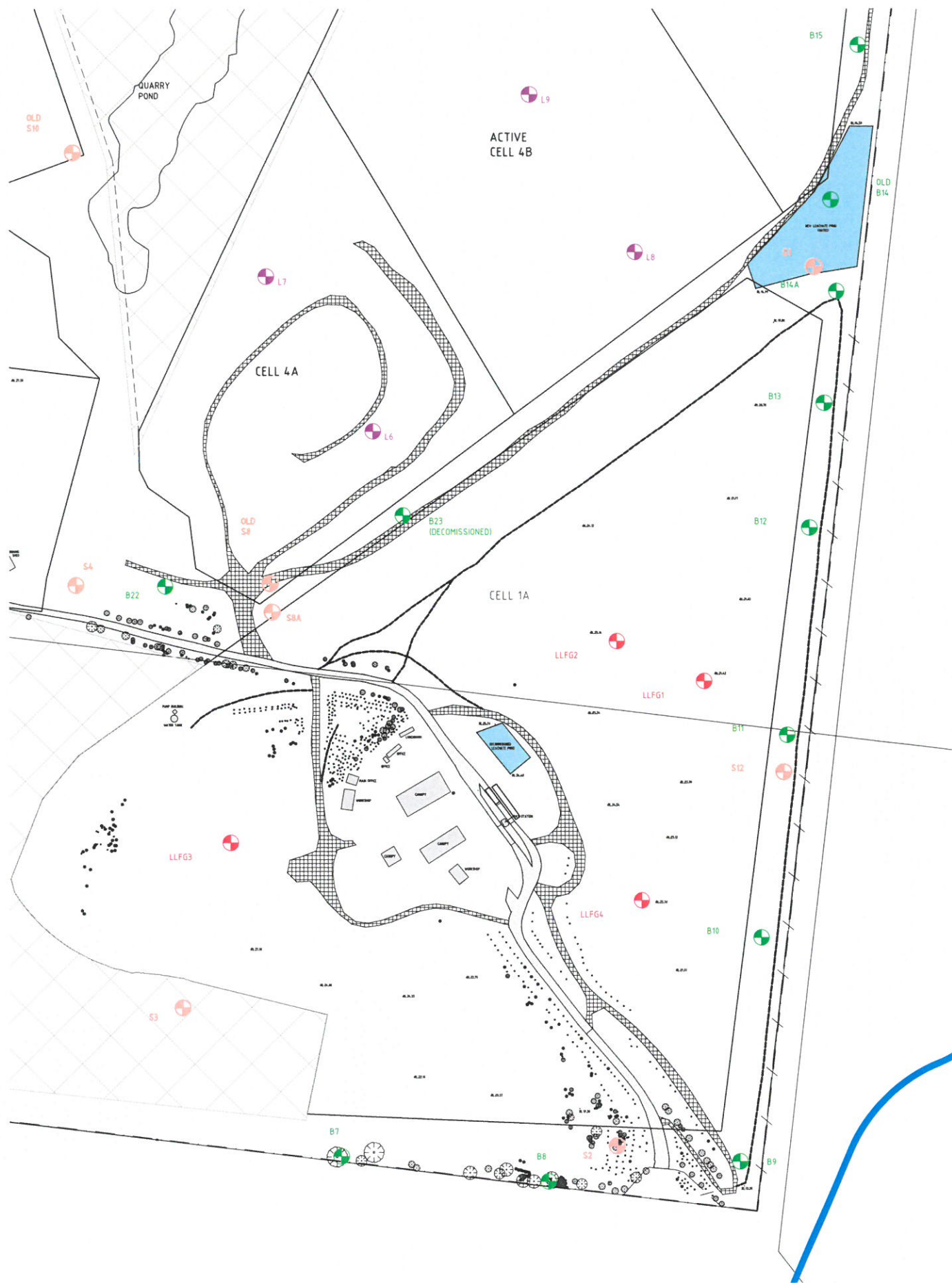
CONTRACTOR IS TO ENSURE THAT ANY EXISTING STORMWATER REMAINS FUNCTIONAL OR IS REDIRECTED TO AN ALTERNATIVE POINT OF DISCHARGE. AN ALLOWANCE SHOULD BE MADE FOR ALL TEMPORARY WORKS AS REQUIRED.



PRELIMINARY ISSUE
NOT FOR CONSTRUCTION



DRAWING: H:\08\01\02\03\04\05\06\07\08\09\10\11\12\13\14\15\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\47\48\49\50\51\52\53\54\55\56\57\58\59\60\61\62\63\64\65\66\67\68\69\70\71\72\73\74\75\76\77\78\79\80\81\82\83\84\85\86\87\88\89\90\91\92\93\94\95\96\97\98\99\100\101\102\103\104\105\106\107\108\109\110\111\112\113\114\115\116\117\118\119\120\121\122\123\124\125\126\127\128\129\130\131\132\133\134\135\136\137\138\139\140\141\142\143\144\145\146\147\148\149\150\151\152\153\154\155\156\157\158\159\160\161\162\163\164\165\166\167\168\169\170\171\172\173\174\175\176\177\178\179\180\181\182\183\184\185\186\187\188\189\190\191\192\193\194\195\196\197\198\199\200\201\202\203\204\205\206\207\208\209\210\211\212\213\214\215\216\217\218\219\220\221\222\223\224\225\226\227\228\229\230\231\232\233\234\235\236\237\238\239\240\241\242\243\244\245\246\247\248\249\250\251\252\253\254\255\256\257\258\259\260\261\262\263\264\265\266\267\268\269\270\271\272\273\274\275\276\277\278\279\280\281\282\283\284\285\286\287\288\289\290\291\292\293\294\295\296\297\298\299\300\301\302\303\304\305\306\307\308\309\310\311\312\313\314\315\316\317\318\319\320\321\322\323\324\325\326\327\328\329\330\331\332\333\334\335\336\337\338\339\340\341\342\343\344\345\346\347\348\349\350\351\352\353\354\355\356\357\358\359\360\361\362\363\364\365\366\367\368\369\370\371\372\373\374\375\376\377\378\379\380\381\382\383\384\385\386\387\388\389\390\391\392\393\394\395\396\397\398\399\400\401\402\403\404\405\406\407\408\409\410\411\412\413\414\415\416\417\418\419\420\421\422\423\424\425\426\427\428\429\430\431\432\433\434\435\436\437\438\439\440\441\442\443\444\445\446\447\448\449\450\451\452\453\454\455\456\457\458\459\460\461\462\463\464\465\466\467\468\469\470\471\472\473\474\475\476\477\478\479\480\481\482\483\484\485\486\487\488\489\490\491\492\493\494\495\496\497\498\499\500\501\502\503\504\505\506\507\508\509\510\511\512\513\514\515\516\517\518\519\520\521\522\523\524\525\526\527\528\529\530\531\532\533\534\535\536\537\538\539\540\541\542\543\544\545\546\547\548\549\550\551\552\553\554\555\556\557\558\559\560\561\562\563\564\565\566\567\568\569\570\571\572\573\574\575\576\577\578\579\580\581\582\583\584\585\586\587\588\589\590\591\592\593\594\595\596\597\598\599\600\601\602\603\604\605\606\607\608\609\610\611\612\613\614\615\616\617\618\619\620\621\622\623\624\625\626\627\628\629\630\631\632\633\634\635\636\637\638\639\640\641\642\643\644\645\646\647\648\649\650\651\652\653\654\655\656\657\658\659\660\661\662\663\664\665\666\667\668\669\670\671\672\673\674\675\676\677\678\679\680\681\682\683\684\685\686\687\688\689\690\691\692\693\694\695\696\697\698\699\700\701\702\703\704\705\706\707\708\709\710\711\712\713\714\715\716\717\718\719\720\721\722\723\724\725\726\727\728\729\730\731\732\733\734\735\736\737\738\739\740\741\742\743\744\745\746\747\748\749\750\751\752\753\754\755\756\757\758\759\760\761\762\763\764\765\766\767\768\769\770\771\772\773\774\775\776\777\778\779\780\781\782\783\784\785\786\787\788\789\790\791\792\793\794\795\796\797\798\799\800\801\802\803\804\805\806\807\808\809\810\811\812\813\814\815\816\817\818\819\820\821\822\823\824\825\826\827\828\829\830\831\832\833\834\835\836\837\838\839\840\841\842\843\844\845\846\847\848\849\850\851\852\853\854\855\856\857\858\859\860\861\862\863\864\865\866\867\868\869\870\871\872\873\874\875\876\877\878\879\880\881\882\883\884\885\886\887\888\889\890\891\892\893\894\895\896\897\898\899\900\901\902\903\904\905\906\907\908\909\910\911\912\913\914\915\916\917\918\919\920\921\922\923\924\925\926\927\928\929\930\931\932\933\934\935\936\937\938\939\940\941\942\943\944\945\946\947\948\949\950\951\952\953\954\955\956\957\958\959\960\961\962\963\964\965\966\967\968\969\970\971\972\973\974\975\976\977\978\979\980\981\982\983\984\985\986\987\988\989\990\991\992\993\994\995\996\997\998\999\1000



LEGEND

- SITE BOUNDARY
- CURRENT CELL BOUNDARIES
- PROPOSED CELL BOUNDARIES
- ▭ EXISTING BITUMEN ROAD
- ▨ EXISTING PRIMARY TRACK
- ▧ EXISTING SECONDARY TRACK
- ▭ EXISTING BUILDING
- ▭ EXISTING LEACHATE POND
- ⊙ EXISTING TREE
- ⊙ GROUNDWATER MONITORING BORE
- ⊙ LEACHATE SUMP
- ⊙ LANDFILL GAS BORE
- ⊙ SURFACE WATER SAMPLING POINTS
- ⊙ LEACHATE AND LANDFILL GAS BORE

Planning and Environment Act 1987
Wyndham Planning Scheme

Plan3.....of.....4.....

Permit WYP12210704.....

Signature Date/...../.....

Signature for the Responsible Authority

REV	DESCRIPTION	DATE	BY	APP
P2	PRELIMINARY ISSUE	27.06.14	CMB	RA
P1	PRELIMINARY ISSUE	13.06.14	CMB	GA

fmg
ENGINEERING
INCORPORATING
BURNS HAMILTON

Level 1, 2 Dornville Avenue
Hawthorn Vic 3122

P 03 9815 7600
F 03 9662 3879

ABN 58 083 071 185
fmgengineering.com.au

CIVIL | STRUCTURAL | ENVIRONMENTAL | GEOTECHNICAL | BUILDING ASSESSMENT & FORENSIC | SOIL & MATERIAL TESTING | HOUSING | COMMERCIAL | PROJECT MANAGEMENT | SURVEY

WYNDHAM CITY COUNCIL
PROJECT TITLE
WESTS ROAD REFUSE DISPOSAL FACILITY
SITE ADDRESS
WYNDHAM VALE, VIC 3024

DRAWING TITLE
DETAIL PLAN - SHEET 2

SCALE: 1:2000 @ A1
DATE: 10/06/2014

DESIGNED: CMB
DRAWING NO: S10121-206831

CHECKED: RA
DATE: C102 P2

ALL EXISTING AND FUTURE CELLS
MAXIMUM HEIGHT 44m (A.H.D.)

CONTRACTOR IS TO ENSURE THAT ANY
EXISTING STORMWATER REMAINS FUNCTIONAL
OR IS REDIRECTED TO AN ALTERNATIVE
POINT OF DISCHARGE.
AN ALLOWANCE SHOULD BE MADE FOR ALL
TEMPORARY WORKS AS REQUIRED.



PRELIMINARY ISSUE
NOT FOR CONSTRUCTION

REFUSE DISPOSAL FACILITY SITE PLAN - CELLS 1A, 4A & 4B

Ms. Michelle Lee
METROPOLITAN WASTE MANAGEMENT GROUP
Lvl 4 /28 Clarendon St
The Tea House
SOUTHBANK VIC 3006

Reference: 511470

21/12/2016

Dear Ms. Lee

Re: APPLICATION FOR Works Approval 0001002260

EPA Victoria has received the above application from WYNDHAM CITY COUNCIL in relation to premises situated at 470 WESTS RD, WERRIBEE VIC 3030. I enclose a copy of the application for your comment.

We ask that you particularly consider the following issues in relation to this proposal:

Could your organization provide comment on the appropriateness of this proposal in relation to the current regional waste management plan. Please note that the application has not been enclosed as mentioned above but can be downloaded from our website <http://www.epa.vic.gov.au/our-work/licences-and-approvals/public-participation/featured-applications/wyndham-landfill>.

Please provide your comments on this proposal, outlining any objections or recommendations, within 21 days of the date of this letter.

If you need additional information or assistance, please contact David Robinson on (03)84582457.

Yours sincerely



David Robinson
Assessing Officer
Development Assessments
EPA Victoria

6 February 2017

Mr David Robinson
Assessing Officer
Development Assessments
EPA Victoria
P.O. Box 4395
MELBOURNE 3001

Dear David,

WERRIBEE LANDFILL WORKS APPROVAL APPLICATION

Thankyou for your letter of the 21 December 2016 seeking the Metropolitan Waste and Resource Recovery Group's (MWRRG) comment on the appropriateness of the works approval application in relation to the Metropolitan Waste and Resource Recovery Implementation Plan 2016 (Metropolitan Implementation Plan). MWRRG appreciates the opportunity to provide comment on the works approval applications for the Werribee Landfill Wests Road Wyndham. (Werribee Landfill)

MWRRG has considered the works approval application and our comments address whether the proposed works approval is consistent with the Metropolitan Implementation Plan.

The Werribee Landfill is a strategically significant waste and resource recovery infrastructure site for the metropolitan region. MWRRG considers that this works approval application will contribute to meeting metropolitan waste disposal needs and provides for scheduled disposal capacity at the Werribee landfill. The application is consistent with the landfill schedule of the Metropolitan Implementation Plan.

MWRRG does not comment on the technical assessment of the application which is the responsibility of the EPA.

The Metropolitan Implementation Plan encourages best practice operations for the resource recovery and waste network, and aims to achieve a metropolitan network that has established a reputation as a leader in delivering community and economic benefits by going beyond compliance. MWRRG expects the site to operate to best practice standards, and that EPA Victoria will regulate its operations to achieve this outcome, including setting appropriate landfill gas and amenity buffers.

Werribee Landfill and the Metropolitan Implementation Plan

MWRRG's comments are:

- Provided under the Victorian Waste and Resource Recovery Infrastructure Planning Framework (The Framework) set out in the *Environment Protection Act 1970* (EP Act) (Division 2AB).
- Consistent with the Metropolitan Implementation Plan; Waste Management Policy (Siting Design and Management of Landfills) EPA 2004, the waste hierarchy and Statewide Waste and Resource Recovery Infrastructure Plan (SWRRIP).

The strategic objectives for the Metropolitan Implementation Plan are:

1. Reduce waste sent to landfill.

This objective seeks to increase the supply of viable resource recovery infrastructure to reduce pressure on existing landfills and to reduce the need for new facilities

2. Increase organic waste recovered.

This objective seeks to reduce the environmental and community impact of organics in landfill by minimising food waste and by recovering more food and garden waste

3. Deliver community, environmental and economic benefits.

This objective seeks to support a liveable and productive Melbourne with a resource recovery and waste network that provides jobs and economic opportunities, while reducing environmental and community impact

4. Plan for Melbourne's growing population.

This objective seeks to ensure Melbourne has the right resource recovery and waste infrastructure it needs in the right place, at the right time.

Metropolitan Implementation Plan and Infrastructure Schedule

Metropolitan Implementation Plan identifies the Werribee site as a significant landfill, and schedules the site until 2046 with a likely closure date beyond 2046 and notes the scheduled capacity has land use planning approval and will need works approval. It also notes: "that likely closure dates are estimated based on consideration of modelled tonnage projections and land available under current EPA Victoria works approval, planning and permit requirements and potential airspace that may eventuate at quarry based landfill sites. Final timeframes for landfill closures will depend on a range of business decisions made by owners and operators including the rate of fill and whether sites gain the appropriate approvals for additional available airspace".(page 49 of the Metropolitan Implementation Plan)

The Metropolitan Implementation Plan identifies the landfill as a hub of State Importance and provides the following Metropolitan strategic assessment: "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". (Page 67 of the Metropolitan Implementation Plan)

The Metropolitan Implementation Plan also notes Werribee landfill takes waste from Barwon South West Region and if for any reason the scheduled landfills do not operate for the period they are sequenced other regional waste and resource recovery groups will need to plan for alternative disposal options (Page 50 of the Metropolitan Implementation Plan)

The Infrastructure Schedule of the Metropolitan Implementation Plan is the Victorian Government's principal tool to plan for the waste and resource recovery infrastructure that is needed to meet the needs of metropolitan Melbourne. The Infrastructure Schedule identifies new and existing waste and resource recovery infrastructure required for the metropolitan region. The purpose of scheduling is to holistically plan for the management of waste, and where viable make infrastructure decisions that prioritise resource recovery over landfilling.

The Infrastructure Schedule lists the Werribee landfill as an existing landfill licenced to accept solid inert waste, putrescible waste and shredded tyres; and as an existing resource recovery centre and transfer station managing aggregates, masonry and soils, organics-garden, and other general wastes.

The Werribee site is strategically significant and provides infrastructure for the recovery and disposal waste for the greater metropolitan region and adjoining Barwon South West Region. A reduction of the planned capacity of this landfill and hubs of state significance would be expected to impact the available capacity of the waste and resource recovery network serving metropolitan Melbourne and adjoining regions. MWRRG observes that it is difficult to quickly replace lost capacity in the network as the planning and commissioning period of landfills is generally five to seven years.

Future role of landfills

The Metropolitan Implementation Plan also emphasises the importance of community and stakeholders being engaged in waste and resource recovery decision making. MWRRG expects that ongoing planning and operations of the Werribee site includes community and stakeholder engagement.

Approximately 73% of all waste in Metropolitan Melbourne is currently recovered and not landfilled. MWRRG seeks to reduce Melbourne's reliance on landfill through new resource recovery infrastructure and through removing organic waste from landfill. In this context while landfills are expected to progressively manage less waste they importantly will still be needed.

The Metropolitan Implementation Plan projects that substantial tonnages of waste, around 3 million tonnes per annum, will still need to be landfilled in Melbourne over the next thirty years. Strategically significant landfill infrastructure, including the Werribee landfill and its resource recovery operations, will continue to play a central role in protecting health and the environment by safely managing the disposal of waste materials that have not been, or cannot be recycled.

The Werribee landfill provides landfilling services for a number of Metropolitan Councils until 2021. Given the goal of reducing Victoria's reliance on landfilling, expressed in the Statewide Waste and Resource Recovery Infrastructure Plan and Metropolitan Implementation Plan, MWRRG expects that over time, the Werribee site will continue landfilling and also incorporate a range of integrated resource recovery activities. These may include opportunities to recover materials, as well as other recovery infrastructure including in vessel organics and food recovery facilities and other advanced resource recovery technologies and facilities.

MWRRG expects that the Werribee landfill site may provide a number of potential diversion options in addition to residual landfilling. Werribee landfill is also a site utilised by Veolia to accept organics from local governments as part of the North West Organics contract until at least 2028.

Buffers

MWRRG considers that the works approval will need to define and protect buffers to protect the existing landfill and resource recovery facilities and facilitate further resource recovery opportunities for the site.

Buffer distances for the Werribee site are set through the best practice environmental management publication, Siting, design, operation and rehabilitation of landfills (the Landfill

BPEM, EPA publication 788). The landfill BPEM requires that a minimum 500 metre landfill gas migration buffer and amenity buffer be maintained for operating and closed landfills.

As required in Clause 19.03-5 of the State Planning Policy Framework, appropriate acknowledgement and protection of these buffer distances are critical. Identifying and protecting buffers will minimise risk for the adjoining community, and protect current and future waste and resource recovery operations at the Werribee Site.

This works approval provides the EPA with a strong evidence base for future land use planning and precinct structure planning. Precinct Structure Planning around the Werribee landfill site will need to give due regard to the buffer distances set as part of this works approval. MWRRG defers to EPA the setting of appropriate landfill gas and amenity buffer distance requirements.

Conclusion

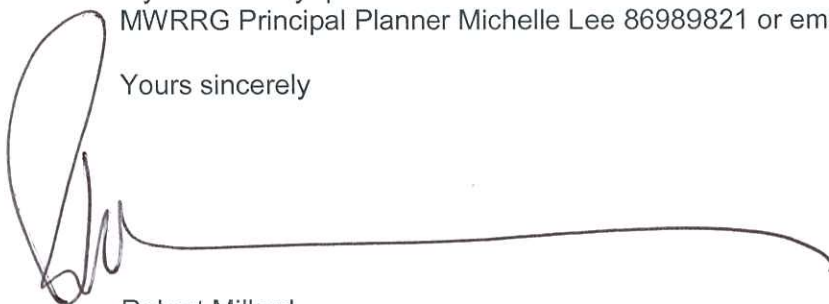
The Werribee Site is a strategically significant waste and resource recovery infrastructure site for the greater metropolitan region, and has been considered a strategic regional site in statutory waste plans since 1996.

In this context, MWRRG considers that the Werribee Site should be acknowledged and protected as a long term waste and resource recovery site of regional and state importance. In recognising the long term role of this site, MWRRG emphasises the importance of the site operator meeting their regulatory obligations, and achieving best practice and continuous improvement in all its operations.

MWRRG's confirm that this works approval application is consistent with the Metropolitan Implementation Plan.

If you have any queries in relation to MWRRG's comments please do not hesitate to contact MWRRG Principal Planner Michelle Lee 86989821 or email michelle.lee@mwrrg.vic.gov.au.

Yours sincerely



Robert Millard
Chief Executive Officer

20 June 2017

Mr David Robinson
Project Manager
Development Assessments
EPA Victoria
200 Victoria Street
MELBOURNE 3001

Dear David,

WYNDHAM LANDFILL WORKS APPROVAL APPLICATION: WREC SUBMISSION

I refer to your letter of the 2 June 2017 and subsequent verbal advice that EPA have accepted a late submission from Western Region Environment Centre (WREC) and are seeking a response from MWRRG. This submission raises a number of issues that MWRRG believes have already been responded to in our correspondence to EPA on 6 February 2017. These issues broadly relate to the need for the landfill and consultation undertaken in the preparation of the Metropolitan Waste and Resource Recovery Implementation Plan 2016 (Metropolitan Implementation Plan).

The Metropolitan Implementation Plan came into effect on the 6 October 2016 and its preparation and approval met all statutory requirements particularly around: consultation, engagement, integration, the description and analysis of waste and resource recovery infrastructure and the need.

The Metropolitan Implementation Plan highlights the challenge of a rapidly growing population and the closure of landfills in the south east of Melbourne. The Plan responds to these challenges through scheduling increased resource recovery infrastructure and sequences existing landfills for disposal needs including the Wyndham (Werribee) landfill. It does not schedule new landfills.

