

21 August 2018

Horowhenua District Council
Private Bag 4002
LEVIN 5540

Attention: Andrew Grant & Ryan Hughes

File ref: RC7289
6009/1, 6010/1, 6011/1
7289/1, 102259/1
HSS

Dear Sirs,

LEVIN LANDFILL COMPLIANCE REPORT – 1 JULY 2017 – 30 JUNE 2018

The attached compliance report assesses the annual monitoring data, submitted by Horowhenua District Council (HDC) from 1 July 2017 to 30 June 2018, as required by the resource consents held by HDC to operate the Levin Landfill. This information has been used to assess the Levin Landfill against the relevant consent conditions.

As a result of this assessment the Levin Landfill has been given an overall **Comply – On Track** for consent 6009/1, **Comply** for consent 6010/1, a **Significant Non – Compliance** for consent 6011, and **Comply – Full** for consents 7289/1 and 102259/1. Please note that since the Levin Landfill is at the time of this invoice complying with 4 of the resource consents assessed and not complying with one of the resource consents assessed, the compliance monitoring charges have been split accordingly between 80% or 100% of the full charge as detailed in the attached cost sheet.

Please find attached a copy of Compliance Assessment Guidelines for your reference.

If you have any queries about the attached report, please contact me via email hamish.sutherland@horizons.govt.nz, on direct dial 0508 800 800.

Kind regards



Hamish Sutherland
SENIOR CONSENTS MONITORING OFFICER

Encl: Annual Compliance Report
Invoice
Cost Breakdown

ANNUAL COMPLAINTS AUDIT REPORT

LEVIN LANDFILL

Resource Consents
6009, 6010, 6011, 7289 & 102259.

Reporting Period
1 July 2017 – 30 June 2018



21 August 2018



Prepared By

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Senior Consents Monitoring Officer

Reviewed By

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Team Leader Consents Monitoring

EXECUTIVE SUMMARY

This compliance report assesses compliance for resource consents 6009, 6010, 6011, 7289 & 102259. These resource consents are held by the Horowhenua District Council (HDC) for the operation of the Levin Landfill, situated in Hokio Beach Road. The assessment period this report covers is 1 July 2017 to 30 June 2018. During this assessment period various monitoring reports have been submitted to Horizons Regional Council (Horizons) as required by the aforementioned consents. These monitoring reports along with a site inspection undertaken on 4 August 2017 have been used to assess compliance against the site resource consents.

In addition to the monitoring reports and site inspection detailed above Horizons have undertaken a number of odour assessments, in response to odour complaints, related to the landfill. These complaints were initially from a complainant, at one address, who shared a mutual boundary with the landfill. This property was subsequently bought by the consent holder and there were no complaints made to Horizons for approximately six months. Recently there have been further complaints but as yet objectionable or offensive odour has not been detected by a Horizons Enforcement Officer during this latter period.

As a result of the inspections and assessments outlined above the following compliance gradings have been allocated;

Resource consent	Nature of resource consent	Compliance Rating
6009/1	Discharge of solid waste onto land.	Comply – On Track.
6010/1	Discharge of landfill leachate onto and into land.	Comply.
6011/1	Discharge of landfill gas, odour and dust to air.	Significant Non-Compliance.
7289/1	Discharge of liquid waste onto and into land.	Comply – Full.
102259/1	Discharge of stormwater to land and potentially to groundwater via soakage.	Comply – Full.

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SCOPE OF REPORT

This compliance report assesses compliance of the Levin Landfill against resource consents 6009, 6010, 6011, 7289 & 102259 which are held by the Horowhenua District Council. The focus of this compliance report is a data assessment of the monitoring reports collated by the consent holder as required by the above resource consents. The period covered by this report is 1 July 2017 – 30 June 2018.

Under the above consents various monitoring reports have been submitted to Horizons during the assessment period that relate to this compliance report. Accordingly the following monitoring reports have been utilised to assess the Levin Landfill's compliance with said consents:

- Levin Landfill Annual Compliance Report July 2016 – June 2017
- Levin Landfill July 2017 Quarterly Monitoring Report
- Levin Landfill October 2017 Quarterly Monitoring Report
- Levin Landfill January 2018 Quarterly Monitoring Report
- Levin Landfill April 2018 Quarterly Monitoring Report

This report also makes use of the following management plans related to the above consents:

- Levin Landfill Management Plan
- Levin Landfill Stormwater Management Plan
- Levin Landfill – Environmental Monitoring & Reporting Requirements

This compliance report does not assess resource consent 106798 which is associated with the operation of the landfill gas flare; this will be covered in a separate and subsequent report.

