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Your reference: **Our reference:**
SO 1002191 2823757

Dear Mr Cooke

**Melbourne Regional Landfill
Works Approval Application 1002191 (WAA)
Section 22 Notice Additional Information**

We refer to the EPA's section 22 notice dated 7 September 2016, EPA's letters dated 21 October 2016 and 6 December 2016, and our meeting on 30 November 2016.

This letter and attachments constitute a consolidated response to the EPA letters of 21 October and 6 December 2016. The document "Response to Hydrogeological Issues Raised by EPA Section 22 Notice of 21st October 2016 in relation to Melbourne Regional Landfill" prepared by David Ife of AECOM and dated 30 November 2016 was previously provided to EPA at our meeting on 30 November 2016, but a copy is included in Appendix 1.

This letter supplements Landfill Operations' initial response to the section 22 notice, dated 23 September 2016, and Landfill Operations' response to submissions, as provided to the Panel considering the WAA.

1 Long term undisturbed groundwater levels (Undisturbed Levels)

Understanding the Baseline Environment

1. Provide a map for the area showing long term undisturbed groundwater level contours (in m, AHD) with justification of the groundwater contours shown.

1.1 Background

- (1) We understand that EPA is concerned about the relationship between groundwater levels mapped by AECOM and groundwater extraction by Boral for quarry purposes.

1.2 Cleanaway response

- (1) Cleanaway maintains that the relationship between extraction and groundwater levels is weak, and that EPA should adopt 0.7 metres as the maximum recovery level if pumping stops. It is noted that the groundwater extracted by Boral comes from the deeper aquifer.
- (2) Please refer to the memorandum prepared by AECOM, included as Appendix 2.

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- (3) If EPA does not accept this position, Cleanaway requests that the works approval allow for the demonstration of Undisturbed Levels prior to licensing of the first cell. Cleanaway can see no reason why it is necessary to finally establish the Undisturbed Levels at works approval stage when:
 - (a) it is apparent from the volume of extraction and the size of the aquifer that the Undisturbed Levels will not be such as to affect the viability of the proposal; and
 - (b) if the Undisturbed Levels cannot be adequately demonstrated, there are design and management measures available that could be adopted to show compliance with clause 16(2) of the Waste Management Policy (Siting, Design and Management of Landfills) (**WMP**).
- (4) Section 4, below, includes additional discussion about how to appropriately deal with EPA's concerns about Undisturbed Levels.

2 Groundwater data and interpretation

Understanding the Baseline Environment

2. Provide additional groundwater analytical data and interpretation to demonstrate that levels of contaminants in groundwater are background levels in accordance with SEPP (Groundwaters of Victoria), including off-site upgradient and in particular how the 2014 s53V Environmental Auditor's conclusions and recommendations regarding the groundwater quality information at the existing landfill (which have been used in this hydrogeological assessment) have been addressed.

2.1 Background

- (1) The 2014 Audit included recommendations relating to groundwater monitoring data assessment and analysis, the monitoring network and refinement of the conceptual hydrogeological model for the area.
- (2) We understand that EPA considers the 2014 Audit, which relates to the existing landfill, and not the extension site, to be relevant to establishing background groundwater chemistry.

2.2 Cleanaway response

- (1) Please refer to section 7 of the draft 'Environmental Audit of Landfill Operations (s. 53V) (EPA Ref CARMS 64171-15; SO No 8004950)' prepared by Anthony Lane (with assistance of Jon Bartley) of Cardno, dated 28 October 2016 (**2016 Audit**), included as Appendix 3.
- (2) The 2016 Audit has addressed the 2014 Audit as summarised below.

2014 Audit	2016 Audit
A more comprehensive assessment of historic groundwater monitoring data is recommended for the next audit following the completion of the regional hydrogeology as set out in the draft URS report provided to the auditor.	The Auditor has carried out a more comprehensive analysis of groundwater chemistry
The establishment of a true up-gradient well pair in the upper and second basalt aquifers will be necessary to be able to draw more comprehensive conclusions regarding groundwater impacts.	This is not specifically addressed in the 2016 Audit, but up-gradient wells GW04 and GW04d provide the best indication of differences in groundwater chemistry between the two aquifers. This has been described in the AECOM Hydrogeological Assessment.
This is an auditor recommendation carried	The 2016 audit has carried out more analysis of