The priority of the Metropolitan Implementation Plan is to reduce the need for landfilling by making use of resource recovery infrastructure and alternative technologies as well as working to reduce the impact of landfills on communities. The plan clearly states that landfilling will still be needed over the next 30 years.

The landfill schedule, contained within the Metropolitan Implementation Plan, sequences eight landfills that can operate beyond 2026. Five of these landfills: Werribee landfill, MRL Ravenhall, Hanson Wollert, SUEZ Hallam and SUEZ Lyndhurst, are significant and are designated as Hubs of State Importance in both the Metropolitan Implementation Plan and the Statewide Waste and Resource Recovery Infrastructure Plan (SWRRIP).

Of these five landfills, four have the potential to operate beyond 2046 (SUEZ Hallam is scheduled to close earlier). The Metropolitan Implementation Plan identifies that if any of these five landfills – including the Werribee landfill – do not operate in accordance with the landfill schedule sequence table, the metropolitan Melbourne region will not have sufficient landfill capacity.

The Metropolitan Implementation Plan also states:

“...If...significant landfills...ceases to operate prior to the likely closure date, new landfill capacity and / or significant resource recovery operations with annual processing capacity similar to these existing significant landfills will need to be scheduled to meet Melbourne’s needs. This additional capacity is above and beyond the new required resource recovery infrastructure scheduled...” (Metropolitan Implementation Plan: Section 6.2 page 50)

The Metropolitan Implementation Plan requires existing landfills to operate at their existing and planned future capacities and seeks to hold waste volumes to landfill to 2015 levels. The increased projected waste to landfill tonnages of around 500,000 tonnes by 2026 are proposed to be diverted from landfill and recovered through reducing organics waste in the residual bin and through a residual waste group procurement process for alternative waste treatment options with Local Governments.

The WREC option to hold waste tonnages at Wyndham landfill to 2008 levels does not align with the Metropolitan Implementation Plan.

The WREC submission raises issues in relation to public consultation and engagement processes undertaken in the development of the Metropolitan Implementation Plan. I will provide a brief overview below and refer you to Appendix B of the Metropolitan Implementation Plan that provides a detailed description of the consultation processes.

A comprehensive consultation and engagement program underpinned the development of the Metropolitan Implementation Plan. The draft Metropolitan Implementation Plan was released for public consultation in November 2015 for five weeks (16 November – 18 December).

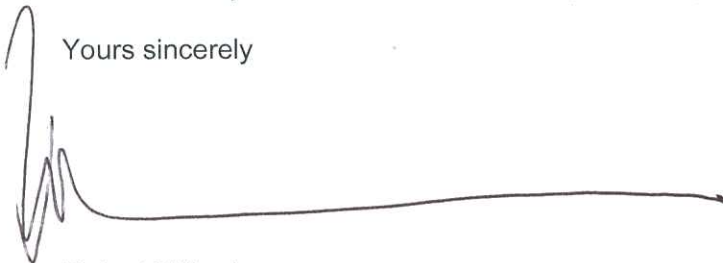
MWRRG engaged community, industry, local government and state government in developing the Metropolitan Implementation Plan through four main phases of engagement:

1. Market Assessment process
2. Pre-draft engagement
3. Public consultation
4. Portfolio consultation and integration processes.

The ideas, feedback and comments that MWRRG received from all stakeholders throughout these phases, was invaluable and has helped to make the Metropolitan Implementation Plan robust, innovative and ambitious. These processes including engagement with WREC representatives and consideration of their written submissions.

In conclusion MWRRG's maintains that this works approval application is consistent with the Metropolitan Implementation Plan. If you have any further queries please do not hesitate to contact the myself or Michelle Lee, Principal Strategic Planner on 86989821.

Yours sincerely



Robert Millard
Chief Executive Officer

From: Liza McColl <Liza.McColl@wyndham.vic.gov.au>
Sent: Wednesday, 2 August 2017 4:26 PM
To: David Robinson
Cc: Simon Clay
Subject: Wyndham Refuse Disposal Facility - Works Approval Application - 1:100 flood
Attachments: WTP Mapping Anomaly 20170727.pdf

Dear David

Please find below a copy of an email from Mark Warren from Melbourne Water confirming that the 1:100 flood area shown on the RDF site on Melbourne Water's mapping system is a modelling anomaly.

I believe that you spoke to Mark from Melbourne Water in relation to this matter and he provided you with similar preliminary advice. Mark was happy for me to pass a copy of this email onto you.

Please let us know if you require any further information from us in relation to the matter of 1:100 flood.

Kind regards

Liza



Liza McColl | Business Analyst | Refuse Disposal Facility | City Operations
45 Princes Hwy (PO Box 197) Werribee, Victoria 3030
m: 0434 360 512 | liza.mccoll@wyndham.vic.gov.au



From: Mark Warren [mailto:mark.warren@melbournewater.com.au]
Sent: Wednesday, 2 August 2017 3:13 PM
To: Liza McColl
Subject: Wests Rd Refuse Disposal & Recycling site

Hi Liza

I can now confirm that the 'isolated puddle' of flood extent shown in the Melbourne Water GIS layer "Flood_Extent_100yr_Waterways" located at the old quarry hole was a modelling anomaly and has since been removed in more recent updating to the modelling.

Attached is a copy of my memo to our Flood Mapping and Mitigation Team identifying this anomaly and requesting that they ensure that it is removed when they update the GIS data/layer with the updated flood modelling.

If you have any further questions concerning this issue, please contact me.

If Council or the EPA wish to submit the Stormwater Management Strategy for the site to Melbourne Water for comment / approval, this can be done via our website

(<https://www.melbournewater.com.au/Planning-and-building/Applications/Pages/Stormwater-management-strategy-review.aspx>).

Regards
Mark

Mark Warren | Program Leader, Investigations South | Development Services, Waterways & Land (Service Delivery Group) | **Melbourne Water**
T: (03) 9679 7538 | 990 La Trobe St, Docklands | PO Box 4342 Melbourne VIC 3001 | melbournewater.com.au

Did You Know: You can now submit your development applications online via the [‘Apply Online’](#) section of the Melbourne Water website. This is now our preferred channel for receiving development applications. When contacting us about an application, please put your Melbourne Water reference number (eg. MWA-1234567) in the subject line of the email and send it to DevConnect@melbournewater.com.au

Enhancing Life and Liveability.

From: Liza McColl [<mailto:Liza.McColl@wyndham.vic.gov.au>]
Sent: Wednesday, 2 August 2017 2:30 PM
To: Mark Warren
Subject:



Liza McColl | Business Analyst | Refuse Disposal Facility | City Operations
45 Princes Hwy (PO Box 197) Werribee, Victoria 3030
m: 0434 360 512 | liza.mccoll@wyndham.vic.gov.au



The information transmitted is for the intended recipient only and should not be re-distributed or published without express written permission from Wyndham City Council. It may contain confidential, proprietary or legally privileged information. No confidentiality or privilege is waived, lost or destroyed by reason of any transmission. If you have received this email in error please notify Wyndham City Council immediately on +61 3 9742 0777, or by return email to the sender, and delete the original email and any copies from your system. Any views expressed in this email are those of the individual sender, except where the email states otherwise and the sender is authorised to state them.

If you have received this email in error, please notify the sender by return email, delete it from your system and destroy any copies.

The information transmitted is for the intended recipient only and should not be re-distributed or published without express written permission from Wyndham City Council. It may contain confidential, proprietary or legally privileged information. No confidentiality or privilege is waived, lost or destroyed by reason of any transmission. If you have received this email in error please notify Wyndham City Council immediately on +61 3 9742 0777, or by return email to the sender, and delete the original email and any copies from your system. Any views expressed in this email are those of the individual sender, except where the email states otherwise and the sender is authorised to state them.

Internal Memo



To: Merran Price – Flood Mapping & Mitigation
From: Mark Warren – Catchment Strategies and Services - Investigations
Subject: **Western Treatment Plant Waterway Mapping
Cherry Creek, Wests Rd Refuse Disposal & Recycling site**

File Ref:

Location: I:\MEL\investigations\Dr7000\DR7705 - Cherry Creek\Correspondence\Memos\
WTP Mapping Anomaly.docx

Date: 27 July 2017

Merran,

As discussed, the original Tuflow flood mapping undertaken by WBM in 2008 indicated some 1% AEP flood extent within the former quarry hole that is now being used as the Wests Rd Refuse Disposal & Recycling site (Melway 243 D5).

In the WBM report for this mapping (*Western Treatment Plant Waterway Mapping Final Report*, June 2008, ref: R.M6121.003.01), Section 4.1 describes the setup of the TUFLOW hydraulic model which includes hydrograph inputs from upstream waterways feeding into the perimeter of the model extent as well as local inflows direct to the grid within the model extent. The statement in the report describing the local inflows as;

"The local inflow boundaries were applied as SA boundaries in TUFLOW. SA boundaries evenly distribute the inflow to all wet cells within the defined area. If there are no wet cells at the start of a run, the model initially applies the inflow to the lowest cell within the defined area."

Since the extent of the model cut through the former quarry site with quite a deep hole, the modelling would have commenced its distribution of inflow directly into the bottom of the former quarry hole as this is the lowest point in the DEM.

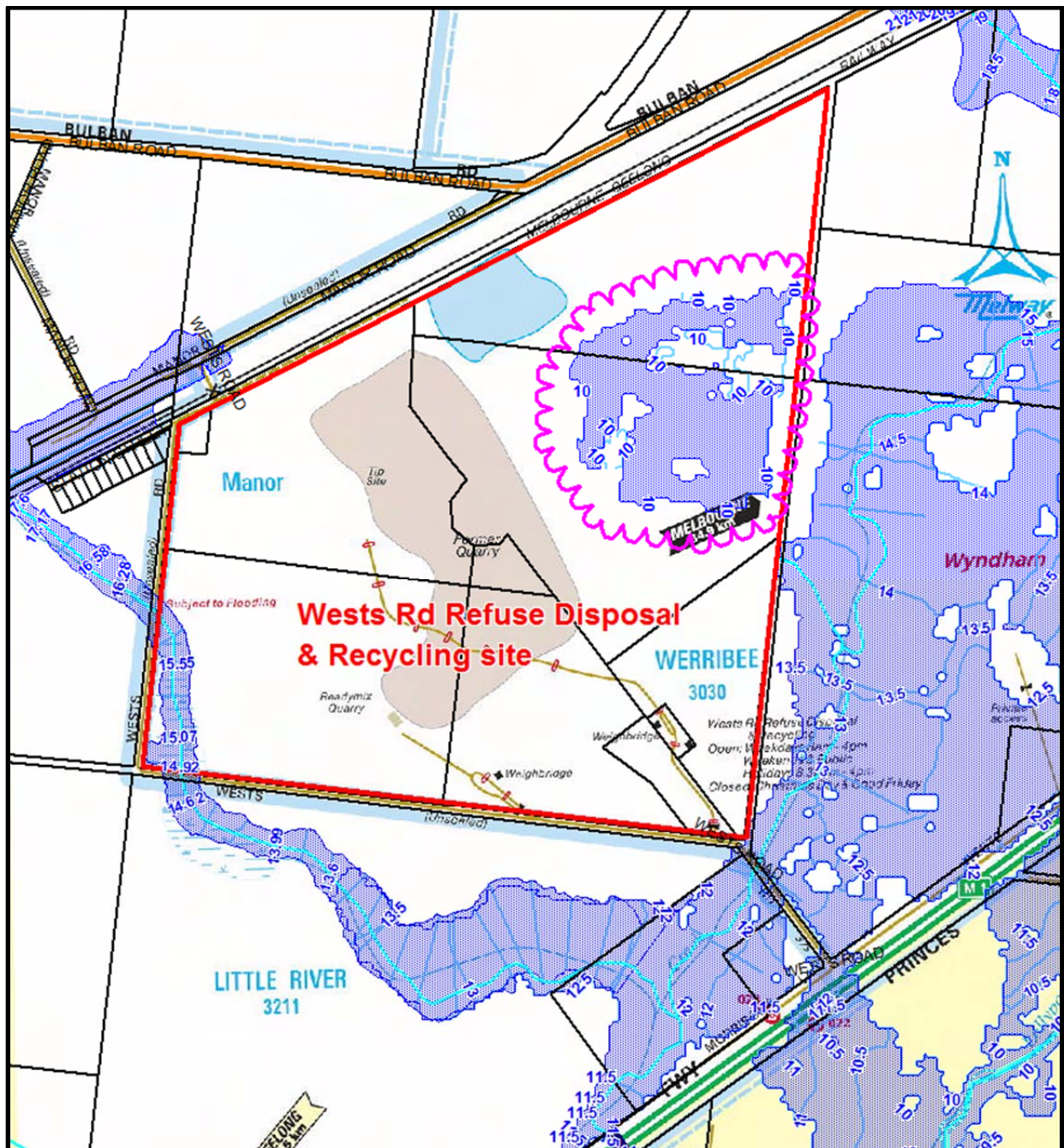
The flood extent within the quarry hole should have been identified as an anomaly by WBM but as it was remote from WTP, for which the mapping was being undertaken, it is understood how it could have been overlooked. It should have been eliminated in the review of the mapping work for inclusion in the 'Flood_Extent_100yr_Waterways' GIS layer but it wasn't.

There has been additional flood mapping work undertaken by WBM (*Western Treatment Plant Waterway Mapping - Final Report*, April 2017, ref: R.M20877.003.00) to refine the previous mapping and evaluate various options being considered for WTP. This more recent mapping has excluded the former quarry site from the model extent.

In updating the 'Flood_Extent_100yr_Waterways' GIS layer with the latest mapping work, please ensure that the original flood extent adjacent to the eastern boundary of the Wests Rd Refuse Disposal & Recycling site (surrounded by magenta cloud in below plan) is removed as it was an anomaly in the original flood mapping. There is another small section of waterway flood extent cutting across the southwest corner of the site which is still valid and should remain.

If you have any questions concerning any of the above, please contact me.

Mark Warren
Program Leader, Investigation South
Catchment Strategies and Services



Mr. Arwinder Gill
EARTH RESOURCES REGULATION BRANCH
1 SPRING ST
MELBOURNE VIC 3000

Reference: 526522

28/06/2017

Dear Mr. Gill

Re: APPLICATION FOR Works Approval 0001002260

EPA Victoria has received the above application from WYNDHAM CITY COUNCIL in relation to premises situated at 470 WESTS RD, WERRIBEE VIC 3030. I enclose a copy of the application for your comment.

We ask that you particularly consider the following issues in relation to this proposal:

Does ERR have any issues or concerns with this application? Can ERR explain the process of excision from the works authority WA184 for Holcim and passing back control to WCC and EPA and any requirements that ERR would have for that process to occur and any issues/ risks from the quarrying activities that EPA and WCC need to be aware of when the site transitions from a quarrying operation to a landfilling operation?

Please provide your comments on this proposal, outlining any objections or recommendations, within 21 days of the date of this letter.

If you need additional information or assistance, please contact David Robinson on (03)84582457.

Yours sincerely



David Robinson
Assessing Officer
Development Assessments
EPA Victoria



Department of Economic Development,
Jobs, Transport and Resources

GPO Box 2392
Melbourne Victoria 3001 Australia
Telephone: 03 8392 6048
ecodev.vic.gov.au
DX 210 292

Ref: WA 184 – VAR 002097
Your Ref: 526522

13 July 2017

Mr David Robinson
Assessing Officer
Development Assessments
EPA Victoria
Level 3, 200 Victoria Street
CARLTON VIC 3053

Dear Mr Robinson

APPLICATION FOR WORKS APPROVAL 0001002260

I refer to the above application received by EPA Victoria from Wyndham City Council in relation to premises situation at 470 Wests Road, Werribee VIC 3030.

Earth Resources Regulation (ERR) considers the surface of land that is to be excised from a work authority. In approving the proposed excision of area from WA184, ERR will consider the application submitted by the work authority holder, Holcim (Australia) Pty Ltd. ERR will assess if all the documentation in relation to the work authority is current and inspect the area to be excised.

The inspection will assess the state of the land. ERR requires that the surface of the land be stable and rehabilitated to an acceptable standard before any excision will be approved. However, as it is proposed that the excised area is to become a landfill, ERR will approve the excision subject to the approval of an EPA Licence and Works Approval over the area excised. This is due to the financial assurance required for an EPA Licence and Works Approval that will ensure that the risk to the public is under control. In addition, the financial assurance gives ERR confidence that the rehabilitation of the land will be attended to and that any risk attached to leaving a pit will be accounted for.

If you require information or assistance, please contact me on arwinder.gill@ecodev.vic.gov.au or 03 8492 6048.

Yours sincerely

Arwinder Gill
Licensing Officer
Statutory Authorisations
Earth Resources Regulation

APPENDIX D

FIRST SECTION 22
NOTICE REQUEST
FOR FURTHER
INFORMATION 19
JANUARY 2017

Notice

**ENVIRONMENT PROTECTION ACT 1970
SECTION 22(1)
NOTICE TO SUPPLY FURTHER INFORMATION**

**TO: WYNDHAM CITY COUNCIL
(ABN: 38393903860)**

OF: 45 PRINCES HIGHWAY, WERRIBEE, VICTORIA, 3030.

WHEREAS an application by you for a works approval in respect of premises situated at 470 Wests Road, Werribee, Victoria was received by the Environment Protection Authority ("the Authority") on 30 November 2016.

AND WHEREAS we consider the information specified herein is necessary and relevant to the consideration of the application

NOW TAKE NOTICE that pursuant to section 22(1)(a) of the Environment Protection Act ("the Act") Wyndham City Council is **HEREBY REQUIRED** to supply to the Authority by 4.00pm on the 26th day of January 2017 the information specified in Attachment A of this notice.

DATED: 19 January 2017



.....
QUENTIN COOKE
DELEGATE OF THE
ENVIRONMENT PROTECTION AUTHORITY

Notice

ATTACHMENT "A"

Re: Works approval application SO 1002260 from the Wyndham City Council to extend their landfill at 470 Wests Road Werribee.

Please submit the following information which needs to be prepared by suitably qualified professionals.

- 1. Provide information on groundwater quality that represents the area (not just the premises).**
 - This information is required to assess compliance with Clause 15(3)(3) of the Waste Management Policy (Siting, Design and Management of Landfills) (WMP).
 - It appears that the applicant relies on only one bore (located at the premises) to determine the groundwater quality (i.e. segment) by quoting a text from an audit report.
 - Provide full details of the audit report and if possible submit a copy of that report.
 - Submit a detail assessment of groundwater quality that represents the area and this should include background groundwater quality (i.e. data from background bore or bores in the surrounding area, if possible).

- 2. Provide long-term undisturbed groundwater level for the site**
 - Long term undisturbed groundwater level is required to assess compliance with Clause 16(2) of the WMP.
 - The water levels provided in the application are not considered to be long term undisturbed long term groundwater as site groundwater levels likely to have been affected by quarry extractions and resulting groundwater seepage and historical groundwater extractions.

- 3. Provide additional design measures**
 - For any cells that do not meet the required 2m separation, additional design measures are required to assess compliance with Clause 16(2)(a) of the WMP (and also Clause 13(a) of the WMP depending on the segment of groundwater)
 - Some preliminary information on design measures has been provided. Further clarification is required.
 - Identify the area (i.e. cells) that will be subject to additional design measures)

- 4. Provide additional management measures**
 - This information is required to assess compliance with Clause 16(2)(a) of the WMP (and also Clause 13(a) of the WMP depending on the segment of groundwater)
 - Identify the area (i.e. cells) that will be subject to additional management measures due to not meeting 2m separation between waste and long term undisturbed groundwater level.

- 5. Provide a detail assessment of leachate management**
 - Leachate management is a key element of landfill operation the current information provided is inadequate and further information is required.
 - The application has included a Leachate Management Plan (Appendix F). However this Plan is for the existing operation. The application document (section 4.7.6) states that "*Tonkin Consulting was engaged by Wyndham City Council to prepare a leachate model (for existing cells only).....*"
 - The desk top assessment included in the application has considered cells 4A, 4B, 4C 5A, 6A, 6B and 6C closed, cell 5C with an interim cap and only active cell 5B. This assessment should take care of the proposed operational sequence considering the cells that are operational, partially capped and fully capped to obtain a worst case scenario to show that this scenario would provide a greatest amount of leachate. .

Notice

- A full assessment of leachate generation from the proposed landfill (from the entire landfill) needs to be provided. This should also include how the leachate will be collected and managed both short and long term with a contingency plan for unforeseen circumstances considering the proposed operational sequence.

6. Stormwater Management

- Submit a stormwater management plan showing how stormwater flows will be managed and how contaminated stormwater will be contained onsite to ensure that no contaminated stormwater release from the site.

7. Figures

Figures should be updated to show additional design and management measures, Leachate pond locations etc.

APPENDIX E

SECTION 20B
COMMUNITY
CONFERENCE –
CHAIRPERSONS
INDEPENDENT
REPORT

Wyndham City Council Refuse Disposal Facility Works Approval Application

EPA 20B Community Conference Report

PCB Consulting

March 2017

Table of Contents

Introduction	2
Conference Process.....	2
Issues, Concerns and Questions.....	3
Options for Resolving the issues and concerns	11
Recommendations	12
Appendix 1	15
EPA 20B Conference Agenda	15
Appendix 2	16
Review of issues raised in the individual submissions received by EPA	16
Review of issues raised in the common submission form letter received by EPA	16
Review of issues raised in the submissions by organisations to the EPA	16

Introduction

EPA received a Works Approval application for the Wests Road Refuse Disposal Facility (RDF) operated by the Wyndham City Council (WCC). The Wests Road Refuse Disposal Facility (RDF) has been operating as a landfill since 1976, covers 240 ha and is located 8km west of the Werribee central business district. The site has been developed as a series of cells which are used for landfill once quarrying of the area is complete.

WCC proposes to construct four new large landfill cell areas (each made up of multiple cells) and raise the height of existing cells 1A, 2 and 3. Under this proposal, all cells will be filled to 44 m (AHD, essentially above sea level), which is the maximum height allowed under the planning scheme (44m AHD is about 22 m above ground level). The existing cells are currently filled to between 30 and 33 m AHD.

The proposal is for disposal of putrescible waste, solid inert waste, and fill material (the same waste stream as for the existing cells). The site receives waste from across the Melbourne metropolitan area.

The draft application was officially received by EPA on 23rd of June, 2016. Further information was requested by EPA and WCC resubmitted the application with the further information as requested by EPA on 30th November, 2016. Public comment submissions opened on the 14th of December, 2016 and closed on 7th of February, 2017.

The Works Approval application was available for download on the EPA website. The EPA received over 170 submissions. A summary of the issues and concerns raised in all the submissions is included in Appendix 2.