BACKGROUND

The Levin Landfill is located on Hokio Beach Road in the Horowhenua District, 4 kilometres west of Levin. The landfill site is located in undulating sand country surrounded by pastoral farming land, 3 kilometres from the coast and 6 kilometres from State Highway 1. The site is approximately 72 hectares in area.

The Hokio Stream (the single outlet for Lake Horowhenua) runs in close proximity to the northern boundary of the landfill site as it flows west to the sea over a distance of approximately 2.5 kilometres. There are a number of rural residences located to the north-east of the landfill site and the small coastal settlement of Hokio Beach is located approximately 1.5 kilometres to the north-west. The Ngatokowaru marae (Ngati Pareraukawa, Ngati Raukawa) is located approximately 500 metres north-east of the landfill property, while the Kawiu marae (Muaupoko) is on the northern shore of Lake Horowhenua.

The original resource consents were granted to Horowhenua District Council (HDC) in 1998. These covered the closed landfill and the new lined landfill.

In 2004 the then Parliamentary Commissioner for the Environment (the Commissioner), received complaints from several members of the local community expressing concern about the management and associated environmental effects of the Levin Landfill. The commissioner suggested a review was in order. Between 2004 and 2007 there was a lot of to and fro between HDC and Horizons and the various consultants that were employed in relation to these concerns.

The Commissioner had originally indicated that their formal investigations would be postponed until the consent review had been completed; however, given delays in progressing the review, in July 2007 the new Commissioner decided to commence an investigation and prepare a report for the benefit of all parties in an aim to resolve the matters at hand.

The Commissioner's report acknowledged that Horizons had made a decision to publicly notify a new consent review which would supersede previous negotiations between Horizons and HDC. Notwithstanding the proposed review, the Commissioner considered that there was significant merit in releasing their findings at that particular time given the concerns of the local community and the importance of the outcome of the proposed review.

The Parliamentary Commissioner for the Environment report (August 2008) and supporting technical assessment undertaken by Tonkin and Taylor (dated 25 March 2008) included key recommendations which were taken into consideration by the Commissioner in forming their final recommendations.

The report provided guidance for the review of the landfill's resource consents including recommendations on compliance monitoring by Horizons and the monitoring and operation of the landfill by HDC, including liaising with the Neighbourhood Liaison Group.

A formal review was initiated which was completed by 2010 and resulted in the current resource consent conditions under the following resource consents:

Resource consent number	Nature of resource consent
6009/1	Discharge of solid waste onto land.
6010/1	Discharge of landfill leachate onto and into land.
6011/1	Discharge of landfill gas, odour and dust to air.
7289/1	Discharge of liquid waste onto and into land.
102259/1	Discharge of stormwater to land and potentially to groundwater via soakage.
106798	Discharge contaminants to air associated with flaring of landfill gas at the Levin Landfill.

Recently a further review of the relevant resource consent conditions was completed; however, this is subject to an appeal therefore the current resource consent conditions apply.

COMPLAINTS RECEIVED

All of the complaints logged for the Levin Landfill with Horizons during this assessment period have been related to odour. Initially these complaints were primarily coming from one complainant, at one address, who shared a mutual boundary with the landfill. To assess compliance with this condition Horizons had been working with this complainant requesting they keep an odour diary and notify Horizons via the Pollution Hotline during odour events.

During the initial part of this assessment period, between 1 July 2017 and 7 December 2017, many of the notifications from this complainant and others, were predominantly sent by email, after odour events had occurred, meaning a direct assessment could not be undertaken. Of the 40 complaints received, between 1 July 2017 and 7 December 2017, 24 were received via email, after an event had occurred and 16 were called in to the Pollution Hotline. Of the 16 Pollution Hotline calls there were five occasions when staff were available to undertake site inspections or odour assessments.

At some time during February 2018 the primary complainant moved and the property was subsequently bought by the consent holder. Around the time said property was purchased the number of complaints dropped significantly with there being no complaints for six months.

Complaints started again on 8 June 2018, since this time there have been 12 more complaints logged with Horizons. Of these 12 complaints six were notified by email after the event with the remaining 6 being called into the pollution hotline. Four of the complaints that were received by the pollution hotline resulted in site inspections. None of these resulted in objectionable odour from the Levin Landfill being detected.

