Jacobs

Memorandum

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Subject	**Response to Further Information Request under Section 92(1) of the RMA 1991**	**Project Name**	AB Lime Limited Landfill Resource Consent Application
Attention	Michael Durand	**Project No.**	IZ000400
From	Ryan McCone		
Date	22 March 2021		
Copies to	**Fiona Smith, Bridget Irving, Andrew Henderson, Charlie Watts**		

1. Introduction

This memorandum is a response to the Further information request under Section 92(1) of the Resource Management Act 1991 for APP 20202200, APP-205862-01 provided to AB Lime Limited on the 19th March 2021.

The request is as follows:

'Please provide a revised or supplementary assessment of the environmental effects of the proposed activities in accordance with accepted case law and practices. In particular, this assessment must address the totality of the environmental effects and their significance for the period 2038 to 2046, without discounting any effect associated with the resource consents that will be replaced.'

The rest of this memorandum addresses the request.

2. Accepted Case Law and Practices

The Section 92(1) request has asked for an assessment of the environmental effects of the proposed activities in accordance with accepted case law and practices. The s92(1) request cites *Ngāti Rangi Trust v Manawatu-Whanganui Regional Council*[1] and *Port Gore Marine Farms v Marlborough District Council*[2] as authority on this matter. Both of these cases, one a renewal for an application for a water take permit (*Ngāti Rangi Trust*) and the other an application for renewal of a resource consent for high yielding mussel farms (*Port Gore Marine Farms)* considered that it should not be assumed that existing consents with finite terms will be renewed or renewed on the same conditions.

This principle has been taken from the authors of *Environmental and Resource Management Law:*

> *"Accordingly, the existing environment cannot include, in the context of a renewal application, the effects caused by the activities for which renewal consents are sought,*

[1] [2016] NZHC 2948
[2] [2012] NZEnvC 72.

unless it would be fanciful or unrealistic to assess the existing environment as though those structures authorised by the consent being renewed did not exist…"[3]

In the context of the AB Lime landfill the Applicant strongly contends that this application can be distinguished as it is both unrealistic and fanciful to consider the existing environment as though the landfill, authorised by the original consent, did not exist. This contention is based on the following factors:

- By 2038 the landfill will have accepted at least 2,278,635 m^3 cumulative waste (based on conservative acceptance data[4]) and will be a heavily modified environment; and
- The enduring effects outlined in **Appendix A** identifies that it is highly impractical and unreasonable to assess the existing environment without the consideration of the landfill's existence. In particular landfill gas, leachate, capping and stormwater will all need to be appropriately managed post-closure, irrespective of the status of any consents.

Therefore, following 2038 or the surrender of the existing consents, the Applicant contends that the environment beyond 2038 will unavoidably include the legacy effects of past lawful activities. Assessing the effects and their significance in total, as if the landfill's activities were not part of the environment is not practicable for this application beyond 2038.

3. Level of Assessment Beyond 2038

On the basis of the conclusion reached in Section 2, the assessment of effects beyond 2038 shall be confined to matters which fall above and beyond what are considered to be lawful legacy effects.

The key effects that are not legacy effects are in relation to traffic movements and odour control related to the active landfill. The control of traffic movements for the purposes of this application remains a land use matter, which is currently under the consideration of the Southland District Council as part of their assessment of this application.

The remaining matter of interest is odour control related to the active landfill. It is the contention of the Applicant that the assessment of effects in relation to odour control in relation to a particular consenting date (beyond 2038) is arbitrary. The air quality technical assessment is based on implementing an adaptive management framework and providing controlling mitigation measures and mechanisms to ensure that there is no offensive or objectionable effect of odour beyond the boundary of the site. This standard is used as the baseline for the assessment and endures beyond 2038 and is created as a framework to manage waste irrespective of the amount accepted. The primary objective of the assessment is to prevent offensive and objectionable effects at the nearest sensitive receptors. The Applicant accepts comparisons have been made to current operations and contends this is helpful (and necessary) to compare the proposed odour control framework against current operations to highlight areas where improvement is needed and can occur.

Ambient air quality standards have been modelled and are shown to be compliant at all levels of operation beyond the boundary of the site[5]. Therefore, the assessment of ambient air discharges, whether in 2030, or 2040, are demonstrated to be compliant.

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[3] Nolan D, *Environmental and Resource Management Law (5th ed, Lexis Nexis, Wellington, 2015) at 610.*
[4] *Appendix O: Landfill Capacity and Lifespan Technical Memo,* AB Lime Limited Resource Consent Application (29th May 2020)
[5] *Appendix K, Landfill Air Quality Technical Memo* AB Lime Limited Resource Consent Application (29th May 2020)

Overall, implementing the adaptive management plan the effects of odour control are expected to be less than minor beyond 2038.