To enable EPA to gain further understanding of the issues that have been raised through submissions, EPA invited all interested parties to attend a public conference held pursuant to section 20B of the *Environment Protection Act 1970*. The public conference was held on the 14th March 2017 at the Mansion Hotel at Werribee Park.

Under Section 20B of the *Environment Protection Act*,

"The Authority shall take into consideration the discussions and resolutions of any conference under this section and the recommendations of any person presiding at that conference."

This report outlines the discussion and key issues identified at the conference and includes recommendations for EPA to consider as part of the evaluation of the approval application. The report has been prepared by the independent conference chair, Cath Botta (PCB Consulting Pty Ltd).

Conference Process

The conference was held on Tuesday 14th March, 2017. Approximately 60 people attended the conference including key EPA representatives, representatives from the Metropolitan Waste and Resource Recovery Group, Sustainability Victoria and Wyndham City Council representatives also attended.

The conference was chaired by Cath Botta, from PCB Consulting Pty Ltd. The process for the conference was designed in consultation with EPA staff and incorporated feedback from the community. The process was designed to ensure all participants had the opportunity to put their perspectives forward, ask questions, and raise issues and concerns with the application.

The conference agenda is included in Appendix 1 of this report.

The conference was opened by the chair and then EPA, represented by Tim Faragher (Manager of Development Assessments Unit), gave a short presentation on the assessment process and a summary of the issues raised in the submissions received.

Wyndham City Council (WCC), represented by Simon Clay (Manager Waste Management & Disposal City Operations, Wyndham City Council) then briefly outlined the proposal, gave an overview of activities at the site, and Wyndham City Council's responses to the main themes in the concerns and issues raised in the submissions including, environmental monitoring, operational issues, odour, landfill gas, fires and buffers.

Two community representatives, were given the opportunity to present further detail on community issues and concerns with the application:

- Connie Menegazzo
- Harry Van Moorst

All participants were then given the opportunity of asking questions or raising further issues or concerns that had not already been identified in the submissions. Harry Van Moorst, representing submitters, was given the opportunity to make closing comments on the key issues and concerns before the conference closed.

Issues, Concerns and Questions

Issues, Concerns and Questions raised by participants at the conference, and any responses given by EPA and Wyndham City Council (WCC) representatives at the conference are summarised in Table 1. The chair's recommendation for follow up actions are also included in the table.

Table 1: Issues, Concerns and Questions raised at the Conference

Key Issues	Issues, Concerns and Questions raised	Summary of Responses given by EPA and WCC	Recommended Follow up Action
<p>Odour and Noise</p>	<ul style="list-style-type: none"> • What is the likely predicted vs actual impact of odour in existing and future (if approved) residential areas? • 500m buffer is inadequate – you can smell from Watton Street • Odour can be smelt from freeway • Noise due to operating hours – next to a growth corridor with residential encroachment- early hours of the morning and increasing the height will mean more noise • Odour modelling – has the sampling and monitoring been adequate? How frequently is this checked over a year? Is the modelling affected by the biases of the consultant employed by council? • What is the likely impact on odour of going higher (tip mountain)? Increased surface area could mean more odour. 	<p>WCC stated that some changes have been made already on site such as extra soil cover, particularly at the end of each day to reduce odour issues.</p> <p>WCC stated that odour complaints are taken seriously and WCC do encourage residents to notify the site manager of any potential odour issues.</p>	<p>EPA need to consider the concerns raised regarding the odour modelling particularly in relation to the proposed height and piggybacking arrangement proposed.</p> <p>WCC need to consider options for how residents and the community can easily raise odour and noise issues with WCC and how these options can be promoted to the community.</p>
<p>Height and Visual Amenity</p>	<ul style="list-style-type: none"> • The landfill detracts from amenity of the area (is an eye sore) and detracts from the view of the rural landscape (You Yangs and rural setting) • Height and visual amenity of the mounded landfill • Concern about the tip mountain impacts on how people feel • Precedent of height approval at 44 m AHD – will this lead to more mounded landfills? • When did council put profits in front of community amenity/liveability? • Land value impacts 	<p>Impact on amenity value is not grounds for EPA to refuse the proposal.</p> <p>Impact on property values is not grounds for EPA to refuse the proposal.</p>	<p>EPA and WCC need to consider a lower height option for the site.</p> <p>EPA needs to clarify and assess the technical feasibility of the proposed height of 44m AHD including the impact on the associated risk profile of the site.</p>

<p>Recycling and transitioning to new technology</p>	<ul style="list-style-type: none"> • Why wait until 2021 for renewable contracts – why not test the market now? • How do we make money from rubbish? Recycle – we have too much to send it all to Land fill • Look at packaging form shops – including plastic bags • Can’t keep going the same way – we need to reduce waste • What is the landfill closure timeline • Waste to energy project – happening at Dandenong – what is the viability for this site? • Reduced incentive for other waste recovery options if 30 years in approved • How does/is council managing the conformity/compliance of incoming loads? • What procedures and practices are used to prevent recyclable material entering the landfill eg batteries, which can cause fires? • What do council do to educate community and how much \$ are spent to do this? • Metropolitan waste and resource recovery group – why are you not raising the bar to ensure that Victoria is not below world standard waste disposal entity. The 30 year plan should ensure phasing in of world’s best practice over next 10 years and not allowing landfill to increase • Why are councils pushing for landfill when community does not support it? • How does council explain the credibility gap between opening up landfill vs encouraging alternatives for next 50 years – the 2 are not compatible – council has a vested interest in not adopting new technology • How do they square up this with the legislation around waste hierarchy and disposal at bottom • When are councillors going to start telling the truth at election times so we know who is supporting this? 	<p>WCC stated that their vision for the RDF was for transformation from a landfill to a resource recovery operation where only residual waste goes to landfill.</p> <p>WCC stated that this works application will secure the sites future and will then enable the Council to explore alternative waste technology with the confidence to invest in alternative technology in the future at the site.</p> <p>WCC stated a whole of site application does not lock in landfilling for the next 30 years.</p> <p>WCC stated that any “profit” from the RDF goes back to the community, currently through additional funding to Council’s capital works program.</p>	<p>WCC need to clarify what waste to energy options have been considered by council to date, Councils assessment of the viability of these options at the site, and Councils plans and timelines for transitioning the site to the use of alternative waste technology.</p> <p>MWRRG and SV need to clarify the future plans for Landfill sites and the timelines for phasing in new technology for waste management at current sites such as Werribee.</p>
---	--	--	---

Key Issues	Issues, Concerns and Questions raised	Summary of Responses given by EPA and WCC	Recommended Follow up Action
	<ul style="list-style-type: none"> • This Works approval is not encouraging an industry into transition – this holds back any notion of transition • Andrews Government is putting \$2million towards alternatives – why do council want to lock in landfilling for 30 years instead of considering alternatives? • There is no environmental justice for the people of the west as we carry the burden for the rest of the state. We need alternative methods for waste treatment not just landfill • Concerned that we just keep using old technology 		
<p>Planning and Buffer Zones</p>	<ul style="list-style-type: none"> • What is the buffer for future development – people don't always know what it is • Staging of the landfill site– first into the NE corner then to SW corner – residential community being developed close to this – why staging it this way? • Buffer Zone – neighbouring land owners should not provide the buffer for the landfill – the buffer should be internal to the landfill or the neighbouring land owned by council 	<p>EPA stated that buffer zones are managed through the planning functions within Councils.</p> <p>WCC stated that Council is currently looking at amendments to the buffer distance around the facility.</p>	<p>WCC need to develop some "plain English" information about the facility including associated planning issues such as the buffer zone areas surrounding the site.</p> <p>EPA and WCC need to clarify adequate buffer zones for gas, odour, and noise issues and how those distances are determined on this site.</p>

Key Issues	Issues, Concerns and Questions raised	Summary of Responses given by EPA and WCC	Recommended Follow up Action
<p>Rehabilitation and landscaping of the site</p>	<ul style="list-style-type: none"> • What does rehabilitation look like? Will it have plastic bags in it? • Remediation – who looks after remediation? who will hold the financial assurance and costs, especially if the council boundaries change, the landfill is sold or the larger size goes across 2 council areas • There have been promises of rehabilitation and landscaping works but no visible action – when will this work start on the ground? • Visual impact – when will this change? What are the timeframes on making it more visually acceptable 	<p>EPA stated that costs for Remediation are covered by Council. The Financial assurance covers the remediation costs of the site if it is abandoned or manager goes bankrupt.</p> <p>WCC stated that council has requested \$8.5 million be provided in the budget for this year for rehabilitation works on the site.</p>	<p>WCC need to develop some "plain English" information about the facility including the longer term vision and plans for the site, and a clear timeline for landscaping works.</p>

Key Issues	Issues, Concerns and Questions raised	Summary of Responses given by EPA and WCC	Recommended Follow up Action
<p>Community engagement, consultation and the CRG</p>	<ul style="list-style-type: none"> • What is the current status of CRG? No minutes available online – appears to have been restructured after last election • Approval of Long time frames removes opportunity for community consultation • Further clarification on what notice was given and how and when? Council should give notice on the 20B conference • How much notice of 20 B conference – only 1 day notice was received • Consultation audience for the 20 B wider than just submitters - more wide distribution needed. Some people don't get the local paper • Council and EPA did acknowledge that there will be no opportunity for further consultation if the works application is approved but did not address what is their response to this? What are the options? • The numbers attending the conference do not reflect the level of concern in the community 	<p>EPA stated that all submitters were notified by email and by hard copy where email was not provided on 1/3/2017 of the conference. There was also a media release that was picked up by the local paper (Star Weekly) and reported on 1/3/2017. Details on the Conference were place on the EPA website</p> <p>Invite sent to CRG independent chair for circulation to the membership of the CRG 1/3/2017. A reminder email was sent to submitters on 8/3/2017.</p> <p>WCC stated that the CRG is still in place and still operating with an independent chair. The minutes are available on the council website and the outstanding minutes should be posted within the next 4 weeks.</p>	<p>WCC need to ensure the CRG is adequately resourced, this may include consideration of an independent minute taker for the group. The TOR and minutes for the group need to be up to date and available online.</p> <p>EPA needs to review their internal processes for organising community conference processes</p> <p>WCC need to consider developing and resourcing a community engagement plan and communications plan for this facility.</p> <p>EPA to consider the possibility of setting approval conditions that require a community consultation and engagement plan for the facility.</p>

Key Issues	Issues, Concerns and Questions raised	Summary of Responses given by EPA and WCC	Recommended Follow up Action
<p>Compliance standards, Track record, and Monitoring</p>	<ul style="list-style-type: none"> ▪ How can council have a 30 year approval given their current poor track record? ▪ Would council be more able to comply with EPA regulation if the landfill was in ground (ie landfill vs land mounding) ▪ There are no current standards covering the proposed piggy backing arrangement of waste on to previous cells. 	<p>EPA do spot checks on compliance to operation licences as part of the EPA Compliance and Enforcement Plan.</p> <p>EPA does consider the compliance history when assessing the application.</p> <p>WCC stated that they continue to work towards compliance with licence conditions at the site and are open and transparent about compliance issues.</p> <p>WCC stated that an independent auditor and EPA will review and approve the design for each new cell.</p> <p>WCC stated that each new landfill cell will be constructed to comply or better the standard of the day as specified in EPA's Best Practice Guidelines for Landfills</p>	<p>EPA need to consider the concerns raised about the track record of the applicant including breaches to compliance standards.</p> <p>EPA also need to consider more frequent targeted compliance inspections at this site, particularly in relation to the proposed piggy backing arrangements.</p> <p>WCC need to provide a clear outline of the system of independent auditing, monitoring and reporting at the site.</p>

Key Issues	Issues, Concerns and Questions raised	Summary of Responses given by EPA and WCC	Recommended Follow up Action
<p>Surface water, Leachate and potential for Ground water contamination</p>	<ul style="list-style-type: none"> ▪ Concern with hotspots breaking down landfill liner. How does this impact on the groundwater aquifer? ▪ Unknown implications for groundwater • Surface water – the creek diversion and the surface water management could lead to potential flooding impacts ▪ Breaches 100m buffer to surface water in BPEM. Relates to former creek route and redirected route. Inundation potential at the landfill as redirected creek is not sufficient for significant run off- related question as to how the original works approval allowed the landfill/surface water proximity. ▪ Concerns about the potential for more leachate with the proposed “piggy backing” of waste onto previous cells. 	<p>EPA stated that surface water management is now part of the EPA <i>The Landfill Best Practice Environmental Management</i> (BPEM) publication.</p>	<p>EPA need to consider the need for additional Hydrological assessments to address the surface water inundation concern and historic creek diversion issues.</p> <p>EPA need to consider the concerns raised about the risk assessment and risk management aspects of the proposal particularly in relation to the proposed “piggy backing” arrangement.</p>
<p>Risk Assessment and risk Management</p>	<ul style="list-style-type: none"> ▪ Fire – what procedures and practices are in place? ▪ Lack of risk assessment for the piggy back cells and the lack of assessment of the risk of delaying full rehabilitation of these cells 	<p>WCC state that there is a Fire Management Plan for the site. In addition the emergency management plan for the site is currently under review and input will be sought from the CFA on the firefighting capacity and on site requirements.</p>	<p>EPA need to consider the concerns raised about the risk assessment and risk management aspects of the proposal.</p>

Key Issues	Issues, Concerns and Questions raised	Summary of Responses given by EPA and WCC	Recommended Follow up Action
Perception of Stigma on the area	<ul style="list-style-type: none"> ▪ Environmental justice – how is this considered ‘just another blow for Werribee’ (youth prison, sewerage) ▪ Perception of Werribee due to landfill and the detention centre ▪ Why is Werribee continuing to be used as “waste mountain” the residents are getting sick of it. Why do we have to put up with taking all of Melbourne’s waste? ▪ Why has the EPA not got back to us on the 3rd party rights issue? We have got no real feedback – government policy is we have consultation? ▪ Why can other councils afford to pay to dump at Werribee when Wyndham Council appears to be starved of funds ▪ Cannot readily fix prior problems so don’t want to make the same problems new problems (3rd party appeal rights) ▪ 	WCC stated that the planning for waste for metropolitan Melbourne is undertaken by the Metropolitan Waste and Resource Recovery Group, and Sustainability Victoria.	<p>WCC need to consider starting the implementation of the landscaping plans for the site as soon as possible, including tree/vegetation planting along boundary fences to create a screen for amenity.</p> <p>MWRRG and SV need to clarify the sites role in landfill plans and arrangements and the degree of flexibility in these arrangements until 2020.</p>

Options for Resolving the issues and concerns

Participants at the conference were asked to record at their table any options that could be considered to resolve the issues and concerns. Responses to this question are documented in table 2 below.

Table 2: Ideas and Options raised at the Conference to resolve the issues and concerns

Key option	Ideas Raised	Recommended followup action
Reduce the Facility Height	<ul style="list-style-type: none"> • EPA should only ever approve tip height to ground level not above ground level • Approve the landfill extension to ground level only – the landfill apex to ground level to allow an appropriate profile • What is the risk to EPA saying ‘no’ to the works approval? 	EPA and WCC need to consider a lower height option

<p>Transition to alternative waste management strategies and greater promotion of waste minimisation strategies</p>	<ul style="list-style-type: none"> • Profit from landfill goes into alternative recovery options (waste to energy options) • Advocacy on the issue of producing less rubbish which ends up in landfill. • Stronger sorting protocols and processes • Incentives for facilities to transition to alternatives • Test alternative ways of waste disposal • Approving a 5 – 7 year landfill lifespan to ensure recovery options are considered • 	<p>WCC need to develop information for the community on waste minimisation strategies and resource recovery options currently available in the area.</p> <p>WCC need to clarify Councils plans and timelines for transitioning the site to the use of alternative waste technology.</p> <p>EPA and WCC need to consider the potential for a shorter approval time frame (7 – 10 years).</p> <p>MWRRG and SV need to consider and clarify the incentives and flexibility for landfill operators to transition to alternative options and technologies before 2020.</p>
<p>Improve Council planning Processes</p>	<ul style="list-style-type: none"> • Review staging of landfill and understand staging of residential development by lease and other land users • Council should own the land for the buffers – both landfill gas buffer and amenity buffer • The works approval application should be amended so that a buffer is provided wholly or at least substantially on the RDF site 	<p>EPA and WCC need to clarify adequate buffer zones for gas, odour, noise, and amenity issues that impact on private land.</p>
<p>Improve the operations at the site and begin landscaping actions</p>	<ul style="list-style-type: none"> • Start planting trees to screen the RDF. • Odour blocking technology or physical improvements – eg mounds of earth • Noise – no heavy machinery use from 00:00 to 06:00 	<p>EPA need to consider the concerns raised about the adequacy of rehabilitation plan for the site and the timelines for rehabilitation.</p> <p>WCC need to consider operational changes that can help to manage noise and odour levels at the site.</p> <p>WCC need to consider aspects of the landscaping plans for the site that can be started immediately eg tree/vegetation planting along boundary fences to create a screen for amenity.</p>

Recommendations

The conference provided an opportunity for the community to raise issues and concerns about the proposal with the EPA and the applicant, WCC. A range of issues and concerns were raised and have been documented in this report.

A number of issues were raised that are not within the scope of a EPA works approval application process such as planning issues, the proximity to residential areas, and concerns about impacts on the amenity value of the area or property values.

There were a number of key issues raised that will require follow up actions by EPA and the applicant WCC. These issues and suggested follow up actions form the basis of the Chairperson's Recommendations.

1. Facility Height - EPA and WCC need to consider a lower height option for this site. EPA needs to clarify and assess the technical feasibility of the proposed height of 44m AHD including the impact on the associated risk profile of the site.
2. Site Landscaping and rehabilitation - EPA need to assess the adequacy of the rehabilitation plan and landscape plan in the application. WCC need to consider aspects of the landscaping plans for the site that can be started immediately, for example tree/vegetation planting along boundary fences to create a screen for amenity.
3. Odour - EPA need to consider the concerns raised regarding the modelling and risk assessment work on odour included in the approvals application. In particular, the impact of the new proposed height and the piggybacking arrangement proposed for existing cells. WCC need to consider options for how residents and the community can easily raise odour and noise issues with WCC and how these options can be promoted to the community. The Community Reference group may be able to provide advice on how this could be done.
4. Communication and Engagement with the community - EPA needs to review their internal process for community engagement activities conducted by the EPA in association with Community Conferences. The review needs to include consideration of the invitation and RSVP process for the conference and identify potential improvements to the process. WCC need to consider developing and resourcing a community engagement and communication plan for this facility. The Community Reference group may be able provide advice how this could be done. WCC need to ensure the CRG is adequately resourced, this may include consideration of an independent minute taker for the group. The TOR and minutes for the group need to be up to date and available online. EPA need to consider the possibility of including licence conditions that require a proactive community consultation and engagement plan for the facility.
5. The Facility operation and risk management at the site - EPA need to consider the need for additional Hydrological assessments to address the surface water inundation concern and the impact of the historic creek diversion at the site. EPA need to consider the concerns raised about the risk assessment and risk management aspects of the proposal particularly in relation to the proposed "piggy backing" arrangement. WCC need to consider operational changes to better manage noise and odour levels at the site.
6. Compliance standards, Monitoring and Track record of the applicant - WCC need to provide a clear outline of the system of independent auditing, monitoring and reporting at the site. EPA need to consider the concerns raised about the track record of the applicant including breaches to compliance standards. EPA need to also consider more frequent targeted compliance inspections at this site.
7. Current and Future Waste Management Strategies for the area- WCC need to develop information for the community on waste minimisation strategies and resource recovery options currently available in the area. WCC need to clarify what waste to energy options have been considered by council to date, Councils assessment of the viability of these options at the site, and Councils plans and timelines for transitioning the site to the use of alternative waste technology. EPA need to request MWRRG and SV to consider and clarify the incentives and flexibility for landfill operators to transition to alternative options and technologies before 2020. EPA and WCC need to consider the potential for a shorter approval time frame (7 – 10 years) to provide certainty for planning but to also ensure future waste technologies are considered for the site, and adequate community consultation is undertaken.

8. Planning and Buffer Zones - WCC need to develop some "plain English" information about the facility including associated planning issues (such as the buffer zone areas surrounding the site in relation to current and future land developments in the area), as well as the longer term vision and plans for the site (including a clear timeline for landscaping works). EPA and WCC need to clarify adequate buffer zones for gas, odour, and noise issues and how those distances are determined on this site.
9. EPA are to make this report available to all attendees of the conference and to the independent chair of the Community Reference Group.

Appendix 1

EPA 20B Conference Agenda

6:00 pm	Arrive, tea and coffee	
6:15 pm	Welcome Background and Objectives of the Conference Agenda and Process	Cath Botta
6:25 pm	Brief outline of the Works Approval Process and key issues and concerns raised in the submissions received	EPA
6:35 pm	Brief Outline of the Works Proposed, Background information and outline of proposal	Wyndham City Council
6:50pm	Primary Objectors outline key issues, concerns and questions Responses from EPA and Council representatives	3 main community objectors present key concerns and questions – 25 min
7:25 pm	Questions of clarification and additional concerns and issues with the proposal Table groups to identify any additional questions of clarification to EPA representatives and Council representatives or to raise any additional concerns or issues with the proposal to what has already been received thru the submission process or from the Primary Objectors Responses from Council representatives (or EPA as appropriate) to question or issue raised by tables	Table group discussion – 20 min Questions, issues, concerns recorded Each table to report back –(20 min)additional issues or concerns or questions
8.05pm	Closing remarks from Objectors	
8:10 pm	What potential options for resolving the issues and concerns do you think should be considered?	Table group discussion recorded
8:20 pm	Closing Remarks and Next steps in the process	EPA
8.30pm	Thanks and Close	Cath Botta

Appendix 2

Review of issues raised in the individual submissions received by EPA

Number of mentions	Issue category	Number of mentions	Issue category
11	Odour	3	Airborne litter
11	Visual amenity	3	Landfill gas
11	Landfilling obsolete practice	3	Land impacts
10	Human Health impacts	3	Too close to housing currently
8	Stigma	2	Dust
8	Too close to future residential areas	2	Fires
8	Council is driven by the dollar	2	Land values negative impact
5	Poor track record	1	Quality of life
4	Groundwater	1	Increased traffic
4	Surface water		
4	Approval period too long		

Review of issues raised in the common submission form letter received by EPA

- The negative impacts on me, my family and my community.
- Visual amenity: a 25m – 30m high mountain of unsightly rubbish;
- Odour - up to 3 km away
- Risk of contamination of air and ground water;
- risk to community health and well-being;
- Stigma - Western suburbs are the dumping ground for everyone else's waste;
- It will negatively impact the amenity and liveability of the new homes that will be built in the areas surrounding the landfill over the next few decades;
- It will set a precedent for other quarries in the region;
- It will encourage cheap waste dumping instead of recycling and resource recovery;
- It will send the wrong message to industry and the community - There are better, more sustainable Resource Recovery processes instead of landfill.
- Approval Period is too Long - a 40 – 50 year approval to continue with out-dated practices instead of the resource recovery alternatives that now form the basis of government policy and community expectations.