Horizons compliance assessment in relation to these odour complaints is discussed further under resource consent 6011, condition 3.

A breakdown of the notifications discussed above are summarised below in **Figure 1**

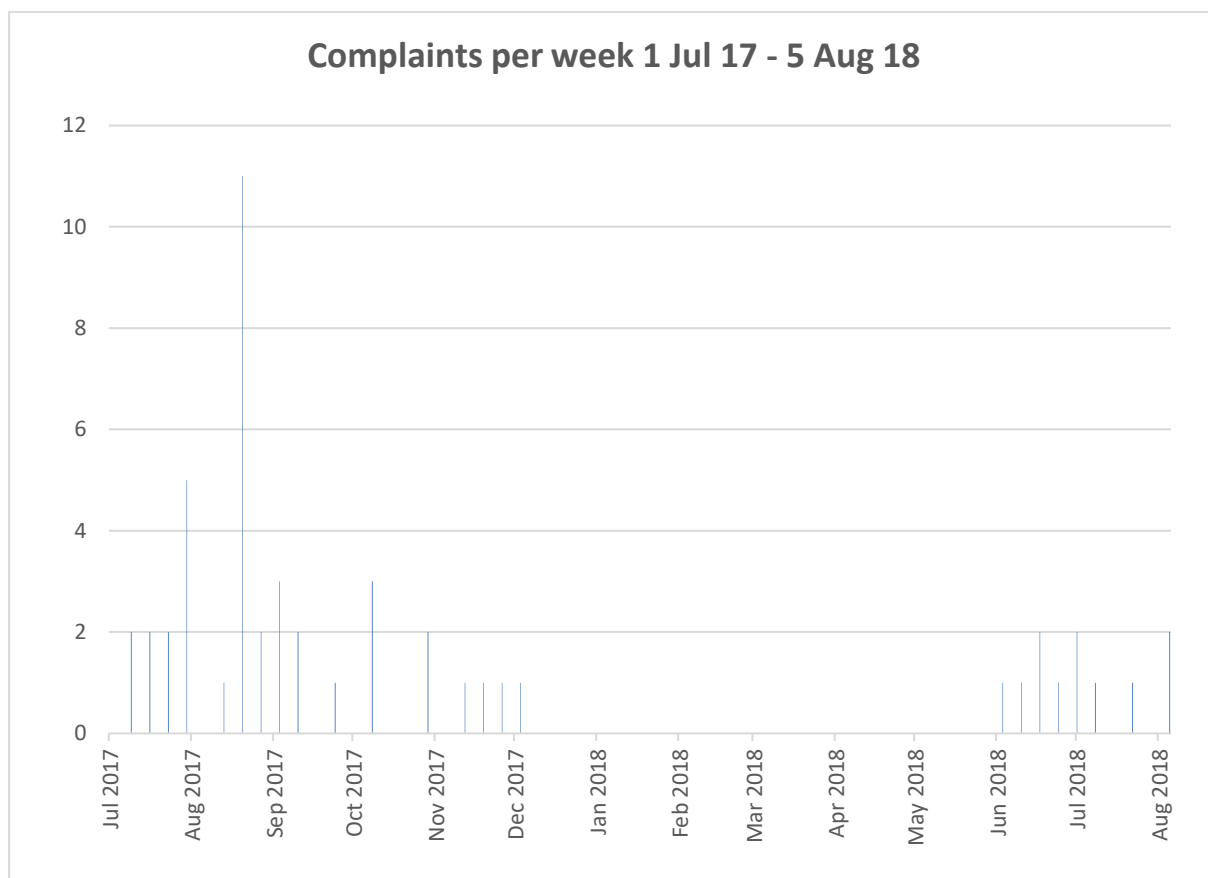


Figure 1: Number of complaints by week 1 July 2017 – 4 August 2018.

GENERAL CONDITIONS APPLICABLE TO 6009

Consent is granted to the Horowhenua District Council to **discharge solid waste to land** at the Levin landfill, Hokio Road, Levin, legally described as Lot 3 DP 40743 Blk II Waitohu Survey District, for a term expiring 35 years from the commencement of the consent subject to the following conditions:

1. *This permit does not authorise the disposal of liquid waste to land at the Levin Landfill.*

Liquid waste is defined as:

Septic tank waste, grease trap waste, sewage and any material that contains free liquids.