4. Duration

The Applicant proposes a duration of 25 years from giving effect to this consent, being the date on which the consent holder surrenders the old consents. The Applicant acknowledges that this date could extend slightly beyond 2046, depending on when the consent is given effect to.

As identified in Section 3, it is the contention of this Application that matters relating to effects beyond 2038 are already appropriately addressed in the application. The 25 year duration is now proposed to bring the application into line with the consent duration principle outlined in the Ngāi Tahu ki Murihiku Natural Resources and Environmental Iwi Management Plan 2008.

4.1 Replacement Consent

A replacement consent application is not considered on exactly the same basis as a new application. Under Section 104(2A) of the Resource Management Act 1991 the regulatory authority must give specific regard to the value of investment of the site involving an application for a replacement consent. The Applicant contends that limiting the duration of the consent to a short-term period is not the best way to address whatever uncertainty the council may have in regard to adverse effects. Over the lifetime of the landfill, whether that is 2038 or a date beyond that, the effects are not likely to change, therefore, a range of adaptive management, monitoring/reporting and review conditions is considered to be more appropriate compared to limiting the consent duration.

5. Conclusion

It is the conclusion of this memorandum that it is both fanciful and unrealistic to assess the landfill beyond 2038 as if the infrastructure did not exist (enduring effects of landfill outlined in **Appendix A)**. The level of assessment provided in the application is appropriate for a consent duration of 25 years. The adaptive management framework provided is considered appropriate to manage effects at all levels of operation, including after the 2038 expiry of current consents.

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Response to Further Information Request
under Section 92(1) of the RMA 1991

Appendix A: Enduring Environmental Effects Post-Closure

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Subject	**Enduring Effects Post AB Lime Landfill Closure**	**Project Name**	AB Lime Limited Landfill Resource Consent Application
Attention	Ryan McCone	**Project No.**	IZ000400
From	Walter Starke		
Date	22 March 2021		
Copies to	**Bridget Irving, Andrew Henderson, Charlie Watts**		

1. Introduction

The purpose of this memorandum is to provide an assessment of the environmental effects that would endure if the landfill were to close in 2038. The objective is to provide an outline of the continuing effects associated with this complex regionally critical infrastructure post-closure, and to help with the assessment of what is a realistic consideration of the existing environment in 2038 and beyond.

This memorandum identifies what effects would endure if the landfill ceased to operate, as well as providing an estimated timeframe that the environmental effects would endure.

2. Environmental Effects

In New Zealand, guidance on the design of landfills is provided in the Technical Guidelines for Disposal to Land prepared by the Waste Management Institute New Zealand (WasteMINZ) (2018)[1]. The WasteMINZ guidelines category the AB Lime Landfill is a Class 1 landfill since it is a Municipal Solid Waste Landfill.

In terms of the type and duration of environmental effects the WasteMINZ guidelines state that:

- *Landfill aftercare is required to ensure ongoing management of final cover and leachate, stormwater and landfill gas control systems.*
- *Monitoring of groundwater, surface water and landfill gas needs to be continued during the aftercare period of the landfill, until the strength of discharges has reduced to a level at which they are unlikely to have any adverse effect on the environment. This aftercare period is likely to last 30-50 years for a Class 1 landfill.*

A landfill aftercare period, also referred to as a landfill closure period, of 30 to 30^{+} years is typical for New Zealand landfills. The following New Zealand landfills all have a minimum 30 year aftercare period specified in their resource consent conditions or management plans:

- Kate Valley landfill in Christchurch;

[1] Waste Management Institute New Zealand (WasteMINZ). 2018. *Technical Guidelines for Disposal to Land*

- Redvale landfill in Auckland;
- Whitford landfill in Auckland; and
- Tirohia landfill in the Waikato.

Australian, United Kingdom and USA also have typical landfill aftercare periods of 30 to 30^{+} years.

WasteMINZ identifies the following site operations as necessary during the post-closure period:

- Leachate collection and disposal;
- Landfill gas control;
- Monitoring of site integrity;
- Repairs to the final cover system;
- Maintenance and control of vegetation;
- Stormwater and sediment control; and
- Monitoring of groundwater, surface water and landfill gas.

The following sections outline the key environmental effects expected for a minimum of 30 years if the AB Lime landfill were to close in 2038.

2.1 Potential Enduring Adverse Effects of Leachate on Groundwater, Surface Water and Air Quality

Leachate is generated by surface water entering the landfill, and also by the waste material in the landfill. If the landfill were to close in 2038 the entire landfill, including the open working face, would have permanent capping installed. This would reduce the amount of surface water entering the landfill, and therefore, reduce the amount of leachate produced. However, it is expected that the waste material will continue to generate leachate for a minimum of 30 years following closure of the landfill. Therefore, ongoing collection of leachate, maintenance of the leachate system, and monitoring will be required.