Review of issues raised in the submissions by organisations to the EPA

- proposals for the extension of or establishment of new landfills in Victoria need to be subject to a thorough and robust environmental impacts assessment similar to what has been completed for Melbourne Regional Landfill
- The piggy back cells - the lack of assessment of the risk of delaying full rehabilitation of these cells until the piggy back liner is constructed.

- Odour issues and the lack of odour modelling.
- Lack of noise modelling.
- Ground water levels at the base of cells.
- Land Fill Gas risks.
- Lack of detail regarding proposed cell construction design in the context of quarrying operations.
- further extension of operations on the facility will have an unreasonable impact on the land available for development to cater for a growing Wyndham West community
- Failure to provide a suitable internal buffer within the boundaries of the RDF site will have an impact on the land surrounding the site such that it may or may not be possible to construct buildings within the 500m buffer prescribed under the Landfill BPEM.
- a buffer should be provided wholly or at least substantially on the RDF site
- The buffers criteria is not adequately met at the site - the reliance on so much privately owned land for buffers is inequitable, and the proposed cell boundaries should be made smaller.
- The required buffer distances have been overestimated.
- Environmental Compliance
- Risks to Groundwater
- Surface Water impacts
- Litter and Amenity
- Proposed Best Practice Environmental Management (BPEM) for New Cells
- Landfill Siting
- Green Waste Processing Facility

APPENDIX F

SECOND SECTION 22
NOTICE REQUEST
FOR FURTHER
INFORMATION 12
APRIL 2017

Notice

**ENVIRONMENT PROTECTION ACT 1970
SECTION 22(1)
NOTICE TO SUPPLY FURTHER INFORMATION**

**TO: WYNDHAM CITY COUNCIL
(ABN: 38393903860)**

OF: 45 PRINCES HIGHWAY, WERRIBEE, VICTORIA, 3030.

WHEREAS an application by you for a works approval in respect of premises situated at 470 Wests Road, Werribee, Victoria was received by the Environment Protection Authority ("the Authority") on 30 November 2016.

AND WHEREAS we consider the information specified herein is necessary and relevant to the consideration of the application

NOW TAKE NOTICE that pursuant to section 22(1)(a) of the Environment Protection Act ("the Act") Wyndham City Council is **HEREBY REQUIRED** to supply to the Authority by 4.00pm on the 19th day of April 2017 the information specified in Attachment A of this notice.

DATED: 12th April 2017



.....
QUENTIN COOKE
DELEGATE OF THE
ENVIRONMENT PROTECTION AUTHORITY

Notice

ATTACHMENT "A"

Re: Works approval application SO 1002260 from the Wyndham City Council (WCC) to extend their landfill at 470 Wests Road Werribee.

Attachment A, Part A: Information needs arising from the 20B conference report recommendations

On 14th of March 2017 EPA conducted a conference under section 20B of the Act. All submitters on your application were invited to attend and were given the opportunity to ask questions and clarify their concerns with the application. A report, with recommendations, has been prepared by the conference chair and is enclosed as Attachment B. Arising from the recommendations are a number of questions.

Please submit the following information which needs to be prepared by suitably qualified persons.

1. Facility Height

- The proposed height of 44m is clearly an issue with many in the community, has Wyndham City Council considered a lower height, including filling only to ground level?
- Please prepare a risk assessment for the site for the proposed height and comment on how the height affects the associated risks. The risk assessment needs to address the following issues: Dust, odour, noise, litter, visual amenity, batter stability, landfill gas generation and collection, leachate collection and generation and stormwater management to justify that the proposed height of 44 m AHD does not lead to adverse environmental outcomes.

2. Site landscaping and rehabilitation

What aspects of the landscaping and rehabilitation plans can be fast tracked or started immediately?

3. Odour and Noise

- What are the options for residents and the community for raising issues with noise and odour?
- Is Wyndham City Council able to propose additional options to facilitate the registration and follow up of odour and noise complaints?
- Are there additional mitigating management actions that would be effective, which can be employed?

4. Communication and Engagement with the Community

- Please outline your plans for community engagement and communication for the facility.
- Outline how these plans will be resourced including ensuring that the Community reference Group is adequately resourced to enable it to carry out its role efficiently.

5. The facility operation and risk management

- The issue of the historic creek diversion at the site and how this might affect the risk of inundation of the site was raised. Have Council considered this risk and how is it addressed in the hydrological assessment?

6. Compliance standards, Monitoring and Track record of the applicant

Notice

- The recommendation is that WCC need to provide a clear outline of the system of auditing, monitoring and reporting at the site. Please provide such an outline.

7. Current and future waste management strategies for the area.

A number of recommendations are made for WCC to address, these are:

- a) WCC need to develop information for the community on waste minimisation strategies and resource recovery options currently available in the area. – Please outline how WCC will address this recommendation.
- b) WCC need to clarify what waste to energy options have been considered by council to date, Councils assessment of the viability of these options at the site, and Councils plans and timelines for transitioning the site to the use of alternative waste technology. – Please outline how WCC will address this recommendation.
- c) WCC need to consider the potential for a shorter approval time frame (7 – 10 years) to provide certainty for planning but to also ensure future waste technologies are considered for the site, and adequate community consultation is undertaken. – Justify why a duration of 30+ years has been proposed rather than the 7-10.

8. Planning and Buffer Zones

A number of recommendations are made for WCC to address, these are:

WCC need to develop some "plain English" information about the facility including associated planning issues (such as the buffer zone areas surrounding the site in relation to current and future land developments in the area), as well as the longer term vision and plans for the site (including a clear timeline for landscaping works). – Please outline WCC's approach to addressing this recommendation.

WCC need to clarify adequate buffer zones for gas, odour, and noise issues and how those distances are determined on this site. – Please outline WCC's approach to addressing this recommendation.

Attachment A, Part B: Amendment of application to remove the piggy back cells

WCC have indicated that they want remove the piggy back cells from the application. This change in scope requires some amendments to the application. Please provide as a minimum the following and any other amendments WCC consider are appropriate:

- A revised cell layout Plan clearly showing the cells with cell boundaries. Also show in a different map the cells removed from the site plan and the cells remaining.
- Revised drawings showing cross sections of the site with new cells showing; An updated contour plan (pre-settlement top of waste and pre-settlement top of cap contours);
- A revised leachate management plan;
- A revised stormwater management plan;
- A revised cell filling and proposed progress rehabilitation plan;
- A comment on the proposed operational period with anticipated waste volumes;
- An assessment of the slope stability of the revised landfill profile;

Attachment A, Part C: Other outstanding information

1. Financial Assurance

Notice

Please provide a financial assurance calculation based on guidance given in an email sent 10 January 2017 and EPA's guideline document (publication 1596).

2. Clarification of the air assessment

- a) Please confirm the model used to develop the medium risk zone, was it Aermod? Or was another model used?
- b) Please clarify what meteorological data set has been used for the air modelling. To ensure that the modelling is representative a five year data set needs to be used, if the data set used is not representative then the modelling will need to be re-done with an updated meteorological data set.
- c) There were some odour measurements carried out and specified in Appendix C, there's no discussion about how they have been converted to odour emissions rates for the modelling, please explain how the odour emissions rates were derived.
- d) The zones in the Wyndham city council buffer study looks consistent with the methodology in the assessment report and makes sense considering that a greater medium risk zone than in the buffer study is being proposed. That report included low, medium and high risk zones. Please add the low and high risk zones to the assessment report.
- e) The report defines the medium risk zone as area's where:
 - An odour between 1 – 3 occurring more than 26 times a year
 - An odour between 3 – 6 occurring between 13 to 25 times a year
 - An odour between 6 – 10 occurring between 4 to 12 times a year
 - An odour greater than 10 occurring less than 6 times a year

The report needs to identify which of these categories each of the receptors in the medium risk zone falls into, please prepare a table of odour and frequency to do this.

3. Response to issues raised in submissions received on the application

Please provide responses to issues raised in the submissions on the application received by EPA. Copies of all submissions received have been provided to WCC.

Notice

ATTACHMENT "B"

See attached PDF file "EPA Community Conference report - WCC final.pdf"

APPENDIX G

THIRD SECTION 22
NOTICE REQUEST
FOR FURTHER
INFORMATION 18
AUGUST 2017

Notice

**ENVIRONMENT PROTECTION ACT 1970
SECTION 22(1)
NOTICE TO SUPPLY FURTHER INFORMATION**

**TO: WYNDHAM CITY COUNCIL
(ABN: 38393903860)**

OF: 45 PRINCES HIGHWAY, WERRIBEE, VICTORIA, 3030.

WHEREAS an application by you for a works approval in respect of premises situated at 470 Wests Road, Werribee, Victoria was received by the Environment Protection Authority ("the Authority") on 30 November 2016.

AND WHEREAS we consider the information specified herein is necessary and relevant to the consideration of the application

NOW TAKE NOTICE that pursuant to section 22(1)(a) of the Environment Protection Act ("the Act") Wyndham City Council is **HEREBY REQUIRED** to supply to the Authority by 5.00pm on the 22nd day of August 2017 the information specified in Attachment A of this notice.

DATED: 18th August 2017



.....
QUENTIN COOKE
DELEGATE OF THE
ENVIRONMENT PROTECTION AUTHORITY

Notice

ATTACHMENT "A"

Re: Works approval application SO 1002260 from the Wyndham City Council (WCC) to extend their landfill at 470 Wests Road Werribee.

Please submit the following information, all information must be prepared by a suitably qualified person and accompanied by sufficient details, reports, calculations and justifications that would allow EPA to test and verify your findings.

1) Revised Contour Plan

- To cover all parts of the site including the older previously filled cells 1-3 and Stage 1A. All heights should be m, AHD (Australian Height Datum)

2) Revised rehabilitation schedule

- That takes into account progressive rehabilitation and re-arranging the filling sequence in order to rehabilitate all cells in a timely manner.

3) Approach to stability issues

- Please outline how you propose to address stability issues in the detailed design phase.

4) Approach to stormwater management

- Please outline how you propose to address stormwater management in the detailed design phase.

5) Revised premises plan

- This should clearly show the boundary of the premises (i.e. works approval area), landfill cells (existing and indicative boundaries for proposed cells) with identifications of key landforms. The plan should be drawn to scale.

6) Response to the WREC submission

- The Western Region Environment Centre (WREC) provided a detailed submission please provide a response to the issues raised.

APPENDIX H

EXTERNAL PEER
REVIEW OF
STORMWATER
MANAGEMENT
SYSTEM AND PLAN



West's Road Refuse Disposal Facility

Peer Review of Conceptual Stormwater Management System

15 August 2017

Report by: Valerie Mag, B.E. Civil (Hons), M. Eng. Sci.

Stormy Water Solutions

stormywater@optusnet.com.au

stormywater.com.au

Contents

1. INTRODUCTION	1
1.1 PURPOSE OF THE REVIEW	1
1.2 VALERIE MAG CREDENTIALS	1
1.3 REVIEW METHODOLOGY	2
2. BEST PRACTICE ENVIRONMENT MANAGEMENT REQUIREMENTS.....	4
2.1 EXTERNAL CATCHMENTS AND WATERWAYS.....	4
2.2 INTERNAL STORMWATER MANAGEMENT.....	4
2.3 MONITORING OF PERFORMANCE.....	5
3. EXTERNAL CATCHMENT CONSIDERATIONS	6
4. INTERNAL DRAINAGE PROPOSALS AND REQUIREMENTS	8
4.1 STORM WATER MANAGEMENT PLAN SUMMARY	8
4.2 SWALE SYSTEM	8
4.3 DETENTION PONDS	10
4.4 STORMWATER REUSE.....	12
4.5 OVERALL SITE PLAN.....	12
4.6 ONGOING MANAGEMENT OF THE STORMWATER SYSTEM.....	13
5. HYDROLOGICAL REVIEW OF INTERNAL DRAINAGE SYSTEM	14
5.1 DESIGN FLOWS AND SWALE SIZING	14
5.2 DETENTION POND SIZING	17
6. REGULATORY REQUIREMENT REVIEW	19
6.1 EPA PUBLICATION 788.3 - REFUSE DISPOSAL FACILITY BPEM	19
6.2 WATERWAY REQUIREMENTS	19
6.3 STORM WATER POLLUTANT RETENTION REQUIREMENTS	20
6. CONCLUSIONS	21
7. ABBREVIATIONS	23
APPENDIX A - HYDROLOGIC MODELLING	24

1. Introduction

1.1 Purpose of the Review

This report details a peer review of the document entitled “Wests Road Refuse Disposal Facility, Conceptual Stormwater Management Plan, Wyndham City Council, June 2017” (June 2017 SWMP).

This review was requested by EPA Victoria (EPA) to support its technical assessment of the proposed refuse disposal facility.

The June 2017 SWMP was prepared by Wyndham City Council (Council) to comply with EPA correspondence dated 19 January 2017, requiring:

- A revised Stormwater Management Plan showing how future flows will be managed and
- Details on how contaminated stormwater will be contained on site to prevent the release of contaminated stormwater from site.

This review focuses on the technical calculations contained within the June 2017 SWMP in regard to whether the modelling and data includes consideration of:

- Appropriate delineation of catchments,
- Appropriate modelling techniques for sizing of drainage lines, and
- Sizing of the proposed storage ponds.

Notwithstanding the above, the general drainage requirements as detailed in “Siting, Design, Operation and Rehabilitation of Landfills, Best Practice Environmental Management, Environment Protection Authority Victoria, Publication 788.3, August 2015 (2015 EPA BPEM requirements)” are considered in regard to the application of the June 2017 SWMP.

1.2 Valerie Mag Credentials

I am the author of this report. My name is Valerie-Joy Sally Mag. I am a Civil Engineer and Principal of Stormy Water Solutions. I practice as a consulting hydraulic and hydrologic engineer.

My educational qualifications are as follows:

- Bachelor of Civil Engineering, Monash University (1989)
- Master of Water Resources and Environmental Engineering, Monash University (1993)

I have twenty eight years’ experience and expertise in hydrologic and hydraulic engineering, particularly in the areas of:

- Preparing complex urban and rural flood plain strategies,
- Preparing Water Sensitive Urban Design Strategies,

- Reviewing drainage strategies prepared by other consultants for Melbourne Water and various councils, and
- Regularly preparing and conducting training in drainage and WSUD for the Municipal Association of Victoria, Vic Roads, Melbourne Water, the Department of Tourism Arts and the Environment (Tasmania), ARRB Group and others.

I have had no previous involvement in the site. However, I have a background knowledge of the catchment which I obtained as part of the following projects:

- Production of the concept and functional designs of the wetlands located between Blackforest Road and Greens Road in 2006/2007,
- Production of the Werribee West Floodway Rehabilitation Strategy in May 2006, which relates to the breakaway flow from Werribee River into the Lollypop Creek system in extreme events, and
- Examination of flood impacts on land to the east of the subject site in late 2016 for various landowners.

1.3 Review Methodology

1.3.1 Documents Reviewed

As part of the preparation for this report I have reviewed a report entitled “Wests Road Refuse Disposal Facility, Conceptual Stormwater Management Plan, Wyndham City Council, June 2017”. This report is referred to as the June 2017 SWMP report in this review document.

Specifically I have focused on:

- The delineation of catchments for the various stages,
- The use of the rational method to specify design flows
- The use of Mannings formula to size the swale systems, and the sizing of the proposed storages.

In addition this review considers:

1. The document entitled “Siting, Design, Operation and Rehabilitation of Landfills, Best Practice Environmental Management, Environment Protection Authority Victoria, Publication 788.3, August 2015”. (2015 EPA BPEM requirements),
2. An internal Melbourne Water Corporation (MWC) memo dated 27 July 2017 detailing the 1% Annual Exceedance Probability (AEP) flood extent from external catchments in and adjacent to the subject site,
3. Australian Rainfall and Runoff: A Guide to Flood Estimation, Commonwealth of Australia Ball J, Babister M, Nathan R, Weeks W, Weinmann E, Retallick M, Testoni I, (Editors), 2016,
4. Base map information obtained in AutoCAD format from DELWP being roads, property boundaries, waterways and one metre contour information,

5. Melbourne Water Corporation Land Development Manual (February 2017 web site version),
6. Waterway Corridors Guidelines for greenfield development areas within the Port Phillip and Westernport Region, Melbourne Water Corporation, and
7. Environment Protection Authority Victoria (EPA) publication 480 - Environmental Guidelines for Major Construction Sites.

I have not reviewed the report entitled “Tonkin Consulting report (West’s Road Refuse Disposal Facility Stormwater Management Plan. Ref No. 20131288RA2, Revision B, 5/03/15)” as part of this current Stormy Water Solutions (SWS) assessment process. As such, items suggested as requiring additional information may have been addressed in this previous 2015 report.

1.3.2 Review Methodology

The primary objective of this review is to determine if the hydrological methodology contained within the June 2017 SWMP is appropriate for use and adequately accounts for the runoff expected within the site as it develops.

More broadly, in relation to drainage system design, this review considers if the refuse disposal facility complies with the Best Practice Environment Management BPEM (EPA Publication 788.3).

To determine if the above objectives are met by the proponents SWMP, Stormy Water Solutions (SWS) examined the following:

- External catchment definition,
- The internal cap swale and discharge pond concept design proposals in relation to sediment collection and flood attenuation requirements,
- The swale and detention pond design flows (including independent checks by SWS), and
- Detention pond concept design (including independent checks by SWS).

2. Best Practice Environment Management Requirements

In relation to drainage system design, this review considers if the refuse disposal facility complies with the Best Practice Environment Management BPEM (EPA Publication 788.3) as follows:

- The BPEM represents a default position for siting, design, operation and rehabilitation, with objectives and required or equivalent outcomes.
- Best practice is defined by EPA Publication 1517 Demonstrating Best Practice as a “requirement of statutory policy” and “the best combination of eco-efficient techniques, methods, processes or technology used in an industry sector or activity that demonstrably minimises the environmental impact of a generator of emissions in that industry sector or activity”.

The following details specific drainage requirements in regard to the application of EPA Publication 788.3

2.1 External Catchments and Waterways

Specific requirements in relation to the impact of the site works on external waterways are:

- Table 5.2 of EPA Publication 788.3 specifies that a Buffer distance 100 metres from surface waters to landfill operations is required, and
- Section 5.1.9 states that landfilling must not occur on land liable to flooding if determined to be so liable by the responsible drainage authority or within 100 metres of surface waters (see below).

2.2 Internal Stormwater Management

Section 6.5.1 (Stormwater management) of the document are that:

- Storage ponds and other drainage measures should be designed to contain and control rainfall run-off for a 1-in-20-year storm event for a putrescible landfill,
- Storm events up to 1-in-100-year recurrence intervals should also be considered to ensure that they do not result in any catastrophic failures such as flooding of the landfill or failure of dams or leachate storage ponds,
- The discharge of stormwater from the site should only occur from dams, and only after confirmation that the water is not contaminated, and
- Sediment control features should be designed to enable both silty sediments (able to settle out under gravity) and clayey sediments (will not settle out without flocculating agents) to be removed from the water. Typical features that may remove silty and clayey sediments include shallow, heavily vegetated stormwater control ponds and swales.

2.3 Monitoring of Performance

Section 7.14 (Performance monitoring and reporting) of the document states that the following is required:

- Preparation of a verified monitoring program in accordance with Landfill licensing guidelines (EPA publication 1323).
- Monitoring of the environment in accordance with the verified monitoring program.
- Submission of an annual performance statement.

In general this review aims to assess if the submitted 2017 SWMP meets the above requirements.

3. External Catchment Considerations

Figure 1 below denoted the 1% AEP (100 Year ARI) flood extents as delineated by MWC.

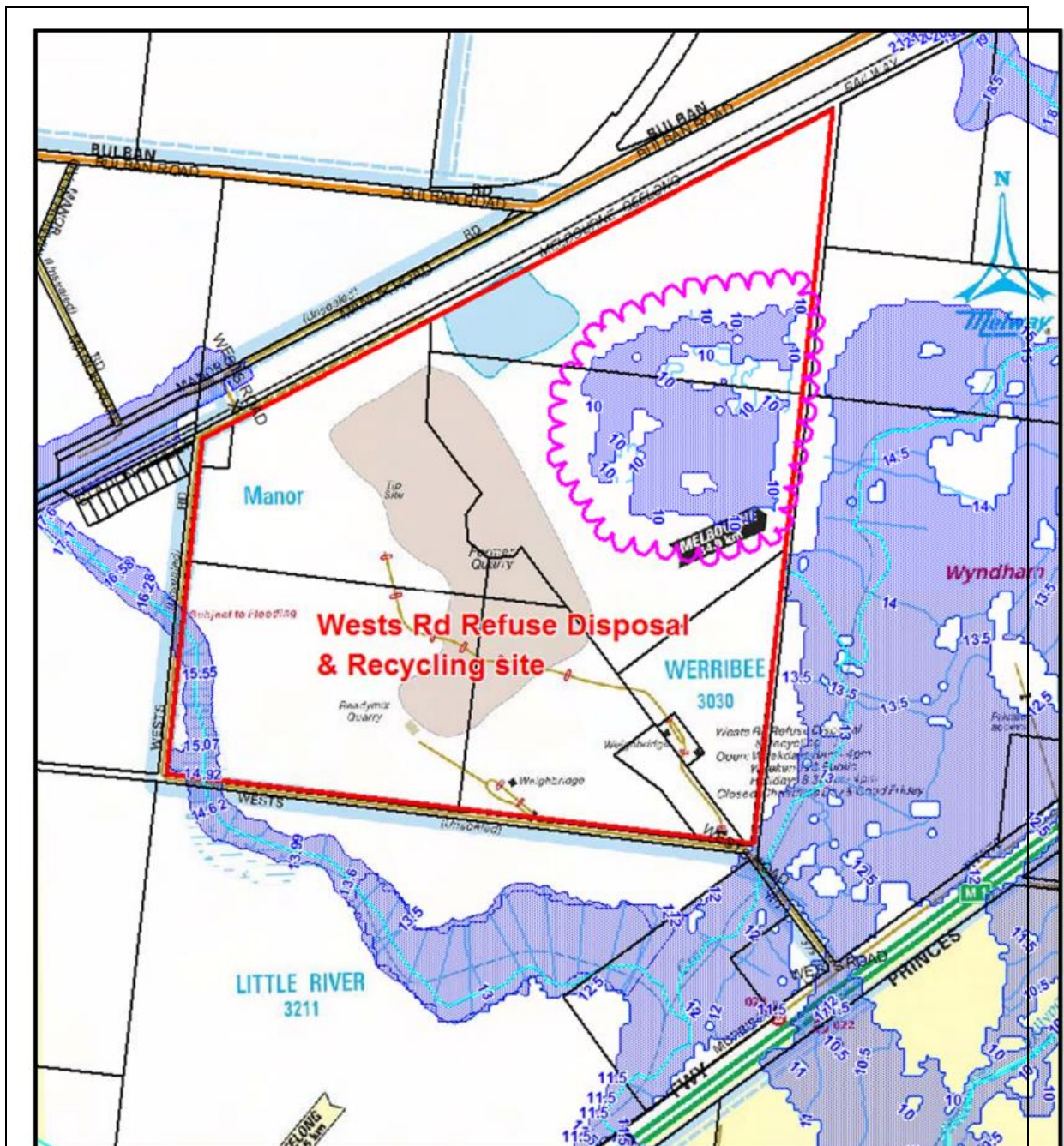


Figure 1 External Waterway 1% AEP impacts on the Subject Site
(Reproduced from an internal MWC memo dated 27 July 2017)

Specific requirements in relation to the impact of the site works on external waterways are:

1. Table 5.2 of EPA Publication 788.3 specifies that a Buffer distance 100 metres from surface waters to landfill operations is required, and
2. Section 5.1.9 states that landfilling must not occur on land liable to flooding if determined to be so liable by the responsible drainage authority or within 100 metres of surface waters.

