Consolidated Response to Submissions

Woodlawn Bioreactor

June 2016

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Consolidated Response to Submissions

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Contents

1 INTRODUCTION

Veolia Australia and New Zealand (Veolia) proposes to adjust the operational water management practices at the Woodlawn Bioreactor. The proposed modification involves converting a current stormwater collection dam into a treated leachate storage pond to enable increased storage and evaporation of treated leachate at the site. Stormwater would then be diverted to an existing evaporation dam onsite.

Veolia engaged WSP / Parsons Brinckerhoff to prepare an Environmental Assessment (EA) in December 2015 to seek approval under Section 75W of the *Environmental Planning and Assessment Act 1979*. The EA was distributed by the Department of Environment and Planning (DP&E) to the following stakeholders:

- NSW Environment Protection Authority (EPA)
- Goulburn Mulwaree Council
- Palerang Council
- NSW Office of Environment and Heritage (OEH)
- Department of Industry – Water
- Department of Industry – Resources and Energy
- Tarago and District Progress Association Incorporated (TADPAI)

1.1 Purpose of this Report

The purpose of this report is to provide a response to submissions received by the relevant stakeholders during the notification period. This Submissions Report has been provided to satisfy the provisions of Section 89G of the EP&A Act and Clause 85A of the E*nvironmental Planning and Assessment Regulations 2000* (EP&A Regulations).

Based on the content of the submissions received, a Submissions Report is deemed adequate pathway to address clarifications and provide additional information requested.

1.2 Project Overview

Veolia has improved the leachate treatment capacity at the site and leachate volumes in the northern cell of evaporation dam 3 (ED3N) are now operating near capacity. As such, there is concern about the long-term adequacy, functioning and capacity of the site's ability to control leachate levels within the waste mass. If leachate builds up within the landfill, biogas capture will be reduced and the site's environmental performance will be compromised. Veolia is currently experiencing this as a result of scaling back leachate extraction rates to preserve the storage volume within the ED3N ponds until the required approvals have been obtained.

Veolia proposes to adjust the operational water management practices at the site to gain additional volume for the storage of treated leachate. The proposed amendment to Veolia's operations (the

proposed modification) would allow for this by using existing dams at the site that have capacity for increased storage.

The northern half of ED3 has four lagoons (ED3N1, 2, 3 & 4). Water level monitoring of these lagoons shows that ED3N1, ED3N2 and ED3N3 are operating at their maximum allowable water levels. The water level in ED3N4 is operating at approximately 0.8m below its maximum allowable level. Veolia has reduced the leachate extraction rate from the waste to preserve volume within the ED3N system until the required approvals are obtained.

The southern half of ED3 (ED3S) has two lagoons and only water extracted from the mine void is stored and evaporated in this dam.

Veolia proposes to use ED2 to store and evaporate stormwater from the mine void and ED3S lagoons for treated leachate from the bioreactor in addition to ED3N lagoons. The stored water currently within ED3S will be transferred to ED2. ED3S will be lined before its use as leachate storage facility. About 10% of the storage area from the northern lagoon of ED3S will be used as a sump to facilitate water transfer from the mine void to ED2. The remainder of ED3S will store leachate from the mine void.

The proposed modification will require the realignment and extension of above ground pipes associated with leachate and stormwater transfers between dams. Road crossings will be installed where pipes are required to cross access roads.

Figure 1.1 provides a layout of the site water management layout.