The potential legacy adverse environmental effects relating to leachate are three-fold. Firstly, leachate collection and processing has been identified as a potential odour source. Secondly, leachate that is not managed correctly has the ability to cause adverse effects on surface water. Stormwater that comes into contact with refuse material is currently treated as leachate[2]. Finally, leachate that is not managed correctly can cause potential adverse effects on groundwater. As discussed above, it is expected that the waste material will continue to generate leachate for a minimum of 30 years following closure of the landfill. Whilst the risk of contamination is considered to be low[3], the risk remains.

[2] *Appendix W. Site Stormwater Management Technical Memo,* AB Lime Limited Landfill Resource Consent Application

[3] *Appendix L. Groundwater Quality Technical Memo*, AB Lime Limited Landfill Resource Consent Application.

2.2 Potential Enduring Adverse Effects of Landfill Gas Effects on Air Quality

Landfill gas is captured through pipe networks both within the landfill and aboveground for transmission to the landfill gas flare. If the landfill were to close and was permanently capped in 2038, landfill gas production does not suddenly stop but will continue for many years, probably a few decades, as the waste slowly decomposes within the landfill. Therefore, the landfill gas would still need to be captured, disposed of, and monitored. During the aftercare period, the landfill gas infrastructure will also need to be maintained. This includes upkeep of the landfill gas wells, pipework and the flare.

Landfill gas that is not captured and managed effectively will produce fugitive greenhouse gas emissions (such as methane) that can be harmful to the ozone layer, and has the potential to cause legacy adverse effects on the environment. Secondly, landfill gas that is not effectively managed post-closure has the ability for subsurface combustion creating a human health and environmental hazard. Finally, landfill gas is a known source of odour. Landfill gas not managed properly after the closure of the landfill has the potential to cause adverse effects in regard to odour that are offensive and objectionable beyond the site boundary as long as landfill gas is produced at the landfill.

2.3 Potential Enduring Adverse Effects of Capping on Air Quality and Groundwater

The operational landfill area will be progressively restored during the operation of the landfill. The capping provides a barrier to surface water infiltration, controls discharge of landfill gas, surface water and leachate, and rehabilitates the site surface[4]. If the landfill were to close in 2038, final capping on any open landfill areas would need to be completed alongside any remedial work on previously restored areas. Monitoring and maintenance of the cap to assess and repair signs of cracking, erosion, and subsidence will be ongoing post-closure for a minimum of 30 years, but probably considerably longer. Without effective management the occurrence of cracking, erosion and subsidence may result in odour issues, fugitive landfill gas emissions. Also, there is the potential for an increase in the production of leachate due to water ingress, which may impact on groundwater quality. Without effective management these issues have the potential to cause legacy adverse effects on the environment. It is expected that the waste material will continue to generate leachate for a minimum of 30 years following closure of the landfill.

2.4 Potential Enduring Adverse Effects of Stormwater on Surface Water

Stormwater that is generated within the quarry area is collected in an open channel before it comes into contact with the landfill areas. This open channel discharges to a 1200 mm diameter pipe, which drains under the landfill into the stormwater pond. If the landfill were to close in 2038 this pipe would have to be decommissioned, stormwater from this area would require alternative management. In the place of current stormwater system, a significant stormwater diversion would need to be constructed around the outside of the landfill boundary to divert the stormwater that is generated within the quarry area into the stormwater pond.

In addition, stormwater from the permanent landfill cap will need to be diverted into the stormwater pond to allow sediment to settle until the site is sufficiently rehabilitated to allow stormwater run-off directly into natural drains.

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[4] *Appendix Q. Landfill Operations Management Plan*, AB Lime Limited Landfill Resource Consent Application

During the post-closure period, ongoing collection of stormwater, maintenance of the stormwater collection, treatment and storage systems, and monitoring will be required. Sedimentation and contamination of stormwater will remain as a potential legacy adverse effect on the Winton Stream as the ultimate receiving environment.

2.5 Conclusion

WasteMINZ guidelines (2018) identify the comprehensive list of what adverse effects require management at the site of a landfill post-closure.

A realistic consideration of the existing environment in 2038 and beyond identifies that a closed landfill has the potential to cause legacy adverse effects on air quality, surface water and groundwater.

Leachate, landfill gas, permanent capping and stormwater all require comprehensive management and form part of the enduring environment for a period of at least 30-50 years, which spans generations. It is concluded that a realistic consideration of the environment should consider the identified potential legacy effects that are related to the current lawful operation of the landfill.