The presence of free liquids may be determined by either of the following methods, whichever is most practicable at the time:

- i. *The "Paint Filter Test"; or*
- ii. *Material which may be loaded, transported and deposited at the landfill without the risk of free liquid seeping from the material, and without the risk of having the deposited material flow under gravity down any slope on the landfill shall be deemed to not contain free liquids.*

Condition 26 of this consent and various conditions of resource consent 7289 provide exceptions to this condition under certain situations. Despite this the Levin Landfill Management Plan requires that any liquid waste disposed of at the Levin Landfill must be accompanied by a Hazardous Waste Application Form. There have been no forms generated during this assessment period and therefore no liquid waste disposed of at the Levin Landfill.

Condition Compliance Status: Comply Full

General Conditions – Discharge Solid Waste to Land

2. *The Permit Holder shall take all practicable measures to avoid the discharge of waste from within the landfill to surrounding land. To this end, the Permit Holder shall ensure:*

Condition

- a. *The amount of refuse exposed at any one time is confined in dimension to 800 square metres of tipping face; and*
- b. *Exposed refuse is covered at the end of each day that refuse is received at the landfill.*

A site inspection of the Levin Landfill occurred on the morning of 4 August 2017. At this time intermediate clay cover was well established and the tip face was kept to a confined area. The inspection concluded prior to the end of the day so limb "b" of this condition could not be checked.

Condition Compliance Status: Comply On-Track

3. *If refuse is discharged from within the active landfill areas to land outside the legal boundary of the landfill property, the Permit Holder shall ensure that such waste is cleared and removed to the landfill as soon as practicable.*

The site inspection mentioned above did not find any refuse beyond the boundary of the landfill. As observed on the day the litter nets were clean and refuse was confined to the tip face. Further to this there have been no complaints made to Horizons indicating litter is escaping the Levin Landfill during this assessment period.

Condition Compliance Status: Comply – Full

4. *The Permit Holder will monitor the landfill at least once every two weeks for the build up of litter, paper and other deposits outside the active landfilling areas, and remove such material as required.*

Weekly inspections are required by the Levin Landfill Management Plan. During the site inspection above the litter nets were clean as was the area surrounding the tipping face.

Condition Compliance Status: Comply – Full

5. *The Permit Holder shall regularly inspect for the presence of vermin, birds and other pests take appropriate measures to control them.*

Periodic shooting, bait stations and a gas gun are used onsite to manage pests.

Condition Compliance Status: Comply – Full

6. *The Permit Holder shall regularly inspect the landfill for noxious weeds, and take appropriate measures to control those noxious weeds.*

At the time of the inspection above there was no obvious problems with invasive weeds on site.

It is recommended that the Levin Landfill Management Plan documents a process where incidences of noxious weed control is recorded to demonstrate full compliance with this condition.

Condition Compliance Status: Comply On-Track

Hazardous Material

7. *The Permit Holder shall not allow the disposal of waste of an explosive, flammable, reactive, toxic, corrosive or infectious nature, to an extent that the waste poses a present or future threat to the environment or the health and the safety of people.*

Any potentially hazardous material must follow an approval process with the requisite application for filled out and approved. This process is covered in the Levin Landfill Management Plan.

Condition Compliance Status: Comply – Full

8. *The Permit Holder shall develop and implement a procedure for the landfill operator, such that potentially hazardous material, as listed in Annex 1 attached to and forming part of this permit, will not be accepted for disposal at the Levin landfill without specific authorization. The Operations Manager of the Horowhenua District Council, or some other designated person, is able at their discretion to accept quantities of such wastes. The waste shall be accompanied by a Hazardous Waste Manifest, as listed in Annex 1, which will form part of the permanent record and shall be reported by the Regional Council by 31 August each year for the term of this Permit.*

Section 16 of the Levin Landfill 2016-2017 annual compliance report details the types of waste that is deemed hazardous as specified in Annex 1. Envirowaste maintain a hazardous waste log to record arranged incidents of hazardous waste disposal. The annual report states that there was no hazardous waste disposed of at the Levin Landfill during the Annual report period and therefore no entries on the log.

It is recommended that any future annual reports include an appendix with a copy of the hazardous waste log even if there are no entries.

Condition Compliance Status: Comply – On Track

9. *The Permit Holder shall maintain a secure facility for any small quantities of hazardous waste, pending a decision on treatment, disposal or transfer to another facility.*

No hazardous waste was disposed of at the landfill during this assessment period.