Introduction

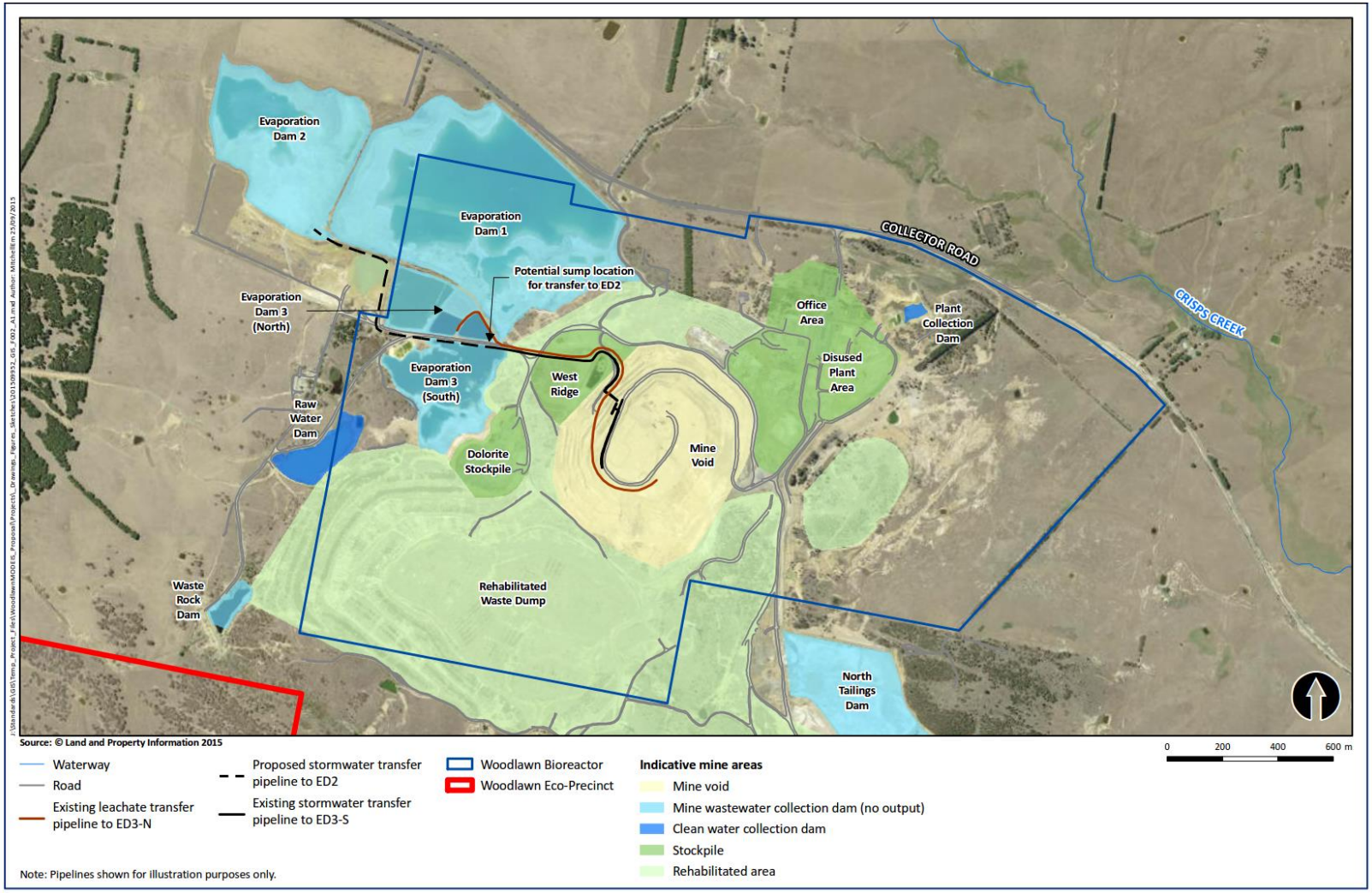

Figure 1.1 – Water Management Layout

INTRODUCTION

1.3 Assessment and Determination Process

The site operates under the following approvals:

- Project Approval PA 10_0012 (the project approval) – issued under Part 3A of the EP&A Act on 16 March 2012.
- Development Consent Q91/00233 (the development consent) – issued under Part 4 of the EP&A Act on 30 November 2000.

