

**ENVIRONMENT PROTECTION ACT 1970
SECTION 22(1)
NOTICE TO SUPPLY FURTHER INFORMATION**

TO: COLIN BURNS

**OF: ILUKA RESOURCES LTD
LEVEL 23, 140 ST GEORGE'S TERRACE
PERTH, WESTERN AUSTRALIA, 600.**

WHEREAS an application by you for a works approval in respect of premises situated at Pit 23 of the Douglas Mine Site (Crown Allotments 91, 94, 95, and 96 in the Parish of Telangatuk), Victoria was received by the Environment Protection Authority ("the Authority") on 23 JUNE 2015

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") you are **HEREBY REQUIRED** to supply to the Authority by 4.00pm on the 18th day of September 2015 the information specified in Attachment A of this notice.

DATED: 11 September 2015



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QUENTIN COOKE
DELEGATE OF THE
ENVIRONMENT PROTECTION AUTHORITY

ATTACHMENT A

Understanding the Baseline Environment

The following requests are made:

1. Further baseline information as set out below:
 - all Iluka raw (i.e. not summaries) groundwater borelog and monitoring data (including groundwater levels) pertaining to its Douglas mine site (both pre-mining and post mining disposal);
 - physicochemical monitoring data for all groundwater samples (ideally in Excel format);
 - full laboratory analysis reports for all the by-product characterisation analysis completed and reported in the tables within the Application for Works Approval document and the Groundwater Risk Assessment contained in Expert Report Volume 1; and
 - surface water monitoring data (field measurements and the laboratory analyses) down gradient of the site and for the locations identified in Table 6.5.2 of the Application for Works Approval document; and
 - soil sampling and depositional dust (including information on current dust monitoring (location, frequency, method, observed weather conditions at and before monitoring, and dust constituents) monitoring data.
2. Electronic copies of documents relied upon and referenced in the Expert Report Volume 2 as identified below:
 - Basin Mineral Holdings (2001) Douglas Heavy Minerals Projects, Stage 1 Environmental Effects Statement, December 2001.
 - Golder Associates (2001) Modelling notes for the effects of tailings storage on groundwater within the Douglas area, unpublished Report to Basin Minerals Holdings NL, December 2001.
 - Hattingh, R. (2008) Groundwater mounding at Douglas Mine, unpublished report to Iluka, November 2008.
 - SKM (2004) Bondi West Hydrogeological Investigation, Final Report, March 2004.
 - SKM (2007) Groundwater Monitoring, Douglas Mine, Letter Report, April 2007.
 - SKM (2008) Douglas Mine Groundwater & Surface water Monitoring Review & Rationalisation, March, 2008.
 - Smart, J. (2001a). Preliminary Water table Investigations Douglas-Toolondo Area, unpublished report to Basin Minerals Holdings NL, August 2001.
 - Smart, J. (2001b). Lakes and Swamps in the Douglas - Toolondo Area, unpublished report to Basin Minerals Holdings NL, August 2001.
 - Smart, J. (2001c). Renmark Group Stratigraphic Drilling, unpublished report to Basin Minerals Holdings NL, August 2001.
3. A network groundwater bore performance audit;
4. An aquifer pump test (of an appropriate duration - to be discussed and agreed);

5. Additional groundwater bores up and cross-gradient need to be installed to the northwest and west of the Pit 23 [locations and numbers to be discussed and agreed] to demonstrate that there is no migratory relationship, i.e. that groundwater cannot migrate from Pit 23 to Glenelg River (or elsewhere other than White Lake);
6. Additional groundwater bores [locations and numbers to be discussed and agreed] need to be installed to demonstrate that groundwater mounding around Pit 23 is localised;
7. An investigation of groundwater flows and hydrogeochemistry at the Site, and around the suspected groundwater sink of White Lake;
8. A detailed assessment of the results of the leach testing and solubility analysis of the identified waste streams to be deposited into Pit 23 as reported in the Application for Works Approval document and Groundwater Risk Assessment contained in Expert Report Volume 1;
9. A geomorphological assessment [the detailed scope to be discussed and agreed] including empirical data collection to confirm the actual erosional rate at the Site and validity of the assumed erosional rate; and
10. A discussion of the Site and regional groundwater chemistry and potential for enhanced mobility of solutes in groundwater is required.

Defining the potential impacts to the Receiving Environment

The following requests are made:

1. A review of hydrogeological flow modelling and potentially updating (dependent on the required tasks above) to better understand the baseline;
2. Consideration and discussion within the risk assessment of uncertainties relating in particular to dispersion, permeability and effective porosity;
3. Consideration of the groundwater flows in the short term period of groundwater mounding in the vicinity of Pit 23 (i.e. while the pit is open – say for another 5-10 years);
4. The temporal extent of the solute transport modelling and assessments needs to be increased to consider long term stability i.e. 50,000-100,000 years;
5. Consideration of and demonstration that groundwater migration from Pit 23 to Glenelg River (or elsewhere other than White Lake) cannot occur;
6. Reconsideration of the assumptions and input data within the modelling, to include more conservative assumptions [to be discussed and agreed] and to ensure consistencies in the input data between the solute transport and hydrogeological models;
7. A proposed long-term groundwater monitoring and management program, including provisions for any future maintenance and rehabilitation of the current network;
8. Model and review stormwater management and develop a stormwater management plan to cover the deposition of wastes into Pit 23 and with its final rehabilitated landform;
9. A schedule with supporting figure images confirming the types of and quantities proposed to be deposited in Pit 23, including capping materials and that they can be deposited in Pit 23 without any increased landform compared to pre-mining conditions. In the event that

there is too much waste or overburden material, this should be clearly indicated with details provided describing how it will be managed and deposited; and

10. Develop and submit a decommissioning plan.

Demonstrating Environmental Best Practice

The following requirements are made with regard to the selection of Pit 23 as the disposal site and the proposed containment options:

1. The detailed option study referred to in subsection 2.2 of the Works Approval application;
2. Provision of a detailed comparative assessment of the environmental impacts of by-product disposal at other Iluka operating sites, in particular to substantiate statements in subsections 2.2.3 and 2.3 of the Application for Works Approval document that 'there is no reason to believe that those [environmental] impacts [at other operating sites] would be any less' and or disposal at Pit 23 is 'equal or [a] better option than others available from the point of view of environment impact';
3. Consideration and discussion of the appropriateness of the continued disposal of waste by-products in Pit 23 in particular that it will not increase risk of any off-site impacts;
4. Consideration and discussion of the appropriateness of the proposed containment measures in particular with consideration of the feasibility of lining Pit 23;
5. Provision of a pre-settlement contour plan and final cap design showing the top of waste and cap that is not to be exceeded as well as greater information on the proposed surface water management, rehabilitation and revegetation proposed to ensure there is adequate surface binding to prevent erosion of the capping layer, penetration of the cap and subsequent emission; and
6. Consideration of alternative final landforms, such as a flat or a shallower slope (than the 1:30 and in parts 1:10) to further reduce long term potential erosion of the cap.