The issue of impact on external waterways is not specifically covered in the 2017 SWMP report. The issue may have been covered in the previous Tonkin Consulting report (West's Road Refuse Disposal Facility Stormwater Management Plan. Ref No. 20131288RA2, Revision B, 5/03/15). However, I have not reviewed this previous report.

I have scaled Figure 3.1 of the 2017 SWMP to assess if the above two conditions are met. This high level analysis indicates Condition 2 above is probably met, but both Cell 8A (in the south west of the site) and pond P13 in the south east of the site may be within the 100 metre buffer to the defined creek lines.

Council should confirm buffer distances to the existing external creek lines from refuse disposal facility operations to clearly show there is a buffer distance of at least 100 metres between the refuse facility operations and the existing creek lines affecting the site.

4. Internal Drainage Proposals and Requirements

4.1 Storm Water Management Plan Summary

The SWMP is proposed to comprise of:

- A series of open channel stormwater swale drains that collect rainfall runoff from the final cap and the interim cap and distribute this runoff into various stormwater detention ponds located around the perimeter of the site,
- Runoff from external catchments is assumed to be diverted around the site as described in Section 3 above,
- Stormwater runoff from the proposed refuse disposal facility will be classified according to the stage of the site rehabilitation with the collected stormwater treated by removing sediment from the capping soils and then either discharged to the offsite stormwater network surrounding the site, and
- Any outlet flows from the stormwater detention ponds are assumed to discharge at controlled rates to external water courses.

The various components of the SWMP are discussed below.

4.2 Swale System

The cap swales define the inlet swale system to the proposed detention ponds.

SWS generally agrees this with application of the swales as they will assist in retention of sediment prior to discharge to the sediment collection (discharge) ponds.

The swales have been roughly sized in the June 2017 SWMP. Calculations relating to flow (rational method) and swale sizing (Manning's formula) are described in the SWMP.

Section 5.1 below details a hydrological review of the swale design flows and capacities.

In general the review indicates that the design flows defined in the 2017 SWMP are underestimated. SWS suggests that Council review the swale system sizing based on the recommendations in Section 5.1.

The swales are proposed to be grassed. This suggests an ongoing maintenance regime of mowing. If this is the case swale batters must be modified to 1 (vertical) to 5 (horizontal) to ensure safe mowing practices.

Unless the proponent can guarantee mowing of the entire swale system every 6 weeks or so, it would be much more prudent to specify a higher Manning n value to represent sedges and rushes or equivalent. In addition, if retained at the current 1 in 2 and 1 in 3 batters, the swales should be planted with sedges and rushes which require no mowing. This of course will increase Manning's n (to at least about 0.1 – 0.15) and this will increase the swale dimensions required. However planted swales have the advantage of allowing the swales to be modelled to contribute to sediment (and TSS, TP and TN) treatment from the start of the construction of the cap. This will aid in supplementing the sediment collection mechanism of the detention ponds.

Whatever the case, SWS does strongly suggest vegetating inlet swales to reduce the flow velocity in these systems. Flow velocities of over 2 m/s (if grassed) may result in swale erosion. This will not only be an asset maintenance issue but will add sediment input to the sediment collection zones of the detention basins. However, alternative velocity mitigation techniques such as in-line berms, geo-fabric lining etc. can also be used to achieve this objective.

The definition of the land take required for drainage assets on the land fill cap needs to be better defined as the design develops into the functional design stage of the project.

In regard to the swales they will need to be constructed on a traverse slope in the order of 1 in 5 (in some cases). As detailed in Figure 2 below this adds to the total width requirement of the asset. If vegetated swales are utilised, SWS preliminary calculations indicate that this could result in swales in the order of up to 8.5 metres wide being required in some locations.

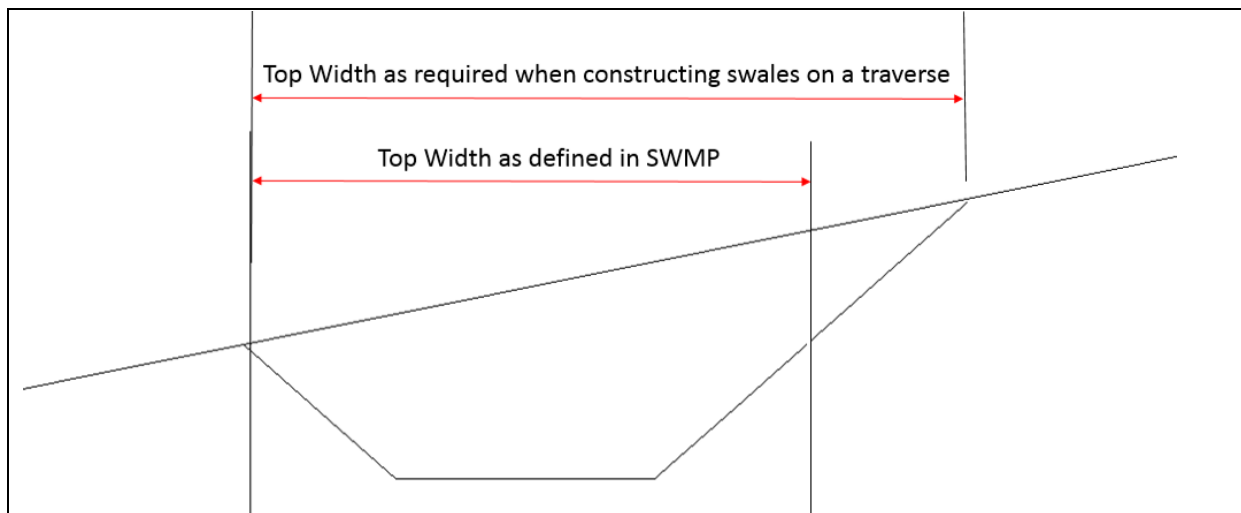


Figure 2 Schematic cross section of swale assets constructed on a traverse requiring land take in addition to the flood water “top width”

In addition all swales will be required to be constructed on a longitudinal slope. In Melbourne drainage swales typically incorporate a 1 in 300 slope (or greater). In some cases, the swales must be aimed slightly uphill so that a slope downhill can be assured. This means some areas downslope of the final swale alignments will not be able to drain the swales.

Little information is given in the SWMP report or plans in relation to the sizing, longitudinal slope and placement of swale systems. In addition, placement also affects catchment delineation assumptions etc. All of these aspects of the cap drainage system are required to be clearly delineated to ensure enough space is available on the refuse disposal facility cap.

No allowance for cap settling and how this may affect the swale assets is detailed in the SWMP. Inspection and maintenance regimes must ensure the integrity of all swales and as the refuse disposal facility settles.

Notwithstanding the above, SWS considers that there is enough room both on the cap, and within the site, to place the swale systems (even if design development requires a relatively large land take for these assets).

4.3 Detention Ponds

4.3.1 Overall Configuration

The objectives of the discharge ponds are to:

- Store sediment, and
- To control the 5% AEP (1 in 20 Year ARI) discharge offsite at the equivalent of the pre-refuse disposal facility activity flow rates.

Figure 3 reproduces a SWS conceptual concept plan of what is usually the requirements of a typical detention pond. The two aspects of the design are discussed below.

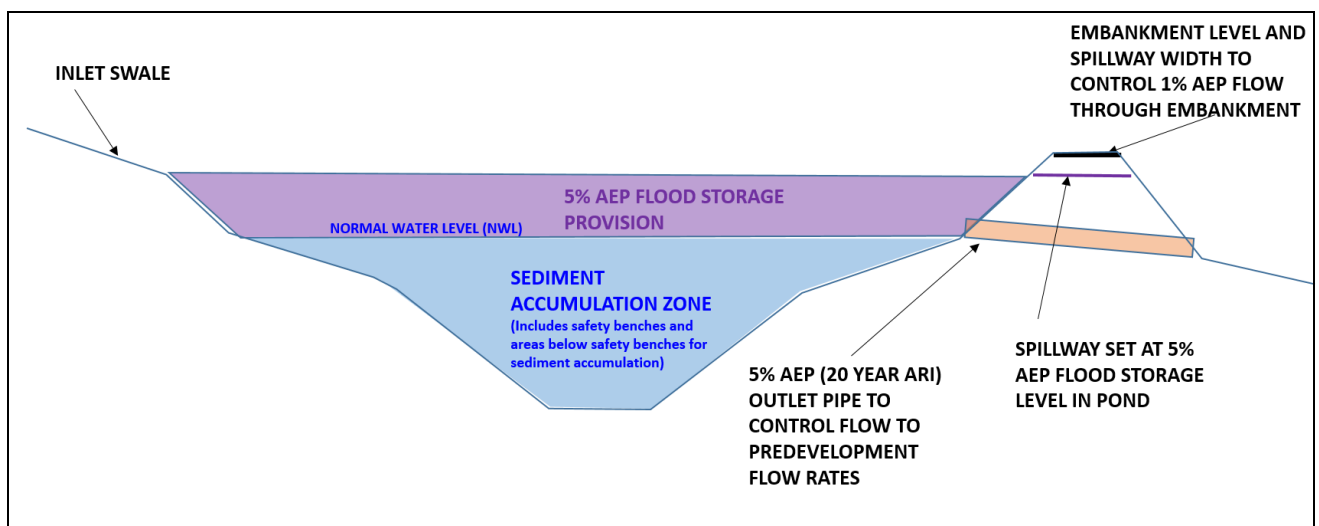


Figure 3 SWS Conceptual Cross Section of typical Discharge Pond

4.3.2 Sediment Accumulation Zone Volume

The sediment accumulation zone can be a pond, and does not need to dry out.

SWS understands that, often in landfill operations, the Sediment Accumulation Zone volumes can be designed in accordance with the International Erosion Control Association (IECA) of Australasia 2008, Best Practice Erosion and Sediment Control, Appendix B - Sediment basin design and operation. The formula is reproduced below,

$$V_s = 10 \times R_{(Y\%, 5\text{-day})} \times C_v \times A \text{ where}$$

V_s = volume of settling zone (m³)

$R_{(Y\%, 5\text{-day})}$ = 1 year, 5-day rainfall intensity default values for the percentile of rainfall depth (Y%) (mm)

C_v = volumetric runoff coefficient

A = catchment area (ha)

SWS has some concerns with the use of this formula. It assesses the efficiency of the system to capture sediment (defined by the sediment accumulation zone water volume and area and the runoff characteristics of the catchment). However, investigation of the amount of sediment which can be stored before cleanout (which is a combination of the capture efficiency calculated above and the amount of sediment expected off the catchment) is not addressed.

SWS has previously compared the sizing of ponds using the above method to the usual Melbourne Water recommended sediment pond sizing formula being:

- The Fair and Geyer Equation used to assess capture efficiency, and
- A sediment load assumed to be 10 times the typical urban load to assess cleanout frequency.

This check indicates the sediment accumulation zones are adequately sized using either method. The sediment accumulation zone should be at least 1 metre deep to ensure adequate allowance for sediment accumulation.

The June 2017 SWMP does not design this aspect of the detention ponds at all. It only assesses the 5% AEP flood detention role of the asset (as discussed below). As such, it is recommended that more detail in regard to this aspect of all detention ponds be provided by council.

4.3.3 Flood Storage Zone

The flood storage zone is usually proposed to slow the water down to discharge offsite at the equivalent of the pre-refuse disposal facility activity.

Notwithstanding the above, SWS considers that the design assumptions for the sizing of the flood storage zones to be simplistic and potentially under sizing the required volume given the current requirement of ARR 2016.

This aspect of the design is discussed further in Section 5.2 of this report

4.4 Stormwater Reuse

The June 2017 SWMP does not specify any information relating to possible stormwater reuse on site. Usual uses in applications such as this are:

- Dust Suppression,
- Wheel/Truck Washing, and
- Compacted Clay Liner & Cap Construction.

It is suggested that, if stormwater is to be used on site, that an appropriate water balance (using at least 10 years of daily rainfall and evaporation data), should be formulated during the functional/detailed design stage of the project to clearly define:

- Storage volumes,
- Reliability of supply, and
- The actual volume used.

The MUSIC model water balance component would be an appropriate model to use in this application. The modelling would assist the proponent in site management, rather than address any EPA concerns in regard to this stormwater issue.

The applicant may also be required to apply for (or modify an existing) stormwater harvesting licence with the appropriate authority.

4.5 Overall Site Plan

The June 2017 SWMP delineates various detention pond locations and sizes and swale locations for Stages 1 – 4 of the site operation. Overall SWS found that the plans prepared were transparent in conveying the drainage design intent of the stages.

However, the June 2017 SWMP staging plans are considered very high level and not entirely transparent in regard to the following aspects.

- The swale systems are just detailed as lines. Swales are required to be clearly shown in regard to “land take” (see Figure 2 above). All swales require a 1/300 (min) fall over the swale length.
- Adequate delineation of all detention ponds is required including specifying proposed normal water levels, batter requirements, spillway levels, crest requirements etc. to ensure adequate space has been allocated on site.
- The final cap will be prone to settlement over time. The impact on the integrity of the drainage swales and ponds located on the cap over time should be covered via implementing the inspection and maintenance program in regard to this issue.

Given the above SWS consider that the SWMP drawings are relatively high level. However, as detailed in this report, system concept design sizes are (in the most part) probably reasonable from a concept design perspective.

There appears to be adequate site area to modify and change designs over time as the design process goes forward. Therefore, provided transparent and detailed calculations as recommended in this report are undertaken going forward (as part of the design development process), SWS considers the usual EPA requirements can be met.

4.6 Ongoing Management of the Stormwater System

The June 2017 SWMP does not describe any proposed monitoring system for discharge off site.

Surface water from the discharge ponds must be controlled and monitored to ensure trigger concentrations of contaminants of concern are not exceeded. The following strategies should be considered in response to the contamination of surface waters;

- Sampling of surface water to determine the extent of contamination;
- Containment of the contaminants; and
- Remedial actions.

SWS suggests that inspection and maintenance schedules be required for all drainage systems at the functional design stage of each element (including all swales and detention ponds). Schedules must clearly define each element, its upstream and downstream inputs, its objectives in the SWMP, and its potential issues.

The asset managers must commit to diligent implementation of these schedules. In addition, audits of treatment systems should be undertaken periodically to:

- Monitor the condition of assets,
- Assess the effectiveness of maintenance,
- Determine likely timeframes for renewal,
- Confirm that discharge of stormwater from the intermediate capped areas site is only occurring from discharge ponds, and
- Confirm that discharge of stormwater from the site is not contaminated to the relevant authority requirements.

Of course it is assumed that prudent site management of at source sediment loads will occur as per similar applications in Melbourne (e.g. silt fences, berms in the swales etc.).

5. Hydrological Review of Internal Drainage System

5.1 Design Flows and Swale Sizing

5.1.1 Application of the Rational Method in the June 2017 SWMP

The June 2017 SWMP design flows were obtained using the rational method. It should be noted that the 2016 ARR strongly suggests, that for catchments incorporating diversions and storages, the rational method may not be an appropriate method to determine design flows, as it has proven to be quite simplistic. As such, a more robust model such as RORB (or equivalent) should be used. RORB will be able to account for any flood retardation in the discharge basins (if required) and therefore better define both inlet and outlet flows from the discharge ponds.

In addition to the above the following is noted in regard to the application of the rational method in the June 2017 SWMP.

The June 2017 SWMP uses 5% AEP runoff coefficients of 0.3 for intermediate covered areas and 0.1 for final cap cover catchment areas. These runoff coefficients do appear lower than usually applied in landfill situations. Given current Melbourne Water 1% AEP runoff coefficient recommendations and consideration of ARR frequency factors, the following 5% AEP runoff coefficients could be deemed reasonable:

- The existing runoff coefficient of 0.25 for predevelopment conditions,
- An interim cap runoff coefficient of 0.45 to allow for no vegetation and increased slope, and
- A final cap runoff coefficient of 0.35 to allow for planting of the cap.

An arbitrary review of catchment area via scaling the staging plans into AutoCAD indicates that, in some cases, delineated catchment area estimates in the June 2017 SWMP may be underestimated slightly.

Notwithstanding the above, the greatest influence of the design flows as detailed in the June 2017 SWMP is the use of the Kinematic Wave Equation to define the time of concentration of each catchment. The Kinematic Wave Equation is only valid for sheet flow on wide surfaces (such as very shallow flow off a hillside). Once flow is confined to a channel, the velocities increase and the Kinematic Wave Equation is no longer valid. The use of the Kinematic Wave Equation for all flow paths has resulted in very long time of concentration estimates. This has resulted in 5% AEP design flow rates in the June 2017 SWMP which are much less than would be expected (See Section 5.1.2 below).

In addition, it should be noted that in the June 2017 SWMP time of concentration spreadsheets (detailed in the appendices), iteration of the Kinematic Wave Equation to ensure the final design

intensity matches the time of concentration intensity used in the calculation has not occurred. As such, not only does SWS consider that the Kinematic Wave Equation is not valid for use along most of the flow paths, but it was applied incorrectly.

Finally, one of the reasons the rational method is not valid under ARR 2016 is that hydrologists are now required to consider:

- The updated Bureau of Meteorology (BoM) design intensities (available on the BoM web site), and
- Consideration of ten temporal patterns for each storm duration (as opposed to one) to ensure that the variable nature of the way rainfall falls on a catchment for a designed AEP event is captured.

This current ARR 2016 flow estimate method have, in no way, been captured in the June 2017 SWMP. Considering it has been one year since the release of ARR 2016 this is considered a major oversight.

5.1.2 Design Flow and Swale Sizing Review

Given the above concerns, SWS has undertaken an analysis of the catchment contributing to the south eastern outfall from the site (Pond P13) for Stage 1 and Stage 3 conditions. The aim of examining these two stages is to assess the design flow results detailed in the June 2017 SWMP report.

The analysis performed was completely consistent with current ARR 2016 recommendations and:

- Used the RORB model to predict flows,
- Used the catchment parameters currently recommended by Melbourne Water for this area of Melbourne,
- Used pervious area runoff coefficients given consideration of current Melbourne Water advice in relation to these values,
- Utilised 2016 rainfall intensities from the BoM web site, and
- Used the temporal patterns (10 for each storm duration) as currently required under ARR 2016.

Appendix A detailed the RORB model setup and results. Tables 1 and 2 below compare the SWS 5% AEP design flows to those extracted from the June 2017 SWMP. In addition, design flows are compared to the estimated swale and culvert capacities (as detailed in the June 2017 SWMP).

Table 1 Comparison of Stage 1 (Existing Condition) Design Flows and System Capacities

Location as defined in 2017 SWMP	Assumed catchments contributing to flow ¹	Assumed 2017 SWMP Design Flow (m ³ /s)	Equivalent SWS RORB Reach ²	RORB Design Flow (m ³ /s)	Drain Type Defined in 2017 SWMP	2017 Drain Capacity ^{3,4}
Area 10	Area 10	0.208	Reach 5	0.5	450 mm ø	0.25
Area 12	Areas 10+12	0.26	Reach 7	0.7	D13 Type B	0.42
Areas 13	Areas10+12+13	0.402	Reach 13	0.9	D13 Type C	1.25

1 - It is assumed that the flow used to size swales is the "addition" of contributing catchments, although this is not clear in Table 3.1 of the 2017 SWMP

2 - Reach as defined in Figure A.1, Appendix A

3 - Assumes a 300 mm driving head on a culvert acting under outlet control if the drainage system is a culvert

4 - Manning's formula assuming 1/340 longitudinal slope (based on existing site natural surface slope along D1) and n=0.04 for grass

Table 2 Comparison of Stage 3 Design Flows and System Capacities

Location as defined in 2017 SWMP	Assumed catchments contributing to flow ¹	Assumed 2017 SWMP Design Flow (m ³ /s)	Equivalent SWS RORB Reach ²	RORB Design Flow (m ³ /s)	Drain Type Defined in 2017 SWMP	2017 Drain Capacity ^{3,4}
Area 24	Area 24	0.253	Reach 5	1.3	D19 Type c	1.25
Area 12	Areas 24+12	0.305	Reach 11	1.1	Twin 600 mm ø	1.0
Part Area 13	Areas 24+12 ⁵	0.305	Reach 16	1.8	D13a Type D	1.6

1 - It is assumed that the flow used to size swales is the "addition" of contributing catchments, although this is not clear in Table 3.1 or Table 5.1 of the 2017 SWMP

2 - Reach as defined in Figure A.4, Appendix A

3 - Assumes a 300 mm driving head on a culvert acting under outlet control if the drainage system is a culvert

4 - Manning's formula assuming 1/340 longitudinal slope (based on existing site natural surface slope along D19 and D13a) and n=0.04 for grass

5 - 2017 SWMP indicates no additional catchment from 13 into P13

As detailed in Tables 1 and 2, the SWS review indicates that the 5% AEP design flows as detailed in the June 2016 SWMP are less than expected. It is recommended that either:

1. At the very least, the rational method be applied given a review of catchment areas, the runoff coefficients and the time of concentration determination (given the discussion in Section 4.1 above) to obtain flows more in line with those calculated by SWS using RORB, or
2. A complete analysis of all stages and catchments be undertaken with an appropriate model (such as RORB) given current 2016 ARR and Melbourne Water recommendations in relation to calculation of flood flows.

It should be noted, that RORB (or similar) would aid in designing the detention ponds as detailed in Section 4.2 below. The rational method is not an appropriate method for designing storages (via incorporation in Boyd's Method or similar) as the contributing catchments are too large.

Notwithstanding the above, swale sizes delineated in the June 2017 SWMP are in the order of magnitude of what may ultimately be required. In addition, there appears to be adequate site area to modify and change designs over time as the design process goes forward. Therefore, provided transparent and detailed calculations as recommended above (or required by Melbourne Water) are undertaken going forward (as part of the design development process), SWS considered the EPA requirements can be met.