The proposed modification does not represent a substantial change to the existing approvals, consequently it is considered that the Minister is able to modify the approval under Section 75W of the EP&A Act.

1.4 Structure of this Report

This Submission Report is structured as follows:

- Section 2 – Overview of notification and consultation process
- Section 3 – Summarizes responses from stakeholders received during the notification period and provides Veolia's reply to each point raised
- Section 4 – Compiles a final list of mitigation measures for the proposal
- Section 5 – Outlines the key conclusions

2 NOTIFICATION AND CONSULTATION

The EA was provided to the relevant stakeholders, with the notification period expiring on 1 February 2016. The EPA requested an extension to 12 February 2016 due to issues with receiving the documents. All stakeholders provided a submission or stated that they had no comments relevant to the submission. All documents were made available on the DP&E website at the following link:

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=7447

2.1 Consultation during EA Process

In preparing for the proposed modification and undertaking this EA, Veolia has undertaken consultation with the following stakeholders:

- NSW Department of Environment and Planning
- NSW Environment Protection Authority

2.1 Consultation Post EA Process

Following receipt of responses from the stakeholders engaged by DP&E, Veolia has met with:

- NSW Environment Protection Authority
- Tarago and District Progress Association Incorporated

Discussions in these meeting focussed on the need for the modification in relation to the current operational issues experienced at the Bioreactor. Veolia indicated that this modification will enable sufficient time to implement the long-term leachate treatment solution at the site.

The EPA reiterated their comments based on their submission and asked Veolia to address these within the response to their submission. Veolia agreed to verify that offsite odour impacts would not be impacted through this proposal through modelling and to provide further detail around the long-term leachate treatment solution.

To facilitate the discussion with TADPAI, Veolia invited Terry Schultz from The Odour Unit to present the 2015 odour audit report which led to discussions surrounding the benefits of proceeding with the modification in relation to odour impacts in the community. The TADPAI members were satisfied that the reasoning for the modification and were comfortable to withdraw their objection to the modification. Veolia has continued attendance at TADPAI meetings.

3 SUBMISSIONS RECEIVED

The EA was sent to a seven stakeholders during the notification period and seven (7) responses were received. This was comprised of six (6) government agencies and one (1) community group. A summary of the submission and Veolia's response is provided in table 3.1.

Table 3.1 Overview of Submission and Veolia's Response

Issue	Comment	Clarification / Response
NSW Environment Protection Authority		
Air Quality Impacts	Further justification is required on odour impacts based on this modification, given that odour dispersion modelling was not undertaken	Based on discussions with the EPA, Veolia has commissioned The Odour Unit to undertake odour dispersion modelling. The result of the model indicates that there will be no offsite impact from storing treated leachate within ED3S at the measured. The odour dispersion modelling report is included as Attachment A. Veolia intend to undertake a staged process of constructing storage dams within ED3S. The construction of the ED3SS dam will only reflect a 4% increase (based on the odour assessment) and Veolia expect to have a new leachate treatment solution (refer below for further information) delivered prior to constructing any additional dams. The increase in odour from leachate storage would be offset through increasing landfill gas capture rates thereby reducing odour emissions from the waste mass.
	An explanation of how, and the scale at which, leachate build-up impacts on odour emissions from the landfill void.	Leachate is desirable within the Bioreactor up to field capacity. Where leachate build up impacts on the movement of landfill gas into collection infrastructure, landfill gas capture rates decline. Leachate exceeding the field capacity is either recirculated or extracted for treatment to minimise this effect. Recirculation alone is not sufficient to manage leachate for optimal gas extraction. Based on advice from Earth2Water, Veolia are anticipating leachate treatment and extraction will need to meet a rate of 3L/s from the Bioreactor to manage leachate, while continuing to manage an effective stormwater diversion system. This modification will enable Veolia to continue to