2014 Audit	2016 Audit
<p>forward for the next audit period as while a huge amount of historic groundwater data is available, the understanding of the relevance of much of this data remains unclear. However, at this point there appears to be little change occurring in the chemistry of down-gradient wells, apart from a possible slight increase in nitrate and manganese levels in wells down-gradient of Stage 1. The same trend is evident in newly drilled wells MB14, MB15 down-gradient of Stage 2 and may reflect a degree of attenuated leachate loss from early compacted clay lined cells in the Stage 2 area.</p>	<p>the groundwater data and has relied upon the AECOM results as well as an updated Piper plot and assessment. The Piper plot enables a significant amount of major ion chemistry data to be compared.</p> <p>The 2016 Audit concludes that “as exceedances are relatively low, and the nearest downgradient receptor is Port Philip Bay (approximately 12km to the southeast of the site) the Auditor considers that the beneficial use of groundwater for maintenance of aquatic ecosystems is not precluded downgradient from the site.”</p>
<p>Develop a comprehensive reporting format for presenting monitoring results in advance of the next audit.</p> <p>This should include finalisation of the draft hydrogeological assessment and a review of the effectiveness of the current monitoring well network in light of the findings of the hydrogeological assessment.</p> <p>The conceptual hydrogeological model should be refine for the Stage 2 area and the appropriateness of the current monitoring well network confirmed.</p> <p>Historic data should be analysed to develop meaningful data trends for key indicator parameters.</p>	<p>The 2016 Audit LOPL comments on status are: “AECOM (2016) has completed the HA for the extension which indicates there are no impacts to groundwater. As part of this assessment the groundwater monitoring network was expanded to include baseline levels and quality the full Boral quarry works area.”</p> <p>See also above, and comments below in relation to 2016 Audit recommendations.</p>

- (3) AECOM reaches different conclusions to the Auditor in relation to the impact of leachate on groundwater. AECOM’s views are set out in written comments provided recently to the Auditor following discussions with the Auditor (see Appendix 4). The Auditor has confirmed that he will consider this information in finalising the 2016 Audit.
- (4) The 2016 Audit includes recommendations to further reduce and manage risks to beneficial uses of groundwater to acceptable levels:
 - (a) Upgrade the groundwater monitoring network.
 - (i) Survey groundwater bores MB04, MB09 and MB11, for measurement reference point elevation and ground elevation.
 - (ii) Install two additional monitoring bores at the location of MB12. One bore into the Lower NVA, and one bore into the Upper NVA.
 - (iii) Install two additional monitoring bores close to the northern boundary of the Stage 2 landfill cells – in the Upper NVA and Lower NVA.
 - (iv) Install a groundwater bore to monitor the Lower NVA adjacent MB04.
 - (b) Revise the Monitoring Program to include gauging of water levels in all on-site and off-site groundwater monitoring bores in each monitoring event.

- (c) Measure groundwater level, field chemistry and obtain a groundwater sample for laboratory analysis from the four groundwater extraction bores during a GME undertaken in the next Audit period.
- (d) Add VFA (volatile fatty acids) to the laboratory analytical suite for groundwater.
- (5) The implementation of these recommendations will ensure that the understanding of groundwater levels and quality will continue to improve.
- (6) Cleanaway's view is that the critical, shared finding of the 2014 Audit, the 2016 Audit and the AECOM work is that no protected beneficial uses of groundwater are precluded.

3 Geotechnical stability

Defining the potential impacts to the Receiving Environment

The following requests are made:

1. Provide an assessment and measures on the geotechnical stability of the side wall and the side wall liners of the landfill, in particular where the landfill does not adjoin the quarry batter. Details are requested of the measures that will be installed to ensure that the geotechnical stability of side walls and the side wall liner will be maintained.

3.1 Cleanaway response

- (1) In relation to the situation where the landfill adjoins the quarry batter, please see attached memorandum prepared by Cleanaway (Appendix 5).
- (2) In relation to the situation where the landfill does not adjoin the quarry batter, please see attached memorandum prepared by Golder Associates (Appendix 6).

4 Design and management measures – separation from groundwater

Demonstrating Environmental Best Practice

The following requirements are made with regard to:

1. Additional design and management measures. If the information provided in response to (1) Understanding the Baseline Environment above indicates that a 2m separation between waste and the long term undisturbed depth to groundwater is not achieved (for any area within the landfill), please provide additional design and management practices that would be adopted to show compliance of clause 16(2) of the WMP. Note that those measures must be acceptable to the Authority.