5.2 Detention Pond Sizing

It appears that the 2017 SWMP (conservatively and simplistically) assumes all of the 5% AEP runoff is to be stored, and no outflow from the detention ponds occur in this event. As described in Section 4.3.1 of this report, the actual outflow between the sediment pond normal water level and the 5% AEP spillway level should be designed to mimic the "natural" predevelopment 5% AEP flow at this point.

Appendix A detailed an analysis to mimic the June 2017 SWMP approach of specifying storage volumes based on the inflow volume of a 5% AEP 24 hour rainfall event. As such the detention storage volume calculated for Pond P13 (Stage 1) is the inflow hydrologic volumes, not the required flood storage volumes. Although consistent with the 2017 SWMP approach, the flood storage volume required above the sediment pond normal water level will be less than specified (for the specified critical duration).

The June 2017 SWMP assumes a constant rainfall duration of 24 hours to calculate the 5% AEP (20 year ARI) pond volumes. This is a very simplistic approach. ARR 2016 requires consideration of 10 temporal patterns for the 24 durations which ARR 2016 recommends (10 minutes to 7 days). In essence, current best practice is to simulate 240 storms through the detention storage. The June 2017 SWMP simulates one.

The RORB inflow hydrographs into P13 for the ensemble of the 24-hour storm event are shown in Figure A.3. For the 5% AEP 24-hour event, the median inflow volume to P13 is 7560 m³ (TP18). This is slightly larger than the June 2017 SWMP value of 6720 m³.

The analysis indicates that the June 2017 SWMP gives a reasonable estimate of the 5% AEP inflow volume to Pond P13, assuming the critical inflow volume occurs for a 24 hour critical duration.

The 2015 EPA BPEM requirements require detention of the 5% AEP event, but SWS cannot find reference to only considering the 24 hour storm duration.

The actual critical duration (in relation to storm inflow volume in this case) as calculated by RORB is 144 hours. As such, the 5% AEP critical volume of inflow into P13 occurs in the 144 hour 5% AEP event and results in an inflow volume of approximately 12,500 m³. Again, the actual “detention” storage required will be less than this value, once pond outflow is taken into account.

Given the above I conclude that more work is required to adequately design the SWMP detention ponds for their two functions being:

- Specifying a sediment and pollutant retention zone water volume below normal water level, and
- Specifying the flood retention aspect of the asset being:
 - A 5% AEP (20 year ARI) outlet pipe design to ensures post development 5% AEP outflow from the site is less than predevelopment conditions,
 - a 5% AEP (20 year ARI) flood storage between the normal water level and the 5% AEP spillway level given adequate consideration of the stage/storage/discharge relationship within a model capable of modelling flood storage effects adequately (such as RORB or XP RAFTS), and
 - A 1% AEP spillway capacity between the spillway level and the embankment crest to the required 1% AEP design flow specified above.

It should be noted that the detention ponds are not required to retard the 1% AEP flow. They are only required to safely discharge this flow. As such the 1% AEP flows estimate is only required to set the pond spillway requirements.

6. Regulatory Requirement Review

The usual SWMP regulatory requirements as discussed below.

6.1 EPA Publication 788.3 - Refuse disposal facility BPEM

EPA Publication 788.3 Best Practice Environmental Management- Siting, design, operation and rehabilitation of refuse disposal facilities dated August 2015 (BPEM) outlines environment performance objectives for Refuse disposal facilities and sets out design criterion to apply in developing a stormwater management system.

Section 6.5 of the BPEM states:

- “Storage ponds and other drainage measures should be designed to contain and control rainfall run-off for a 1-in-20-year storm event for a putrescible refuse disposal facility or a 1-in-10-year storm event for a solid inert refuse disposal facility. Storm events up to 1-in-100-year recurrence intervals should also be considered to ensure that they do not result in any catastrophic failures such as flooding of the refuse disposal facility or failure of dams or leachate storage ponds.”
- “All dams should have spillways with erosion-control measures such as rocks and erosion-resistant vegetation.
- The discharge of stormwater from the site should only occur from dams, and only after confirmation that the water is not contaminated.”

I consider this condition can be met by designing the detention ponds to the recommendation of Sections 4, 5.1 and 5.2 of this review report.

6.2 Waterway Requirements

Specific requirements in relation to the impact of the site works on external waterways are:

- Table 5.2 of EPA Publication 788.3 specifies that a Buffer distance 100 metres from surface waters to landfill operations is required, and
- Section 5.1.9 states that landfilling must not occur on land liable to flooding if determined to be so liable by the responsible drainage authority or within 100 metres of surface waters (see below).

The SWS investigation of the SWMP indicates that Council should confirm buffer distances to the existing external creek lines from refuse disposal facility operations to clearly show the above conditions can be met.

6.3 Storm Water Pollutant Retention Requirements

Discharges into downstream waterways should be in accordance with SEPP - Waters of Victoria, June 2003. SEPP - Waters of Victoria lists the environmental quality indicators and objectives that shall not be exceeded.

In reality, the June 2017 SWMP only addresses the “sediment laden runoff” by (it is assumed) assigning a sediment retention mechanism to all the detention ponds. In specifying this treatment mechanism the only stormwater pollutant addressed is sediment. Other pollutants such as salinity, suspended solids, turbidity, colour, total phosphorous and nitrogen are not proposed to be treated specifically by the SWMP.

For completeness, a full MUSIC stormwater pollutant model (to current Melbourne Water standards) should be completed to clearly show predicted suspended solids, total nitrogen and total phosphorus level reduction as all identified site outfall points. It is assumed pollutant reductions should be to current best practice being 80% retention of TSS, 45% retention of TP and 45% retention of TN, for all stages of the facility.

7. Conclusions

The June 2017 SWMP was prepared by Wyndham City Council (Council) to comply with EPA correspondence dated 19 January 2017, requiring a

- Revised Stormwater Management Plan is required showing how future flows will be managed and
- Showing how contaminated stormwater will be contained on site to prevent the release of contaminated stormwater from site.

On review I consider that the site and staging delineation detailed in the June 2017 SWMP is transparent and clear. However, calculations and asset plans are not of an adequate standard to meet the above two requirements.

In particular:

- The review has concluded that the 5% AEP design flows are low compared to the values detailed in this review,
- The design assumptions for the sizing of the flood storage zones in the detention ponds are simplistic and potentially under sizing the required volume given the current requirement of ARR 2016,
- The June 2017 SWMP does not design the sediment collection zone of the detention ponds at all,
- No information is given in relation to stormwater treatment, except that it is implied that the detention ponds will retain pollutants on site (although this has not been proven with adequate calculations),
- The June 2017 SWMP does not specify any information relating to possible stormwater reuse on site,
- The June 2017 SWMP asset plans are considered very high level and not entirely transparent in regard to the following aspects.
 - Little information is given in relation to the sizing, longitudinal slope and placement of swale systems,
 - The swale systems are just detailed as lines whereas they should be clearly shown in regard to “land take”,
 - Adequate delineation of all detention ponds is required including specifying proposed normal water levels, batter requirements, spillway levels, crest requirements etc. to ensure adequate space has been allocated on site, and
 - The impact on the integrity of the drainage swales and ponds located on the cap over time should be covered via implementing the inspection and maintenance program in regard to this issue.

Future information required to meet the appropriate regulatory requirements should include the following:

- The design flows for all catchments and stages be updated given:
 - At the very least, the rational method application given a review of catchment areas, the runoff coefficients and the time of concentration determination (given the discussion in Section 4.1 above) to obtain flows more in line with those calculated by SWS using RORB, or
 - A complete analysis of all stages and catchments with an appropriate model (such as RORB) given current 2016 ARR and Melbourne Water recommendations in relation to calculation of flood flows,
- Adequate definition of the land take and asset dimensions required for drainage assets on the land fill cap,
- Confirmation of buffer distances to the existing external creek lines from refuse disposal facility operations to clearly show there is a buffer distance of at least 100 metres between the refuse facility operations and the existing creek lines affecting the site,
- Adequate design consideration of the detention ponds for their two functions being:
 - Specifying a sediment and pollutant retention zone water volume below normal water level, and
 - Specifying the flood retention aspect of the asset being:
 - A 5% AEP (20 year ARI) outlet pipe design to ensure post development 20 year outflow from the site is less than predevelopment conditions,
 - a 5% AEP (20 year ARI) flood storage between the normal water level and the 5% AEP spillway level given adequate consideration of the stage/storage/discharge relationship within a model capable of modelling flood storage effects adequately (such as RORB or XP RAFTS), and
 - A 1% AEP spillway capacity between the spillway level and the embankment crest to the required 1% AEP design flow specified above.
- A MUSIC stormwater pollutant model (to current Melbourne Water standards) to clearly show predicted suspended solids, total nitrogen and total phosphorus level reduction as all identified site outfall points.

There appears to be adequate site area to modify and change designs over time as the design process goes forward. Therefore, provided transparent and detailed calculations as recommended in this report are undertaken going forward (as part of the design development process), SWS considers the usual EPA requirements can be met. By completing detailed calculations, modelling and site analysis, SWS considers that the requirements as detailed above will be shown to be met as the design process develops. However, in meeting these requirements additional land take for drainage assets (in addition to what is shown in the June 2017 SWMP) may be required.

8. Abbreviations

Table 3 lists some common abbreviations and drainage system descriptions and their definitions which are referred to in this report.

Table 3 Common Drainage Abbreviations

Abbreviation Descriptions	Definition
AHD - Australian Height Datum	Common base for all survey levels in Australia. Height in metres above mean sea level.
AEP – Annual Exceedance Probability	The probability of an event being exceeded per year. i.e. 1% AEP = 100 Year ARI event.
ARI - Average Recurrence Interval.	The average length of time in years between two floods of a given size or larger
ARR	Australian Rainfall and Runoff
BPEM	Best Practice Environmental Management
Detention Basin or Retarding Basin	A man made depression or dam which allows surface runoff to be stored for a period of time for gradual dissipation of outflow to protect downstream properties from flood impact.
Flood Volume	The total volume of surface runoff associated with a flood event = the area under the relevant flood hydrograph (m ³)
Flood Storage Area	A natural or man made depression or dam (e.g. retarding basin) which allows surface runoff to be stored for a period of time for gradual dissipation of outflow.
Hectare (ha)	10,000 square metres
Hydrograph	Graph of Time (seconds, x axis) versus surface runoff (y axis, m ³ /s) for a particular rainfall event
Kilometre (km)	1000 metres
m ³ /s -cubic metre/second	Unit of discharge usually referring to a design flood flow along a stormwater conveyance system
Retarding basin or Detention Basin	A man made depression or dam which allows surface runoff to be stored for a period of time for gradual dissipation of outflow to protect downstream properties from flood impact.
RORB	Hydrologic computer program used to calculate the design flood flow (in m ³ /s) along a stormwater conveyance system (e.g. waterway or drain)
Sedimentation basin (Sediment pond)	A pond that is used to remove coarse sediments from inflowing water mainly by Settlement processes.
SWS	Stormy Water Solutions
Total Catchment Management	A best practice catchment management convention which recognises that waterways and catchments do not stop at site boundaries and decisions relating to surface water management should consider the catchment as a whole
TN	Total Nitrogen
TP	Total Phosphorus
TSS	Total suspended solids
WSUD	<i>Water Sensitive Urban Design</i> The use of naturalistic drainage features to meet stormwater pollutant removal, ecological, social landscape and drainage objectives.

Appendix A - Hydrologic Modelling

The RORB Runoff Routing Program (Version 6.31) was used to determine the design flows originating from the subject site. RORB is a general runoff and stream flow routing program used to calculate flood hydrographs from rainfall and other channel inputs. It subtracts losses from rainfall to produce rainfall excess and routes this through catchment storage to produce the hydrograph.

RORB was used by SWS to assess the design flows specified in the June 2017 SWMP.

A.1 SWMP Stage 1

A.1.1 Model Description

Figure A.1 below details the RORB model setup. The RORB model layout has been based on the site SWMP (Section 3) developed by Tonkin (June 2017). Tables A.1 and A.2 detail the tabulation of the RORB model inputs.

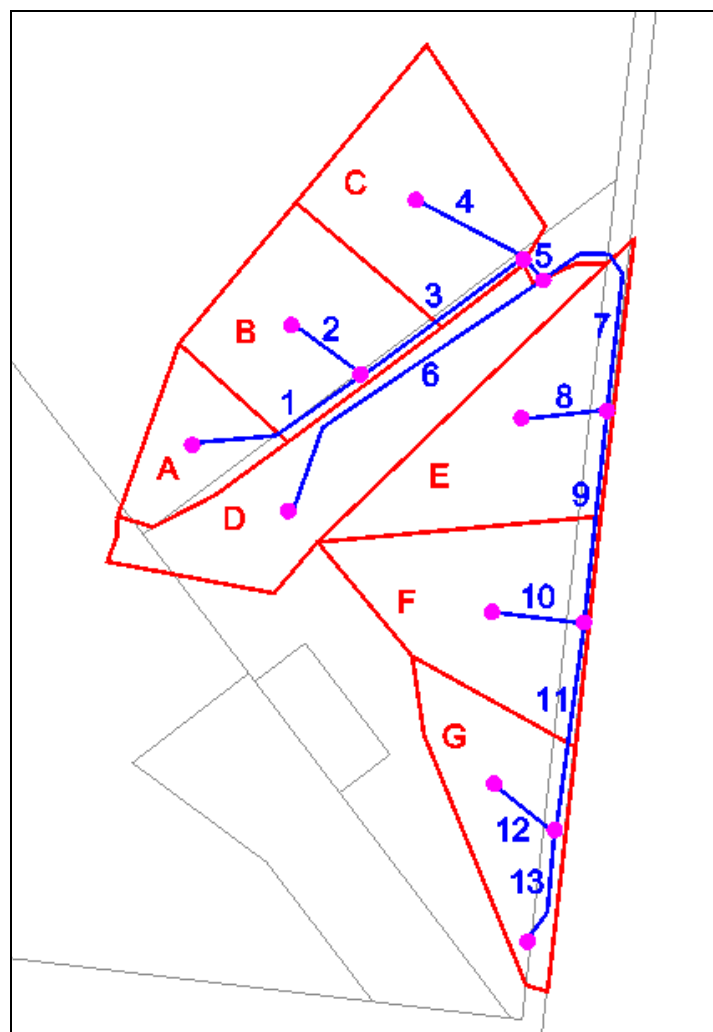


Figure A.1 Stage 1 RORB Model Layout

Table A.1 Stage 1 RORB Model Sub-Area Definition

Sub Area	Area (ha)	Area (km ²)	Fraction Imperviousness	Area Tonkin SWMP	Cover Type
A	1.39	0.014	0.10	10	Intermediate
B	2.89	0.029	0.10	10	Intermediate
C	3.30	0.033	0.10	10	Intermediate
D	3.82	0.038	0.00	12	Final Capping
E	3.59	0.036	0.00	13	Final Capping
F	3.44	0.034	0.00	13	Final Capping
G	2.48	0.025	0.00	13	Final Capping
TOTAL	20.9	0.209	0.04		

Table A.2 Stage 1 RORB Model Reach Definition

Reach	Length (km)	slope %	Reach Type
			Pre
1	0.180	3.5%	EX/UNLINED
2	0.080	1.3%	NATURAL
3	0.190	3.5%	EX/UNLINED
4	0.117	0.9%	NATURAL
5	0.028	1.0%	PIPED
6	0.339	0.9%	EX/UNLINED
7	0.224	0.2%	EX/UNLINED
8	0.082	1.2%	NATURAL
9	0.204	0.2%	EX/UNLINED
10	0.090	1.1%	NATURAL
11	0.201	0.2%	EX/UNLINED
12	0.077	1.3%	NATURAL
13	0.112	0.2%	EX/UNLINED

A.1.2 Model Parameters

RORB is based on the following equation relating storage (S) and discharge (Q) of a watercourse:

$$S = k \times Q^m \text{ where } k = K_c \times K_r$$

The values of K_c and m are parameters that can be obtained by calibration of the model using corresponding sets of data on rainfall for selected historical flows. If historical flows are unknown, values can be estimated from regional analysis or by values suggested by ARR 2016. The value of k_r is a physical parameter related to the reach type chosen by the modeller which is automatically calculated by RORB.

In this case, flow gauging information was not available. However, a regional parameter set (recommended by Melbourne Water for this area of Melbourne) is applicable.

$$K_c = 1.19 \times A^{0.56} = 0.50$$

$$m = 0.8$$

Other parameters of RORB are the initial loss (IL) and the pervious area runoff coefficient (C_{Perv}). IL is the amount of rainfall needed before runoff occurs. Again, the Melbourne water regional parameter set was used:

$$IL_{1\% AEP} = 15 \text{ mm},$$

The pervious area runoff coefficient adopted for all events is in line with the Melbourne Water Corporations Guidelines as follows:

$$C_{1\% AEP, perv} = 0.6, C_{5\% AEP, perv} = 0.5, C_{9.5\% AEP, perv} = 0.4, C_{18.13\% AEP, perv} = 0.3$$

Australian Rainfall and Runoff (ARR) 2016 Data hub (at: 37.9375 S, Lon: 144.5875 E, accessed: 7 August 2017) rainfall depths, rainfall temporal patterns and areal reduction factors ($A = 0 \text{ km}^2$) have been used in the model.

A.1.3 Model Verification

It is required to check the estimated flows against other flow calculation methods to ensure the RORB model developed is valid for application. To achieve this the flows using the RORB model were compared to flows obtained from the 'All Catchment' Flood Regression Curves for Victoria produced by the Department of Conservation and Natural Resources 1994 ($Q_{1\% AEP} = 4.67 \times A^{0.763}$). A flow from this method is a "rule of thumb" estimate only and therefore should not to be used for designing or planning purposes.

As can be seen in Table A.3 below, the SWS RORB model is close to the comparison method and appropriate for use.

Table A.3 Stage 1 Model 1% AEP Verification

Model	1% AEP Flow at Location
	P13
2017 RORB Model (2016 ARR)	1.8 m ³ /s (45-min TP26)
Regression Curve	1.4 m ³ /s

Note: RORB flows are expected to be slightly higher than "rural" in this application given the constructed swale drains minimising reach storage effects

A.1.4 RORB Design Flow Estimates

Peak 5% AEP (20 Year ARI) flows have been calculated throughout the Stage 1 catchment as described in Table A.4.

Table A.4 5% AEP (20 Year ARI) Critical Flows at locations throughout Stage 1

Location	Peak 5% AEP Flow	Storm Duration	Temporal Pattern
Upstream of the 450mmØ	0.5 m ³ /s	1.5-hour	TP13
Upstream of Reach 7	0.7 m ³ /s	1.5-hour	TP13
Into Pond P13	0.9 m ³ /s	1.5-hour	TP16

The above flows are the flows required for the sizing of the culvert and swales in the Stage 1 catchment upstream of Pond P13.

P13 should be defined as a retardation storage facility (retardation storage in the airspace between the sediment pond normal water level and the 20 year spillway level). The spillway is required to be designed for the 1% AEP (100 year ARI) event.

As such the results for all 1% AEP (100 Year ARI) simulations into Pond P13 are shown in Figure A.2 with the critical 1% AEP inflow into P13 being 1.8 m³/s (45-minute duration, TP26).

This is a conservative estimate of the spillway flow requirement, as there will be some stormwater detention in this event in the 20 year flood storage zone.

Flood storage requirements are discussed in A.1.5 below.

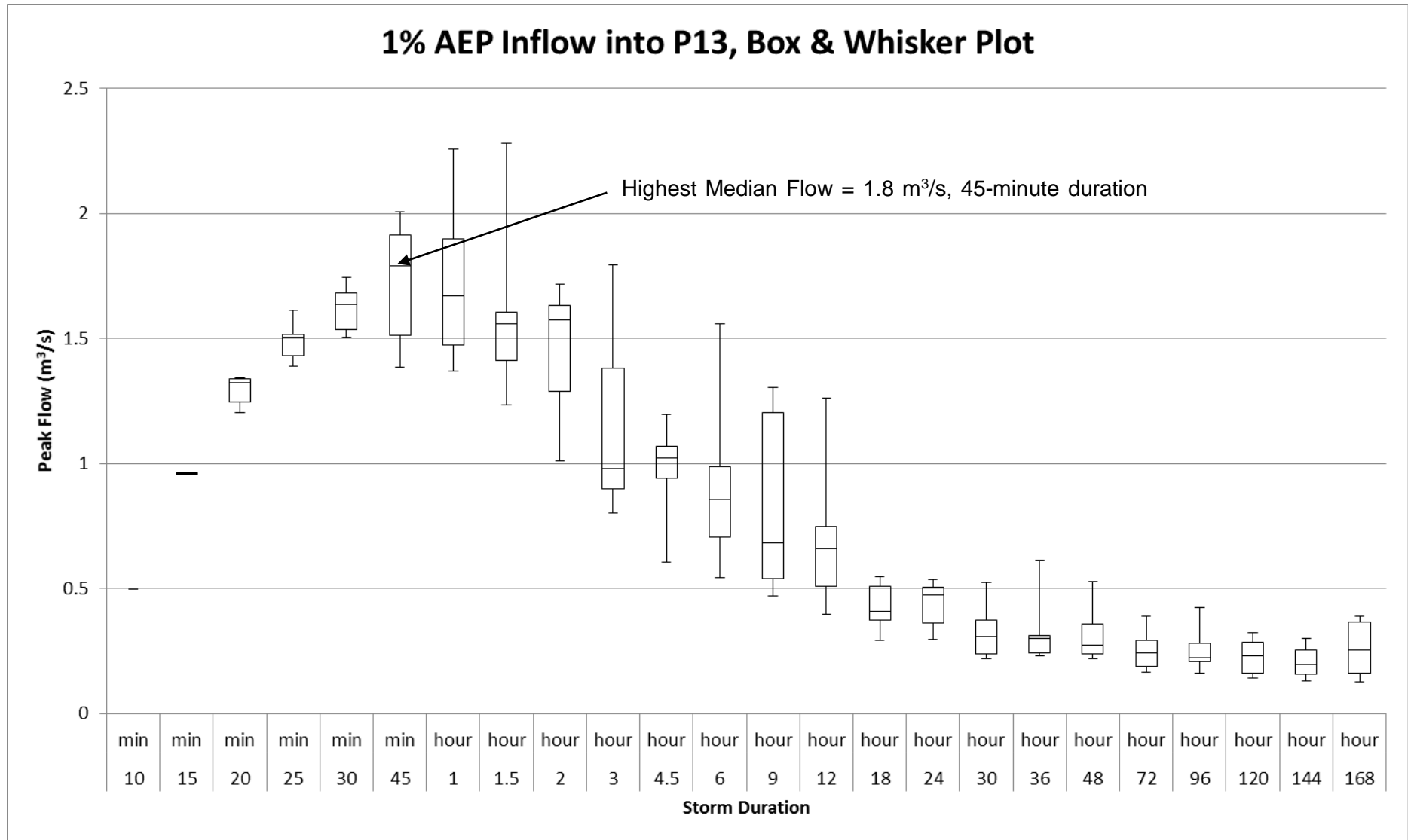


Figure A.2 Stage 1, 1% AEP Inflow into P13 RORB Results

A.1.5 Retardation Storage P13

A storage has been modelled at P13 to determine if the volume specified in the June 2017 SWMP of 4,837 m³ is sufficient (Section 3.2.3). The calculations in the 2017 SWMP Appendix C indicate that a volume of 6720 m³ is required for the Stage 1. The value reported in the text appears to be the Stage 2 value and is assumed to be an error in the table.