Issue	Comment	Clarification / Response
		extract and treat leachate at 3L/s until the long-term leachate treatment solution is developed and implemented. Without approval, Veolia will be required to slow down or stop the leachate extraction process and this will contribute more leachate build-up within the Bioreactor. This will ultimately affect the effectiveness of the long-term leachate treatment solution.
	The predicted reduction in odour emissions from the void that will be achieved if leachate levels in waste are better controlled.	Due to the dynamic nature of the Bioreactor, it is difficult to predict the reduction in odour emissions from the void. The excess leachate we currently have within the Bioreactor is impacting on our ability to effectively capture landfill gas. This modification provides additional short term storage capacity for treated leachate to dewater infrastructure which will increase access to landfill gas. To predict the reduction in odour emissions, Veolia has reviewed the following: • Historical landfill gas capture data - Veolia is currently operating at about 50% of the capacity compared with August 2015. • Comparison of landfill gas collection against the National Greenhouse and Energy Reporting Scheme (NGERS) solid waste calculator - indicates that the collection efficiency is approximately 50% less from August 2015 and May 2016. • The Odour Unit Odour Assessment – October 2015 – Based on information from the 2015 Odour Audit indicates odour emission increase from ED3S is 17% or 8,810ou.m^3/s. The emissions from the Bioreactor in 2015 prior to leachate issues was 100,000ou.m^3/s. Based on the 50% efficiency detailed above this may be in the order of 200,000ou.m^3/s until leachate issues are resolved. The predicted decrease in odour emissions has been calculated as follows: • Current odour emission rate from Bioreactor = 200,000ou.m^3/s at current efficiency • Increase in odour emissions from ED3S system = 8,810ou.m^3/s • Decrease in odour emissions from Bioreactor = 100,000ou.m^3/s to achieve historical efficiency

<table>
<tr><th>Issue</th><th>Comment</th><th>Clarification / Response</th></tr>
<tr><td rowspan="3"></td><td></td><td>after 12 months
• Net overall reduction in site odour emissions = 8,810 – 100,000 = - 91,190ou.m^3/s

To achieve an overall net balance of odour emissions, Veolia would only require a 9% increase in landfill gas capture efficiency. Therefore, should the expected increase in gas capture not eventuate, it is not likely to result in an overall increase in site odour emissions.

<u>Note</u>
This calculation is based on the assumption that operating leachate extraction and treatment activities at a minimum of 3L/s or greater over 12 months. Veolia expect that gas capture rates will return to historical levels much earlier than 12 months.</td></tr>
<tr><td>The quality criteria that will be observed to ensure that treated leachate transferred to ED3S does not become more odorous than predicted.</td><td>The target treatment criteria for the existing leachate treatment system is based on historical data which has demonstrated to be effective in reducing observable odour from treated leachate stores.
• BOD = less than 300 mg/L
• pH = greater than 6.5
• Ammonia – less than 1,500mg/L

These parameters will be sampled from the treated leachate effluent discharge line. The limits suggested are expected to be met 90% of the time

Note: This treatment criteria is subject to change with the future leachate treatment system upgrade.</td></tr>
<tr><td>The monitoring program that will be implemented to monitor the quality of treated leachate in ED3S and its potential to generate offensive odours.</td><td>Veolia currently undertake operational leachate monitoring to ensure that the treatment process is working efficiently. Veolia has identified the following parameters and is prepared to routinely monitor ponds in ED3S that contain treated leachate to determine the potential to generate odour:

<table>
<tr><th>Sample Location</th><th>Parameter</th><th>Frequency</th><th>Sample Method</th></tr>
<tr><td rowspan="2">ED3S</td><td>pH</td><td>Monthly</td><td>Field Testing</td></tr>
<tr><td>DO</td><td>Monthly</td><td>Field Testing</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Issue</th><th>Comment</th><th>Clarification / Response</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td></td><td>Conductivity</td><td>Monthly</td><td>Field Testing</td></tr>
<tr><td></td><td>Temperature</td><td>Monthly</td><td>Field Testing</td></tr>
<tr><td></td><td>ORP</td><td>Monthly</td><td>Field Testing</td></tr>
<tr><td></td><td>BOD</td><td>Monthly</td><td>Grab Sample</td></tr>
<tr><td></td><td>Ammonia</td><td>Monthly</td><td>Grab Sample</td></tr>
</table>
</td></tr>
<tr><td></td><td>The contingency measures that will be implemented to manage odour emissions from ED3S should emissions be higher than predicted.</td><td>Should emissions at ED3S be higher than predicted the following contingency measures will be adopted:
Veolia will assess the landfill gas capture rate to confirm if capture rates are increasing.
Veolia will assess the emissions based on the sensitivity analysis of the dispersion model to confirm whether this might impact offsite.
If the model indicates no impact, then optimisation of the treatment system will be investigated.
If the model indicates potential impact then this water will either be returned for treatment or aeration will be carried out on within the ED3S dam.</td></tr>
<tr><td>Long-term operation of the facility</td><td>The proposal appears to be only a short term solution to controlling leachate levels in the waste mass and it is unclear how the proposed modification fits in with the facility’s longer-term leachate management strategy.</td><td>This modification is for a short term solution which will enable Veolia the ability to continue leachate extraction and treatment until the long-term leachate treatment solution is developed and implemented at the site.

The implementation of a leachate treatment plant is a major capital expenditure item and requires extensive consideration on design and operation. Veolia want to ensure through this process that the leachate treatment plant implemented will work as intended, particular given the complex and dynamic characteristics of leachate produced at Woodlawn. This modification will allow for continued leachate extraction and treatment until the new system is implemented.

The key elements of the proposed Woodlawn Leachate Treatment Plant include a Membrane Bio Reactor (MBR) for the treatment of the leachate, MBRs remove dissolved organics that cause biological oxygen demand (BOD), and suspended materials in wastewater. This is the key technology</td></tr>
</table>

Issue	Comment	Clarification / Response
		which will remove compounds that cause odour. Membrane filtration in MBR's replaces sedimentation and tertiary filtration in conventional wastewater treatment systems. Treated liquid output from the treatment system would be a higher quality than the existing treatment process. It is intended to store the liquid in ED1/ED2 under this process. Should treated leachate be used for irrigation of land, Reverse Osmosis (RO) may be incorporated to reduce salts levels in the treated water. Disinfection process steps may be required to meet final water quality objectives (chlorination). A section 75W application would be undertaken for approval for the long–term treatment solution. Veolia plan to have the long-term leachate treatment system implemented and operational in 2017. It is the intention that Veolia would not need to construct additional storage dams once the long-term leachate treatment system is implemented. Once the long-term leachate treatment system is operational, Veolia will focus efforts on reducing the current stores of treated leachate in ED3, with assistance through mechanical evaporation. The aim of reducing treated leachate stores is to develop a sustainable treatment solution.
	Progress to date on improvements to the leachate treatment system and the actions that it is taking to further improve the system and reduce the need for the storage of treated leachate.	Veolia has undertaken an extensive design and feasibility assessment on a leachate treatment plant to treat leachate extracted from the Bioreactor. Veolia held a meeting with Senior Managers (including Steve Beaman and Rob Hogan) of the EPA where the preferred leachate treatment solution was outlined. Further meetings have been held between EPA and Veolia to outline our long-term leachate treatment solution. The proposed MBR option was discussed, along with options for storing treated leachate in ED1/ED2 and/or use of treated leachate for irrigation. Veolia is currently preparing a preliminary report for the EPA, which will comprise the following: • A detailed description of the leachate treatment