Condition Compliance Status: Not Applicable

10. *Hazardous waste stored at the facility described in Condition 9 shall be stored in a sealed and bunded area to avoid adverse effects from spills.*

No hazardous waste was disposed of at the landfill during this assessment period.

Condition Compliance Status: Not Applicable

11. *Any hazardous waste accepted for disposal shall be disposed within an adequate volume of mature refuse, in accordance with Centre for Advanced Engineering's Landfill Guidelines (2000).*

No hazardous waste was disposed of at the landfill during this assessment period.

Condition Compliance Status: Not Applicable

Monitoring and Reporting

Specific Conditions – Discharge Solid Waste to Land at Existing Landfill

12. *No solid waste shall be disposed to the existing landfill, after two years from the commencement of this consent.*

The existing landfill as described in this consent is described as the Old Closed Landfill or Stage 1 by the operators and the consent holder. This section of the Levin Landfill has final capping in place. Solid waste is currently going into Stage 3B.

Condition Compliance Status: Comply – Full

13. *All new fill should be placed on top of at least 2 metres of existing material in the existing landfill.*

As detailed in condition 12, final capping is in place and this condition was verified as being compliant in Horizons compliance report 42517 dated 19 May 2011.

Condition Compliance Status: Comply – Full

14. *The Permit Holder shall update the Landfill Management Plan in respect of the operations on the lined landfill to the satisfaction of the Environmental Protection Manager at the Regional Council within six months of the completion of the review of the consents. The Landfill Management Plan shall include, but not be limited to:*
- a. The specific conditions contained herein, related to the operation, management and monitoring of the landfill.*
 - b. A description of the development and maintenance of the landfill.*
 - c. A description of how the consent will be exercised in a manner to ensure compliance with the consent and the conditions thereof and the Resource Management Act 1991.*
 - d. A description of how the consent will be exercised to minimise adverse effects on the environment.*
 - e. A description of the hazardous waste acceptance criteria, including the criteria set out.*
 - f. The emergency procedures to be followed in the event of natural emergencies and hazardous waste spills.*
 - g. The methods of controlling dust and odour emissions including the criteria for assessing when, and how regularly, roadways and the landfill are dampened by water or otherwise.*
 - h. Details of measures to avoid nuisance effects on adjacent properties i.e. birds and vermin, as a result of landfill activities.*
 - i. Operational, intermediate and final capping requirements.*
 - j. Closure and aftercare.*
 - k. Procedure to update the management plan, in light of changing circumstances, to continue compliance with Conditions of this Permit.*
 - l. A screen planting implementation description.*
 - m. The feasibility of carrying out greenwaste composting operations on top of the closed landfill shall be assessed. Where it is deemed to be feasible, the composting operations shall be incorporated into the Closed Landfill Aftercare Management Plan.*

The Permit holder shall prepare a Closed Landfill Aftercare Management Plan in respect of the closed landfill (Area "A") to the satisfaction of the Environmental Protection Manager at the Regional Council within six months of the completion of the review of the consent conditions. The Closed Landfill Aftercare Management Plan shall include, but not be limited to those aspects that are detailed in Appendix E of the MfE publication entitled 'A guide for the

Management of Closing and Closed Landfills in New Zealand (May 2001)'. The Closed Landfill Aftercare Management Plan shall require at the least:

- n. Grading to a final slope on the landfill faces and caps of between 1V:3H (1 in 3) and 1V:40H (1 in 40);*
- o. Ensuring the final landfill surface is sloped to promote run-off toward the outside of the landfill footprint and prevent surface water ponding on the landfill cap;*
- p. Ensuring the landfill cap incorporates a layer at least 700 mm thick. All material added to the existing cap to bring the thickness up to 700 mm, or for future cap maintenance purposes, is to have a permeability of not greater than 1×10^{-7} m/s.*
- q. Establishing and maintaining a grass or tussock vegetation cover on the capped landfill consistent with an ongoing ability to monitor and maintain the integrity of the landfill cap as per Condition 15 (d) of Consent 6010.*
- r. Monitoring the landfill cover on an annual basis to identify areas of differential settlement slope stability issues, erosion and changing vegetation patterns, including a topographic survey to ensure Conditions 14(n) to (q) continue to be met;*

The Permit holder shall submit an annual report to the Regional Council by 31 August each year for the duration of this Permit documenting the condition of the unlined landfill and any maintenance carried out during the previous year. The annual report shall address but not be limited to those aspects listed in Conditions 14(n) to 14(r) above. The annual report shall include a plan of the unlined landfill specifically documenting the shape of the closed landfill and any changes during the previous year related to Condition 14(q) [The annual report can be written in conjunction with the annual report required as part of Condition 15 (f) for Consent Number 6010]

The consent holder provided a comprehensive management plan on 30 November 2010. This plan addresses points a to m of condition 14. This plan also includes an aftercare management plan addressing points n to r of condition 14. Section 12 of the annual Levin Landfill report provides detail on the old landfill remediation as required by this condition.