It appears that the 2017 SWMP (conservatively and simplistically) assumes all of the 5% AEP runoff is to be stored, and no outflow from the pond occurs in this event. As described in Section 4.3.1 of this report, the actual outflow between the sediment pond normal water level and the 5% AEP spillway level should be designed to mimic the “natural” predevelopment 5% AEP flow at this point.

Given the above, the storage volumes estimated by SWS below are the inflow hydrologic volumes, not the required flood storage volumes. Although consistent with the 2017 SWMP approach, the flood storage volume required above the sediment pond normal water level will be less than specified below (for the specified critical duration).

The 2017 SWMP assumed a constant rainfall intensity of 24 hours to calculate the 5% AEP (20 year ARI) pond volumes. This is a very simplistic approach. ARR 2016 requires consideration of 10 temporal patterns for calculation of hydrograph volumes.

The RORB inflow hydrographs into P13 for the ensemble of the 24-hour storm event are shown in Figure A.3. For the 5% AEP 24-hour event, the median inflow volume to P13 is 7560 m³ (TP18). This is slightly larger than the Tonkin SWMP value of 6720 m³.

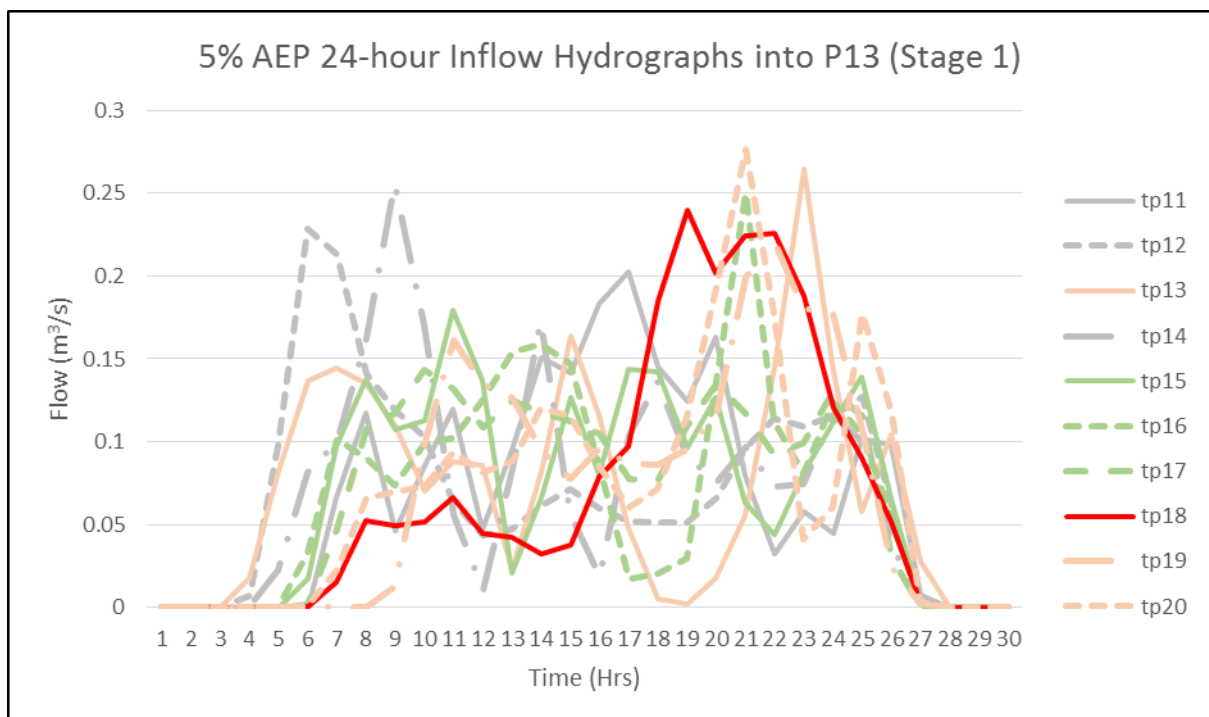


Figure A.3 5% AEP 24-hour Storm hydrographs simulated

The above analysis indicates that the 2017 SWMP gives a reasonable estimate of the 5% AEP inflow volume to Pond P13, assuming the critical inflow volume occurs for a 24 hour critical duration.

The 2015 EPA BPEM requirements require detention of the 5% AEP event, but SWS cannot find reference to only considering the 24 hour storm duration.

The actual critical duration as calculated by RORB in this case is 144 hours. As such, the 5% AEP critical volume of inflow into P13 occurs in the 144 hour 5% AEP event and results in an inflow volume of approximately 12,500 m³. However, the flood storage required will be lower than this volume, given consideration of pond outflows.

Given the above I conclude that more work is required to adequately design Pond P13 to account for its two functions being:

- Specifying a sediment and pollutant retention zone water volume below normal water level, and
- Specifying the flood retention aspect of the asset being:
 - A 5% AEP (20 year ARI) outlet pipe design to ensures post development 20 year outflow from the site is less than predevelopment conditions,
 - a 5% AEP (20 year ARI) flood storage between the normal water level and the 5% AEP spillway level given adequate consideration of the stage/storage discharge relationship within a model capable of modelling flood storage effects adequately (such as RORB or XP RAFTS), and
 - A 100 year spillway capacity between the spillway level and the embankment crest to the required 1% AEP design flow specified above.

It should be noted that the Pond P13 is not required to retard the 100 year flow. It is only required to safely discharge this flow. As such the 100 year flows estimate is only required to set the pond spillway requirements.

A.2 SWMP Stage 3

A.2.1 Model Description

Figure A.4 below details the RORB model setup. The RORB model layout has been based on the site June 2017 SWMP (Section 5). Tables A.5 and A.6 detail the tabulation of the RORB model inputs.

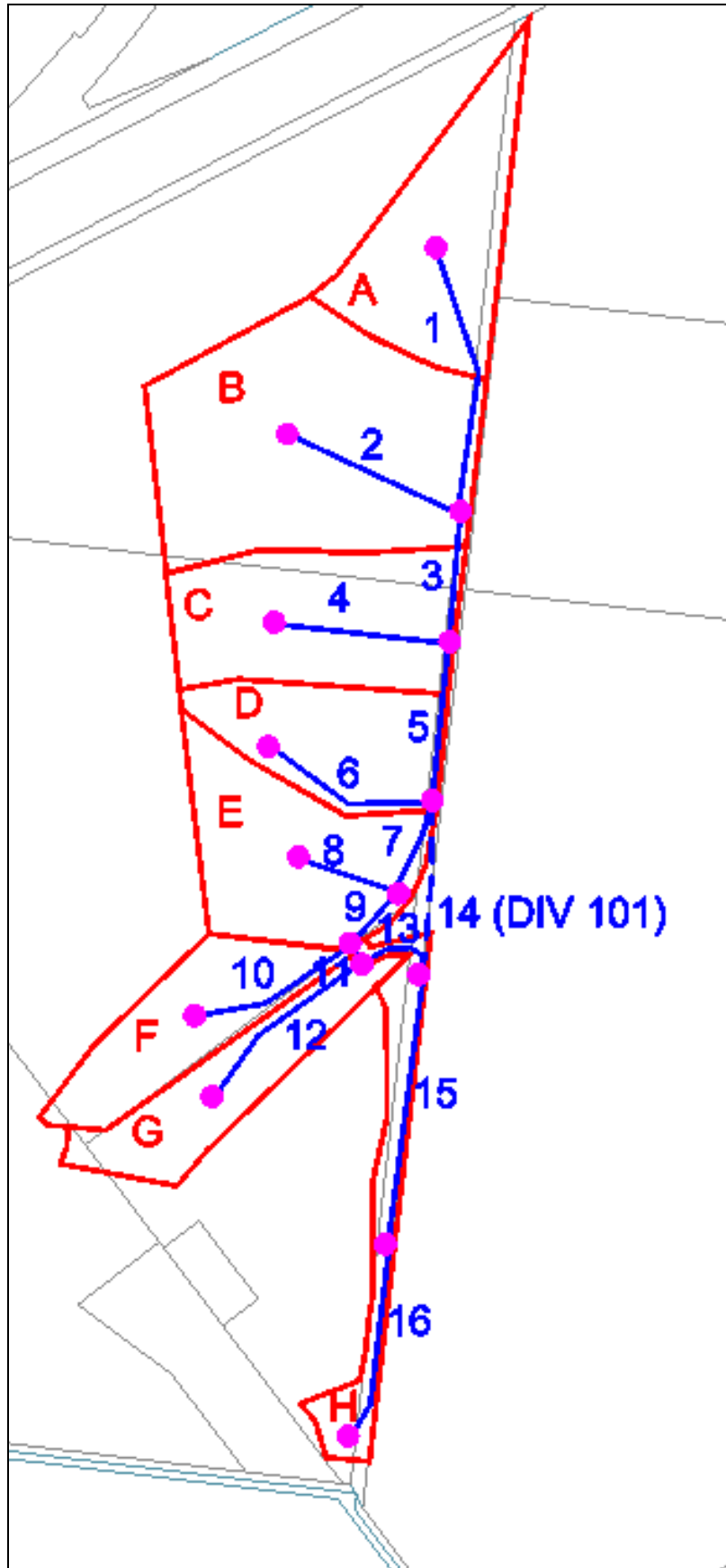


Figure A.4 Stage 3 RORB Model Layout

Table A.5 Stage 3 RORB Model Sub-Area Definition

Sub Area	Area (ha)	Area (km ²)	Fraction Imperviousness	Area Tonkin SWMP	Cover Type
A	6.28	0.063	0.00	24	Final Capping
B	12.81	0.128	0.00	24	Final Capping
C	7.05	0.071	0.00	24	Final Capping
D	4.76	0.048	0.00	24	Final Capping
E	6.47	0.065	0.00	24	Final Capping
F	4.50	0.045	0.00	24	Final Capping
G	4.12	0.041	0.00	12	Final Capping
H	3.08	0.031	0.00	13	Final Capping
TOTAL	49.1	0.491	0.00		

Table A.6 Stage 3 RORB Model Reach Definition

Reach	Length (km)	slope %	Reach Type
			Pre
1	0.370	0.5%	EX/UNLINED
2	0.257	5.8%	NATURAL
3	0.181	0.5%	EX/UNLINED
4	0.249	6.8%	NATURAL
5	0.222	0.5%	EX/UNLINED
6	0.244	7.4%	NATURAL
7	0.132	0.5%	EX/UNLINED
8	0.152	9.9%	NATURAL
9	0.089	0.5%	EX/UNLINED
10	0.240	1.0%	EX/UNLINED
11	0.035	1.0%	PIPED
12	0.280	0.9%	EX/UNLINED
13	0.119	0.5%	EX/UNLINED
14	0.237	0.5%	EX/UNLINED
15	0.375	0.5%	EX/UNLINED
16	0.273	1.0%	EX/UNLINED

A.2.2 Model Parameters

RORB parameter definition methodology is as described in Section A.1.2 above. For the stage 3 model (i.e. different catchment area etc., this results in the parameter set detailed below.

$$K_c = 1.19 \times A^{0.56} = 0.80$$

$$m = 0.8$$

$$IL_{1\% AEP} = 15 \text{ mm},$$

$$C_{1\% AEP, perv} = 0.6, C_{5\% AEP, perv} = 0.5, C_{9.5\% AEP, perv} = 0.4, C_{18.13\% AEP, perv} = 0.3$$

As in the Stage 1 model, ARR 2016 Data hub (Lat: 37.9375 S, Lon: 144.5875 E, accessed: 7 August 2017) rainfall depths, rainfall temporal patterns and areal reduction factors ($A = 0 \text{ km}^2$) have been used in the model.

A.2.3 Model Verification

As in Section A.1.2, the flows obtained using the RORB model were compared to flows obtained from the 'All Catchment' Flood Regression Curves for Victoria produced by the Department of Conservation and Natural Resources 1994 ($Q_{1\% AEP} = 4.67 \times A^{0.763}$).

As can be seen in Table A.7 below, the RORB model is close to the comparison method and appropriate for use.

Table A.7 Stage 3 Model 1% AEP Verification

Model	1% AEP Flow at Location
	P13
2017 RORB Model (2016 ARR)	3.7 m ³ /s (45-min TP26)
Regression Curve	2.7 m ³ /s

Note: RORB flows are expected to be slightly higher than "rural" in this application given the constructed swale drains minimising reach storage effects

A.2.4 Model Diversions

Figure 5.1 in the 2017 SWMP indicates that D19 splits upstream of the leachate pond. As such a 50/50 flow split for has been modelled upstream of the leachate pond. This split is represented in the RORB modelling as diversion 101.

A.2.5 Model Results

Peak 5% AEP flows have been calculated throughout the stage 3 catchment as described in Table A.8.

Table A.8 **5% AEP Critical Flows at locations throughout Stage 3**

Location	Peak 5% AEP Flow	Storm Duration	Temporal Pattern
Upstream of the Leachate Pond	1.3 m ³ /s	1.5-hour	TP14
Upstream of the twin 600mmØ culverts	1.1 m ³ /s	1.5-hour	TP13
Into Pond P13	1.8 m ³ /s	1.5-hour	TP16

Figure A.5 below details all simulations run (for 5% AEP flow into P13) and details how the median value reported in Table A.8 is determined.

The critical 1% AEP inflow into P13 has been determined as 3.7 m³/s (45-minutes, TP26). It is assumed that Pond P13 will not be required in Stage 3 as all contributing area will incorporate their final capping.

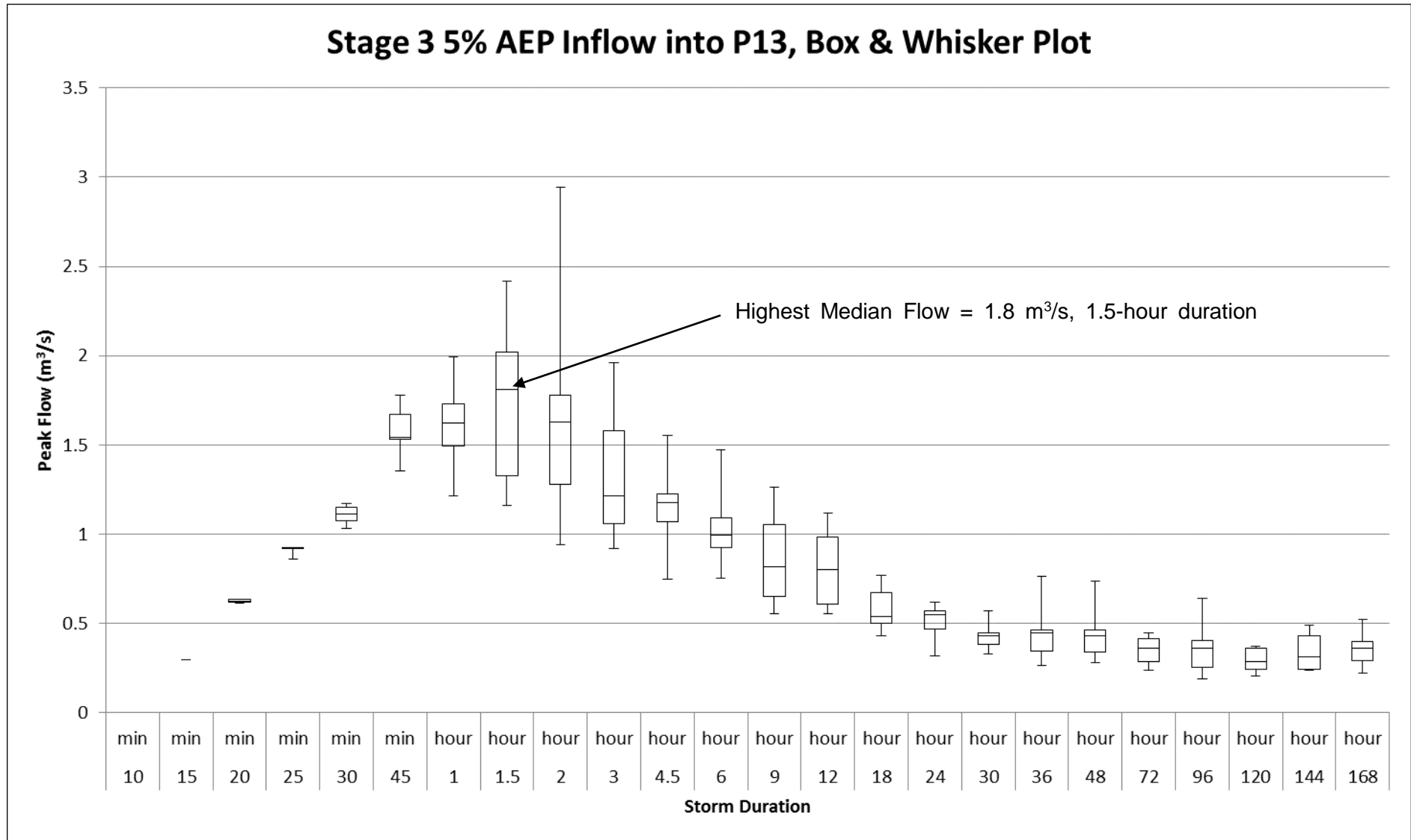


Figure 2 Stage 3, 5% AEP Inflow into P13 RORB Results

APPENDIX I



INDEPENDENT LANDFILL EXPERT ADVISORY PANEL REVIEW

- I.1 Brief
- I.2 Panel Report

Independent Landfill Expert Advisory Panel for EPA – Report



Environment
Protection
Authority Victoria

Project title	Extension to the Wyndham Landfill		
Reference	IBIS Service Order Number 1002260		
Proposal type	Type 2		
Requested by	David Robinson		
Prepared by	Ian Rossiter		Date 28/7/17
Contributors	Roger Parker		Date 29/7/17
	Malek Bouazza		Date 29/7/17

Executive Summary

The extension being applied for is a proposal by Wyndham City Council (WCC) to construct and fill new cells at the Wests Road Refuse Disposal Facility immediately following approval and construction of the next cell (5A). The extension will provide waste storage space projected to be required until 2043. The site is owned and operated by the WCC and has been identified within Sustainability Victoria's Statewide Waste and Resource Recovery Infrastructure Plan and the Metropolitan Waste and Resource Recovery Implementation Plan as playing a significant role in the long term to meeting Melbourne's waste disposal requirements as a number of existing landfills are projected to close in coming years.

The EPA has referred elements of the application to the Independent Landfill Expert Advisory Panel (the Panel) as the Authority has determined the proposal is complex in nature for the following reasons:

- The proposal will involve alternative measures (or variations) to the suggested measures in the EPA Publication 788.3 Best Practice for Environmental Management- Siting, Design, Operation and Rehabilitation of Landfills (Landfill BEPM),
- The proposal will also include additional design and management measures to achieve compliance with the Waste Management Policy.
- The proposal has attracted (or is likely to attract) significant community concern.
- The proposal is (or is likely to be of state significance for its management of waste).

In a Section 22 Notice, WCC was asked to respond to community concern regarding the proposed height of the landfill and to provide assessment of how the height affects risk associated with the landfill: odour, noise, control of leachate and landfill gas, litter and visual amenity. WCC's response to this request was provided in the resource material provided to the Panel. The EPA has asked the Panel to consider and report on the following aspects of the proposal:

1. Does the Panel agree with the findings of the height risk assessment provided by the applicant?
2. In this case, does the Panel consider the proposed height of the landfill and the proposed controls are acceptably low risk?
3. Are there any further control measures that the Panel considers are needed?

The Panel convened on two occasions to assess the documentation provided and the Chair of the Panel attended a site meeting with representatives of EPA and WCC to seek clarification on a number of risk management measures referred to in the S22 response material.

The Panel in consideration of the questions posed, the documentation provided and information gained from the site visit makes the following conclusions and recommendations:

1. The Panel does not agree with all the findings of the height risk assessment provided by the applicant. The Panel recommends that the applicant provide the EPA with a revised Height Risk Assessment which appropriately addresses the revised proposed pre settlement contour plan, impacts of height on wind movement identified in GHD's Odour Modelling Report and the residual risks associated with interim cover and capping stability associated with the proposed 1 in 5 batters;
2. The Panel does not consider that the proposed height of the landfill and the proposed controls are acceptably low risk as further design detail and documentation of operational procedures are required to be enacted to reduce risks to an acceptably low level. While the proposal appears to conform to the requirements of EPA Publication 788.3 BPEM Siting, Design, Operation and Rehabilitation of Landfills, there are significant risks of licence condition non-conformance associated with operation of the tipping face at elevations significantly higher than surrounding landform. The Panel recommends that the Section 53V operational audit (expected to be a requirement of the Licence) require the compilation of documented procedures to address the odour, litter, landfill gas, dust and batter stability issues identified in this report;
3. In response to community concerns about the amenity impacts of the continued development of the landfill at its current maximum elevation and the current extent of capping, site rehabilitation and amenity improvements to site boundaries, the panel recommends the EPA develop within its Works Approval, conditions for future cell approval linked to progress milestones for design and installation of cell capping. Similarly, section 53V operational audits should include progress reports on implementation of the proposed boundary plantings and site rehabilitation works referenced in the works approval application; and

4. The existing 1 in 5 uncapped batters pose challenges to maintain the integrity of interim cover during heavy rainfall incidents due to the length of slope and fluctuations in surface contours. As significant batter areas at 1 in 5 grades are proposed for new cells, the Panel considers that adequate site specific design for the future capping should be prepared as part of each cell design, with Auditor review of the design (as normally required for each landfill cell).

Background

The extension being applied for is a proposal by Wyndham City Council (WCC) to construct and fill new cells at the Wests Road Refuse Disposal Facility immediately following approval and construction of the next cell (5A). Under this proposal it is expected that the last cell (8B) will be filled by 2043 and rehabilitation complete by 2044. The original application included a proposal to extend the landfill across previously filled cells (1B, 2 and 3) raising their current height from around 30-35 m AHD to the maximum allowed height of 44 m AHD. This would have taken the expected duration of the proposal to beyond 2050. WCC have since amended the scope of their application and have withdrawn the cells earlier proposed as 'piggy back' cells over the previously filled cells from the application following the 20B conference held on 14th March 2017.