Issue	Comment	Clarification / Response
		plant technology and process • Calculations on potential odour impacts and potential offset from increasing landfill gas capture • Details of the required leachate extraction rate from the Bioreactor over time • A water balance to demonstrate that the selected option is sustainable. This will include information on volume reduction in ED3S. • An assessment of the dam lining at ED1/ED2 Where applicable, Veolia will include contingency options and sensitivity analysis to account for variability.
	The expected timeframe required to upgrade the leachate treatment system to a level that will allow for an alternative method of disposal.	Veolia plan to have this system installed and commissioned by the end of 2017.
	The contingency measures that would be implemented should the upgrades not be completed before ED3S reaches capacity.	Contingency measures will only need to be adopted in the event that the upgraded leachate treatment solution is delayed sufficiently that ED3S exceeds capacity. Veolia intend to only construct a small portion of ED3S as a new storage dam (termed ED3SS) to provide sufficient capacity until the long-term treatment system is implemented and operational. Contingency measures may include: • Implementation of additional measures to increase evaporation rate, such as mechanical evaporation equipment and/or biological systems • Investigate the use of heat from the onsite power station • Adoption of evaporation technology to assist in volume reduction
Goulburn Mulwaree Council		
N/A	No comments on the proposal	Noted
Palerang Council		
Palerang Roads	No comments provided that condition related to roads in the Palerang Local Government Area are not affected	Veolia is not proposing to modify any conditions related to the use of roads. This modification will not impact on traffic in the Palerang Local Government Area
NSW Office of Environment & Heritage		
Management of Aboriginal Site	OEH is unable to comment on the adequacy of the proposed management of any unexpected Aboriginal objects. OEH is happy to provide comments on Veolia's	As these works are being undertaken in a previously disturbed area, the risk of encountering Aboriginal objects is very low. In the event that a suspected Aboriginal object is found, Veolia will immediately cease works and contact OEH to

Issue	Comment	Clarification / Response
	management plans in relation to this, if required.	confirm our recovery action detailed in our management plans are suitable.
NSW Department of Primary Industries – Water		
Works and Use Approval	Proposed modification does not require a Works and Use Approval	Noted
Groundwater and surface water contamination	ED3S is to be lined appropriately to limit contamination of groundwater or surface water storages	Veolia is proposing to construct a dam liner at ED3S. The lining system will meet current guidelines and will be independently verified.
NSW Department of Industry – Geological Survey of New South Wales		
Consultation with Heron Resources Ltd (Heron)	Geological Services of New South Wales recommends ongoing consultation with Heron	Veolia and Heron currently share an office at the Woodlawn site. Veolia and Heron hold frequent meetings to discuss topics relevant to both parties. This will continue.
Tarago and District Progress Association Incorporated		
Odour	If the proposal is approved TADPAI believe this modification would increase odour impacts in the community	Veolia has attended TADPAI meetings and discussed the benefit of this modification and the long-term leachate management solution involving leachate treatment. Veolia invited Terry Schultz from The Odour Unit to present the 2015 Odour Audit Report and discuss the proposed modification in relation to odour issues experienced by the community. Terry was able to use actual data collect from site to discuss the benefit of enabling Veolia to continue leachate extraction activities to maximise landfill gas capture. Continual leachate extraction and treatment provides a crucial function in managing odour at Woodlawn. It was also discussed that this modification is a short term solution to allow Veolia to develop and implement an effective long-term leachate management solution for the site Based on these discussions TADPAI indicated that they were satisfied as they had been briefed by Woodlawn site management about the requirement to increase storage capacity as well as the short and long term leachate treatment strategy which is critical to manage gas capture initiatives and odour.
Water NSW		
Water and leachate management	Water NSW considers this is only a short term solution. Major changes to leachate treatment is required. Water NSW should be consulted	Veolia is aware that this is only a short term option for leachate management. This modification will allow Veolia to continue to extract the required volumes of leachate from the Bioreactor and store