4.1 Background

- (1) Clause 16(2) of the WMP provides that:

All new landfill sites must deposit waste at least two metres above the long term undisturbed depth to groundwater, unless the:

 - (a) *landfill operator satisfies the Authority that sufficient additional design and management practices will be implemented; and*
 - (b) *the Authority determines that regional circumstances exist that warrant the development of the landfill.*
- (2) EPA's view is that it is necessary for specific additional design and management practices to be approved at this works approval stage.

4.2 Cleanaway response

- (1) As set out in section 1, Cleanaway considers that a 2 metre separation between waste and the Undisturbed Level will be achieved for all areas within the landfill. Cleanaway's position is that:
 - (a) EPA should accept that separation of 2.7 metres above the groundwater contours shown in the AECOM report accompanying the works approval application (or 2 metres above the calculated Undisturbed Levels) is acceptable; or
 - (b) EPA should allow Cleanaway to demonstrate Undisturbed Levels prior to licensing of the first cell, and then provide for separation of 2 metres from those levels.
- (2) If neither of these approaches is accepted by EPA, Cleanaway's position is that the works approval should require that Cleanaway provide additional design and management practices to the satisfaction of the EPA prior to the licensing of the first cell.
- (3) We do not consider that there is anything in clause 16(2) that requires that the specific additional practices and measures be determined at this time:
 - (a) It is clear that practicable additional measures and practices can be applied to deal with any lack of groundwater separation. If EPA, in the works approval, requires these additional measures and practices to be designed to EPA's satisfaction prior to licensing and then implemented, then it is also clear that they will be implemented. Clause 16(2)(a) is therefore satisfied.
 - (b) EPA can make its determination as to whether regional circumstances exist that warrant the development of the landfill. Cleanaway's position is that such circumstances undoubtedly do exist, as demonstrated in Cleanaway's need assessment, the State-Wide Waste and Resource Recovery Infrastructure Plan 2015-44 and the Metropolitan Waste and Resource Recovery Implementation Plan 2016. Clause 16(2)(b) is therefore satisfied.
- (4) Further, it would be inappropriate to mandate without flexibility which measures and/or practices will be required given that it will be some time until they would be required.
- (5) In light of Cleanaway's view of clause 16(2) and EPA's desire to resolve issues at this stage of works approval, we propose a works approval condition generally as follows:

Prior to licensing of the each of proposed cells 1-3, Cleanaway must:

- (i) *design a groundwater relief system generally in accordance with the Golder Associates sketch in Figure 5 of Appendix 6 to the satisfaction of EPA;*
- (ii) *demonstrate to the satisfaction of the EPA that the long term undisturbed groundwater levels will be more than 2 metres from waste; or*
- (iii) *demonstrate to the satisfaction of the EPA other design and/or management practices that are satisfactory in lieu of the groundwater relief system,*

Where design and/or management practices are approved by the EPA, they must be implemented to the satisfaction of EPA.

We look forward to EPA undertaking and concluding its consultation in relation to the section 22 notice responses, and to a prompt assessment and decision following receipt of the Panel report.

Yours faithfully



Alexandra Guild
 Special Counsel
 Norton Rose Fulbright Australia
 Partner: Elisa de Wit

Appendices

	Title	Author	Date
1.	Response to Hydrogeological Issues Raised by EPA Section 22 Notice of 21st October 2016 in relation to Melbourne Regional Landfill	David Ife, AECOM	30 November 2016
2.	Letter to EPA – Section 22 Notice Additional Information – Groundwater Levels	David Ife, AECOM	9 December 2016
3.	DRAFT Environmental Audit of Landfill Operations (s. 53V) (EPA Ref CARMS 64171-15; SO No 8004950) - Section 7 only	Anthony Lane (with assistance of Jon Bartley), Cardno	28 October 2016
4.	Email to Cardno – Draft Audit Report - Melbourne Regional Landfill	David Ife, AECOM	8 December 2016
5.	MRL S22 Response letter – Geotechnical Stability of Sidewall batter and liner system	Alaa Abou-Antoun, Cleanaway	30 November 2016
6.	Memorandum – Further information re Section 22 Notice Additional Information, 1528407-057-M-Rev0	Andrew Green, Golder Associates	9 December 2016