After completion of landfilling on the site, the land would be rehabilitated and ready for its proposed after use.

Key issues for EPA in its determination of the Works Approval Application (WAA), and which make the proposal complex include amongst others:

- Relevant Policy and Guidance;
- Modern Landfill Design & Operation;
- Siting;
- Buffer Requirements for Landfills; Odour Impacts & Odour Buffers;
- Recommended Sensitive Use Buffer for Odour and Amenity;
- Landfill Gas Migration, Gas Risk Assessment, the Timing of New Development (Buildings and Structures) within the Landfill Gas Migration (EPA is not seeking the panel's advice on the aspects of landfill gas risk assessment);
- Leachate & Groundwater, in particular compliance with Clause 16(2) of the WMP – there is some debate about what is the long term undisturbed groundwater table with the EPA being of the opinion that several of the proposed cells may not have a 2m separation such that additional design and management measures are required. After long discussions on this, some additional design and management measures have been provided to demonstrate compliance with WMP in response to a formal request for further information made under section 22 of the EP Act
- Height, the height of the landfill continues to be contentious with some of the community and the submission received from the Western Region Environment Centre (WREC) is particularly critical of the proposed height of the landfill (44 m AHD).
- Duration of the approval, the WREC submission is very critical of the length of the approval as they consider that this locks the community out of having further input for the lifetime of the approval. WREC's preferred position is to have a works approval application for each cell.
- Health; and
- Compliance against EPA's Best Practice Environmental Management (BPEM) Guideline, Siting, Design, Operation and Rehabilitation of Landfills.

Consultation has occurred, including an information session hosted by WCC on 20 July 2016 prior to the application being submitted on 30 November 2016. The application was advertised on 14 December 2016. Because of the Christmas period and School holidays occurring during the comments period, the comments period was held open longer than usual until 7 February 2017. The application was re-advertised on 18 January 2017. Throughout the advertising period EPA trialled on-line advertising for the works approval for the first time. EPA received over 170 submissions and hosted a public conference under section 20B of the EP Act. The 20B conference was held on 14 March 2017 at Werribee Mansion. The independent chair for the conference produced a report, with recommendations, at the end of March 2017. Referral responses have also been sought (and continue to be sought) from external referral bodies.

There are currently two notices for further information (under section 22 of the act) in play. The first was issued on 19 January 2017 and the second was issued on 12 April 2017. The second S22 notice was based on the recommendations from the 20B conference report requiring WCC to respond to the recommendations and to the submissions received from the community. EPA has received responses to some of the questions in the S22 notices but is still awaiting a full consolidated response from WCC.

In the second S22 notice, WCC were asked to respond to community concern regarding the proposed height of the landfill and to provide an assessment of how the height affects risks associated with the landfill: odour, noise, control of leachate and landfill gas, litter and visual amenity. WCC's response to this request is provided in the resource material.

EPA requested the following questions be addressed:

1. Does the Panel agree with the findings of the height risk assessment provided by the applicant?
2. In this case, does the Panel consider that the proposed height of the landfill and the proposed controls are acceptably low risk?
3. Are there any further control measures that the Panel considers are needed?

Approach

As Panel members could not all meet together due to interstate and overseas travel commitments, Panel members Roger Parker and Ian Rossiter met with David Robinson initially on Tuesday 4 July 2017 at EPA head office and clarified the brief and information supplied. Initial review of the height risk assessment indicated that it was inconsistent with the amended application and that there was inadequate information to assess the impacts of odour. As the applicants had amended the application to remove the piggy back cells, a revised contour plan was requested and subsequently provided, together with an odour modelling assessment. Panel members Roger Parker and Ian Rossiter again met on Monday 10 July 2017 to consider the height risk assessment in the context of the amended contour plan and odour modelling.

A site visit was conducted by Panel Chair Ian Rossiter on 20 July 2017 with EPA Development Assessment Officer David Robinson and Wyndham City Council's Waste Manager Simon Clay.

This report has been prepared following the second meeting and site visit, then has been edited through feedback from Panel members.

Discussion

The Panel has reviewed the documents listed in the brief and in particular the risk assessment related to landfill height prepared by the WCC in response to the second Section 22 Notice issued by EPA. Before discussing the WCC risk assessment, the Panel offers the following comments:

Types of Landfill

The BPEM outlines landform options for landfills. The hierarchy of landform, in descending order of preference, is as follows:

- the area method, where an existing hole such as a former quarry is filled
- the trench-and-fill method, where a hole is dug and backfilled with waste using the excavated material as soil cover
- the mound method, where most of the landfill is located above the natural ground level
- the valley or change of topography fill method, where a natural depression is filled.

While the BPEM states that the most appropriate landfill type for a region will be determined based on local conditions as identified in the environmental assessment, the area method and the trench-and-fill method are, however, preferred.

The area method is preferred, as it achieves an additional outcome of rehabilitating an existing hole. It is also generally easier to manage litter and leachate (liquid that has percolated through or drained from a landfill) within the site.

The BPEM goes on to state that mound landfills are to be avoided as their exposed nature requires significant litter controls and present a significant visual impact on the landscape. Further difficulties attached to these landfills are leachate seeps from the side of the landfill and the stability of the landfill cap.

Grade of Final Landform

Suggested measures for compliance with required outcomes within the BPEM state that the design of the landfill cap gradient should be between 5 and 20% (i.e. grades of between 1V:20H and 1V:5H).

The minimum 5% grade is intended to ensure that the landfill surface drains even after settlement of the waste. The BPEM states that where flatter grades are adopted, additional design measures need to be incorporated.

The BPEM states that landfill caps should not be steeper than 20%. Caps steeper than this can have erosion problems and are more difficult to maintain than flatter caps. Steep caps will require specific engineering controls to ensure that they are stable. These controls will, typically, relate to relieving any seepage water pressures within the cap. They will also require features such as cut-off drains and rock beaching on drainage lines to control water erosion. In addition, the surface layer should be vegetated as quickly as possible to further control erosion. Until the vegetation becomes established, this revegetation program should be augmented with measures such as mulch or erosion mats to control erosion.

Recent Practice

Typically Melbourne landfills have been constructed using the area method insofar as they involve filling and rehabilitation of worked out quarries. Since the mid to late 1980s, the practice developed that the final landform for a landfill surface should be mounded to promote surface water run-off even after settlement. The minimum grade adopted was 5% which was subsequently adopted in the BPEM as the minimum design grade for a landfill surface. As noted above, the maximum grade for a landfill permitted by the BPEM is 20%.

In recent years there has been a tendency to adopt the maximum grade around the perimeter of a landfill surface to in turn maximise available airspace. For example, the recently approved MRL landfill extension has grades of 20% around the perimeter of the landfill, flattening to around 5% near the top of the mound. A similar approach with 20% grades has been adopted in the revised filling plan at the WCC landfill (see further discussion below).

Area Method Versus Mounded Landfills

While design of lining and leachate collection systems is more complex in area method landfills than mounded landfills, there are operational advantages for landfills where filling is mostly below the surrounding ground surface, including:

- Noise impacts are lessened while filling is below surrounding ground surface
- Litter impacts are lessened while filling is below surrounding ground surface
- High mounds in a flat landscape may impact on visual amenity, particularly prior to rehabilitation..

The advantage of adopting the maximum BPEM grades on the mounded part of landfills is that it maximises the airspace for a given base area, i.e. volume of waste is maximised for a given cost of lining and capping. The disadvantage of increasing height of landfill above ground surface is that it extends the time during which amenity impacts need to be managed and in some cases (noise and litter) increase the difficulty in management.

WCC Landform Design

The WAA dated 30 November 2016 included a final landform that was generally based on minimum BPEM grades (1V:20H) with greater slopes on the east side of the site where steep grades have already been formed on the existing landfill. The design involved grading to a single mound at RL 44 m AHD in the middle of the site (see Appendix 1).

A revised final landform was provided in the response to the second Section 22 Notice (see Appendix 1). In the revised design, the piggy-back part of the landfill extension was removed. The revised landform involves two mounds peaking at RL 44 m AHD. To achieve this, the final pre settlement surface contours will be formed at maximum BPEM grades (20%) tapering to minimum grades on the upper slopes. Therefore the revised design has maximised airspace by steepening the slopes at the perimeter of the two mounds to the maximum grades permitted by the BPEM (without additional engineering measures).

Question 1

In the second S22 notice, WCC were asked to respond to community concern regarding the proposed height of the landfill and to provide an assessment of how the height affects risks associated with the landfill: odour, noise, control of leachate and landfill gas, litter and visual amenity. WCC's response to this request is provided in the resource material. Does the panel agree with the findings of the height risk assessment provided by the applicant?

Assessment

Since receipt of the risk assessment provided by the applicant, a modified contour and cell filling plan has been received (which does not include the piggyback cells identified in the works approval application). A number of references within the risk assessment are therefore now inaccurate, particularly references to cell capping grades. The Panel considered the risk assessment limited in scope as it presents little quantitative assessment of the risks associated with a large landfill filled to 44m AHD in comparison with the existing cells filled to around 32m AHD. It is apparent to the Panel that the risk issues identified within the assessment have largely been addressed through operational controls, rather than any cell and capping design parameters. The panel therefore provides the following comments in relation to the height risk assessment:

Risk Issue Identified	Panel Comments Relating to Height Risk Assessment Provided
Dust Suppression	<p>The Panel queries the justification that 1 additional water cart alone can suppress dust on roads. This was discussed with the Landfill Manager during the site visit and it was identified that WCC was allocating an additional employee with access to plant including another water cart to carry out maintenance away from the tipping face. The Council is proposing to apply dust suppression compounds to haul roads and carry out additional grading, watering and compacting works and maintenance to interim soil cover.</p> <p>Given the height of the landfill above its flat surrounds, the Panel recommends that the WA be conditional on an agreed program of stringent dust controls.</p>
Odour	<p>The Panel has the following comments on odour risks related to landfill height:</p> <ul style="list-style-type: none"> • The GHD Odour Modelling (June 2017) makes reference to impact of height at section 7.3.4, page 59. It is noted that the design grades stated in the odour modelling are now incorrect. The materiality of this is not known but appropriate adjustment should be made by GHD. • The odour modelling identifies that it is impossible to restrict odour to 1 odour unit at site boundary and assumes the risk will be low under the OERA matrix for a 900 m² tipping face operating from midnight to 4pm (as only 1 receptor has a medium rating). When the same modelling was performed on a 1250 m² tipping face the risk substantially increased. It therefore will be important to ensure that the size of the tipping face is controlled to maintain a lower OERA risk rating. • The odour management plan identifies the use of horizontal gas collection wells to mitigate the odour risks and as this has not been present during previous operations. • Some of the odour complaints registered in last 3 years have been associated with exposing decaying waste due to police investigations, re-constructing cell batters and drilling wells within closed cells. • The site visit indicated interim soil cover on Cell 4 is still subject to storm water erosion as batters are steep and other works being undertaken to establish landfill gas extraction and hotspot extinguishment result in limited capacity to direct surface water flows evenly over surfaces (See Appendix 1). A maintenance program therefore needs to be applied to ensure the effective LFG extraction in Cell 4 through replacement of interim cover following significant rain events and / or the construction of intercept drains and rock lined chutes to remove water from batters.
Noise	<p>The Panel has the following comments on noise risks related to landfill height:</p> <ul style="list-style-type: none"> • When filling above the lip of the quarry pit, it will be important to create successive earthen edge bunds to contain noise, litter and water, as far as practicable. This is considered good practice to minimise amenity impacts for landfills when raised above surrounding ground surface. • Relocatable noise barriers are listed in the risk management mitigation measures. The site visit revealed that these are predominately needed to prevent noise reaching one specific property. The panel noted that a substantial hay bale wall was to be placed as a trial and more dense barriers using shipping containers were being considered. • The operation at night is the critical concern (given past history of complaints) and how operation arrangements are modified for after-hours activities. While the reversing alarms of heavy equipment have been replaced by inaudible alarms, the noise of swinging tailgates or noisy tracked dozers may need specific controls.
Litter	<p>The Panel noted that in the risk assessment the height reduction did not reduce the inherent risk for dust, but did for litter. We suggest this may be an inconsistency as both are likely to be impacted by altered turbulence and air movement associated with height. (There is reference in GHD Odour Modelling describing the changes in air movement associated with the presence of the mounded landfill). Further:</p> <ul style="list-style-type: none"> • The site visit confirmed that the reference to additional height perimeter fences refers to the relocatable litter nets currently installed near boundaries are to be increased in height from 6m to 10-12m and that rigid litter frames are used at the tipping face to catch windblown litter. The risk control

	<p>measure to place additional litter nets at the tipping face will need to happen as the rigid cages are of limited height (approx. 3metres) and cannot surround the whole tipping face.</p> <ul style="list-style-type: none"> The mitigation action of closure during high wind conditions is potentially difficult to apply. (How would WCC manage customers under contractual obligations, what are the parameters for closure?).
Amenity	The panel notes that WCC's previous commitments and delayed actions on post cell filling rehabilitation have resulted in community concerns about the visual amenity. The panel considers that it is important that rehabilitation and landscaping is carried out diligently and within 2-3 years of filling each cell. As a measure of commitment to best practice, WCC should commence rehabilitation works on closed cells with some urgency.
Stability	<p>Irrespective of the slopes being BEPM compliant, site specific cap design needs to consider all material interface strengths for all components and the drainage characteristics of the overlying soil. The steeper batters now proposed around all sides of the landfill, while being BEPM compliant, will require careful design to ensure veneer stability.</p> <p>In the risk assessment Consequence is rated <i>Insignificant</i> and Likelihood <i>Rare</i>. Even though failures can be readily rectified, albeit at a cost, we question the validity of the rating given that damage to caps is considered likely rather than rare. Stability is reliant on appropriate cap design, cap construction and post planting maintenance.</p>
LFG and leachate production and capture	The risk assessment discusses the impact of increased area for each cell if height of waste is reduced. While the larger area may result in greater saturation of the waste and therefore hasten gas generation, ultimately it is the volume of waste that determines the amount of gas produced. The Panel does not consider that the height of the landfill will significantly alter gas generation rates but will increase the volume of landfill gas generated given the greater volume of waste placed. The important issues are the effectiveness of leachate management, placement of cover, rehabilitation and gas capture infrastructure.
Storm Water Management	While the grades of the final capping will be within the BEPM permitted range, side slopes of 20% are proposed which will require careful design of surface water interception such as rock chutes and channels and other measures to prevent scouring and erosion of the capping. At 20% grade flows are more likely to contain suspended solids, meaning sufficient storm water detention to allow a settling period before discharge to surface waterways will be required.

As outlined above, the Panel considers the Height Risk Assessment provided in the second Section 22 response is inaccurate as it does not reflect the amended proposed pre-settlement contour plan and references in the GHD Odour Assessment relating to increased wind speeds associated with the 44mAHD relative to the previously capped cells at 32mAHD.

The Panel therefore recommends that the height risk assessment needs to be resubmitted to address the following anomalies:

- Litter – the reference to additional height not contributing to risk contradicts findings in the GHD odour modelling report; and the risk assessment refers to closure during high winds, however unless this is supported by a documented procedure that has details of how and when this would be decided and the contingent arrangements for customers delivering waste it could not be relied upon as a mitigation control;
- Odour – The batter grades cited in the GHD Odour Assessment relate to the previous waste pre-settlement contour plan which had less steep batters, therefore GHD should provide advice on the impact of the new design in terms of the provided odour modelling;
- Stability – The risk assessment rating for stability ranks the consequence of slopes being unstable as *insignificant*, however in the Panel's opinion this should be higher than insignificant and the likelihood higher than *rare*, given the current situation of erosion present on Cell 4 on the 1 in 5 batters observed; and
- Storm water management – The risk assessment assumes the cell batter grades are for the previous waste pre-settlement contour plan. Storm Water Management Plan does not specifically address management of future cell's surface water controls to prevent compromise of interim cover.

Justification

The comments above are provided with reference to Landfill BPEM and the Annual Performance Statements reporting for this landfill on non-compliances with current licence conditions.

Best practice constitutes design, construction, operation and rehabilitation in accordance with the Landfill BPEM and an absence of non-compliances of the landfill's licence conditions being identified through audits and complaints in the Annual Performance Statement.

Question 2

In this case, does the Panel consider that the proposed height of the landfill and the proposed controls are acceptably low risk?

Assessment

1. The site visit indicated that Cells 4a and 4b have required extensive work to restore the batters to BPEM compliant maximum grades, and that with the current 1 in 5 grades, it is difficult to maintain the interim soil cover integrity due to erosion associated with rainfall (See Appendix1). The pre-settlement height of 44m AHD for new cells poses an acceptable low risk only if:
 - a) Batters are not constructed at the maximum grade of 1 in 5, but at a lesser grade that reduces the need for replacement of interim soil cover following significant rain incidents;
 - b) If batters are constructed at the maximum grade, suitable temporary cut off drains should be engineered to catch water and sediment and deliver it to the base of the batters without significant erosion (Note also comments in Question 1 regarding the need for detailed capping design); and
 - c) The Landfill Manager can present a year round program of works that will be carried out to implement the risk mitigation works identified in the Section 22 Response Risk Assessment which includes additional dust suppression on all haul roads.

2. The site visit indicated that a number of operational controls are required for noise, dust, litter and odour control associated with the management of the tipping face once significantly above surrounding ground level, specifically:
 - a) Limiting the tipping face area to 30m x 30m and ensuring a soil mound is established around each cell once above the quarry pit perimeter before placing each lift layer of waste to minimise escape of dust, noise and litter;
 - b) The placement of litter nets and litter cages to intercept windblown litter with due consideration to normal prevailing wind conditions, together with elevated boundary litter netting in proximity to the tipping face;
 - c) The continued grader trimming and application of water to haul roads and tipping face turning areas;
 - d) Continued use of non-audible reversing alarms on tipping face equipment;
 - e) Control of mechanical noise at night associated with loading and unloading skips and tailgate closure; and
 - f) When the elevation of the tipping face creates a line of sight to nearby sensitive receptors placement of sound attenuation barriers (e.g. shipping containers) to disperse noise.

Justification

The comments above are provided with reference to the Landfill BEPM and the Annual Performance Statements reporting for this landfill on non-compliances with current licence conditions.

Best practice constitutes design, construction, operation and rehabilitation in accordance with the Landfill BPEM and an absence of non-compliances of the landfill's licence conditions being identified through audits and complaints in the Annual Performance Statement.

The Landfill BPEM states that mound landfills are to be avoided as their exposed nature requires significant litter controls and present a significant visual impact on the landscape. Further difficulties attached to these landfills are leachate seeps from the side of the landfill and the stability of the landfill cap. The revised pre-settlement waste plans submitted shift the balance of the landfill from being predominately an area method landfill to predominately a mounded landfill, which is under the BPEM the least preferred landfill method. Therefore a higher level of management must be adopted once the landfill mound rises about the perimeter of the quarry pit.

Question 3

Are there any further control measures that the Panel considers are needed?

Assessment

The Panel considers that while the current works approval application seeks permission to establish and operate landfilling until a projected period of 26 years (until 2043), the EPA may wish to consider conditions limiting future cell construction until adequate site rehabilitation milestones are completed for cells that have been filled, supplied with interim soil cover and connected to landfill gas extraction systems. A reasonable period for design, approval and construction of capping would be 2-3 years of cell filling.

Justification

The comments above are provided with reference to the Landfill BEPM and the Annual Performance Statements reporting for this landfill on non-compliances with current licence conditions.

Best practice constitutes design, construction, operation and rehabilitation in accordance with the Landfill BPEM and an absence of non-compliances of the landfill's licence conditions being identified through audits and complaints in the Annual Performance Statement.

The delays in rehabilitation of filled cells at this landfill have been a concern documented in the Community Conference Report and in the WREC submission, and may have contributed to complaints associated with odour, dust and litter.

Recommendations

The Panel in consideration of the questions posed, the documentation provided and information gained from the site visit makes the following conclusions and recommendations:

1. The Panel does not agree with all the findings of the height risk assessment provided by the applicant. The Panel recommends that the applicant provide the EPA with a revised Height Risk Assessment which appropriately addresses the revised proposed pre settlement contour plan, impacts of height on wind movement identified in GHD's Odour Modelling Report and the residual risks associated with interim cover and capping stability associated with the proposed 1 in 5 batters;
2. The Panel does not consider that the proposed height of the landfill and the proposed controls are acceptably low risk as further design detail and documentation of operational procedures are required to be enacted to reduce risks to an acceptably low level. While the proposal appears to conform to the requirements of EPA Publication 788.3 BPEM Siting, Design, Operation and Rehabilitation of Landfills, there are significant risks of licence condition non-conformance associated with operation of the tipping face at elevations significantly higher than surrounding landform. The Panel recommends that the Section 53V operational audit (expected to be a requirement of the Licence) requires the compilation of documented procedures to address the odour, litter, landfill gas, dust and batter stability issues identified in this report;
3. In response to community concerns about the amenity impacts of the continued development of the landfill at its current maximum elevation and the current extent of capping, site rehabilitation and amenity improvements to site boundaries, the panel recommends the EPA develop within its Works Approval, conditions for future cell approval linked to progress milestones for design and installation of cell capping. Similarly, section 53V operational audits should include progress reports on implementation of the proposed boundary plantings and site rehabilitation works referenced in the works approval application; and
4. The existing 1 in 5 uncapped batters pose challenges to maintain the integrity of the interim soil cover during heavy rainfall incidents due to the length of the slope and fluctuations in surface contours. As significant batter areas at 1 in 5 grades are proposed for the new cells, the Panel recommends that adequate site specific design for the future capping should be prepared as part of each cell design, with Auditor review of the design (as normally required for each landfill cell).

References

1. Works Approval application submitted 30 Nov 2016.
2. S22 notice number 1 issued 19 Jan 2017.
3. S22 notice number 2 issued 12 April 2017.
4. 20B Community Conference report March 2017.
5. WCC Response to EPA S22 Notice 12 April 2017 including appendices:
 - a. Attachment 2 Revised Cell Layout Plan
 - b. Attachment 6 Top of Cap Pre-settlement Plan
 - c. Attachment 7 Top of Waste Pre-settlement Plan
 - d. Attachment 8 Site Cross Sections
 - e. Attachment 9 Progressive Rehabilitation Plan
6. WREC submission – submitted May 2017.
7. VCAT determination P1794 2013 P2540 2013 Wyndham CC vs Menagazzo Enterprises Pty Ltd.
8. Planning permit – WYP1221_07.03
9. GHD Report June 2017 “WCC Wests Road Refuse Disposal Facility Odour Dispersion Modelling Assessment to Support Works Approval Application to Extend Landfill Operations

Any additional Panel notes

Refer Appendix 1 – Schematic Diagrams and Photographs