Issue	Comment	Clarification / Response
	regarding further changes to stormwater and leachate management.	the treated liquid for evaporation, until a long-term treatment solution can be implemented. Veolia is progressing with plans to implement a leachate treatment plant at the site as a long-term leachate management solution. This will likely require a further modification to the development consent and Veolia intend to consult with Water NSW throughout this process Veolia is happy to include Water NSW as an agency to be consulted with in the preparation of any amendment to the following management plans from the date of the approval of this modification: • Soil & Water Management Plan • Leachate Management Plan • Landfill Closure Plan • Rehabilitation Plan Veolia currently has versions of the management plans referenced submitted to DP&E for approval on 15 April 2016. These plans outline measures for long-term leachate management including leachate treatment as a long term option.

4 SUMMARY OF MITIGATION MEASURES

A summary of the mitigation measures related to the modification are provided including minor amendments based upon post EA consultation with relevant stakeholders. Both original mitigation measures outlined in the EA and additional mitigation measures (in bold) are provided Table 4.1.

Table 4.1 Mitigation Measures

Issue	Mitigation Measures / Comments
Aboriginal archaeology & Historic heritage	The modification relates to areas wholly within land previously disturbed by mining activities. There are no known heritage sites or relics in the vicinity of ED3S. Should any Indigenous Artefacts or sites be encountered then works will stop and advice will be sought from the Office of Environment & Heritage.
Air quality	A detailed odour assessment has been prepared by The Odour Unit for the proposed modification which indicated that odour impacts would not impact offsite receivers
	An odour dispersion model has been carried out to demonstrate that odour impacts would not impact offsite receivers from the proposed modification (at worst case conditions). The odour dispersion model report is included in Appendix A.
	A calculation on the overall net odour impact from the modification has been undertaken, and shows a net decrease in odour emissions.
	Veolia are approaching the ED3S expansion as a staged process and will only construct dams as required to satisfy storage requirements. Once the long-term leachate treatment plant is operational, Veolia do not expect that additional storage dams will be required.
	Veolia has presented on the benefits of this modification in relation to community concerns relating to odour issues within local community meetings.
Ecology	The modification relates to areas wholly within land previously disturbed by mining activities. No vegetation is required to be cleared.
Greenhouse gas emissions	The proposed modification will use existing plant and equipment at the site during the construction period and will not result in any changes to site operations that would cause additional greenhouse gas emissions
Groundwater	ED2 is lined with an impervious material and therefore minimal infiltration of stored stormwater to groundwater is expected.
	ED3S will be lined in accordance with the requirements of *environmental guidelines: solid waste landfills* prior to the storage of any treated leachate.
Hazardous materials	The only hazardous materials that would be used for the proposed modification would be fuel used to power plant and equipment used during the construction period. All fuel is stored on bunds or within double-skinned tanks
Land Management	Any sediment would be managed within the site's stormwater management system and would not flow off-site.
	Eroded areas would be rehabilitated to address any issues.
	Establishment of weeds on exposed soils will be effectively mitigated by soil type.
Noise impacts	The nearest sensitive receiver to the site is located over 1.6 km away. Due to the minor nature of the works associated with the proposed modification, it is not

Issue	Mitigation Measures / Comments
	considered to have the potential to cause additional noise impacts to this receiver above those that would already occur from the site. Other earthmoving activities frequently occur in adjacent areas of the site.
Socio-economic impacts	No impacts expected due to minor nature of works
Surface water	A detailed site water balance study was prepared for the proposed modification and it is concluded that the proposed changes would not increase the risk of discharge of contaminated water from the site.
Road Transport	The proposed modification will not require the transport of any equipment or materials on a public road, or require works within a public road.
Visual impacts	No works under the proposed modification are visible from public vantage points
Waste Management	The proposed modification will not generate any additional waste above the waste that would normally be generated at the site. Any fill generated through dam construction would be beneficially used for environmental controls within the Bioreactor.

ATTACHMENT A

ODOUR DISPERSION MODEL REPORT