Condition Compliance Status: Comply – Full

Specific Conditions – Discharge of Offal and Dead Animals to Land

15. *Offal waste shall be immediately buried in depth of 0.6 metres upon delivery.*

Section 6.8 of the Levin Landfill Management Plan requires that offal waste is to be immediately buried to a depth of 0.6m.

Condition Compliance Status: Comply – Full

16. *All animals disposed of as diseased animals under the Animal Act 1967 shall be immediately buried to a depth of at least 1 metre.*

Section 6.8 of the Levin Landfill Management Plan requires the disposal of diseased animals under the animal act are immediately buried to a depth of at least 1.0m.

Condition Compliance Status: Comply – Full

17. *Pits for the burial of offal and animals shall be excavated in mature refuse and shall be away from the public tipping area.*

There is no public tipping at the Levin Landfill; however, the under section 6.8 of the Levin Landfill Management Plan it states that “If the contractor excavates and prepares holes for the disposal of offal, they will be in a closed previous tipping area and shall be at least 10 metres from any landfill batter slope.”

Condition Compliance Status: Comply – Full

18. *Pits for the burial of offal and animals shall be at least 10 metres from any landfill batter slope.*

As detailed under condition 17 all offal is required to be buried 10m from any batter slope. The Levin Landfill Management Plan is silent with regard to the buffer distances for dead animals from batter slopes.

It is recommended that the Levin Landfill Management Plan is updated to ensure dead animals are buried at the appropriate buffer distance from batter slopes.

Condition Compliance Status: Comply – On Track

19. *Pits for the burial of offal and animals shall not exceed a maximum size of two metres by 15 metres.*

Section 6.8 of the Levin Landfill Management Plan states: *"If used, the offal holes shall be excavated to a depth of at least 2.5 metres and to a maximum size of 2m by 15m."*

Condition Compliance Status: Comply – Full

20. *The immediate cover material of all offal and animals shall be a minimum depth of at least 100 millimetres unless these conditions specify otherwise. Pits shall be filled to within one metre of the prior refuse surface level and reinstated with appropriate compaction with previously removed refuse or other suitable material.*

Section 6.8 of the Levin Landfill Management Plan states: *"All materials placed in the offal hole shall be covered within one hour of being deposited. The intermediate cover material shall be to a minimum depth of at least 100mm, with a final cover of greater than 300mm provided when closing that hole. The contractor shall maintain the surface over a closed offal hole as a level surface."*

Condition Compliance Status: Comply – Full

21. *Pits for the burial of offal and animals shall be demarcated as such and shall be fenced off.*

Section 6.8 of the Levin Landfill Management Plan states: *"Offal holes shall be fenced off and the location recorded and sign-posted accordingly."*

Condition Compliance Status: Comply – Full

22. *Any other malodorous wastes not already covered specifically by these conditions shall be covered immediately upon disposal.*

Section 6.8 of the Levin Landfill Management Plan states: *"All other materials requiring specific burial shall be immediately buried to the specified depth in the presence of the relevant observers."*

Condition Compliance Status: Comply – Full

Specific Conditions – Discharge of Biosolids and Sludges to Land

23. *Biosolids, sludges and similar materials which do not contain free liquids may be accepted at the landfill as solid waste. This shall include dewatered municipal wastewater treatment plant solids, dewatered processing plant solids and dewatered agricultural wastes.*

The presence of free liquids may be determined by either of the following methods, whichever is most practicable at the time:

- i. The “Paint Filter Test”; or*
- ii. Material which may be loaded, transported and deposited at the landfill without the risk of free liquids seeping from the material, and without the risk of having the deposited material flow under gravity down any slope on the landfill shall be deemed to not contain free liquids.*

The consent holder keeps a special waste log which records, among other things, when sludges and biosolids are disposed of at the landfill. The Levin Landfill Management Plan states that only biosolids and sludges that do not contain free liquids may be accepted at the landfill.

Condition Compliance Status: Comply – Full

24. *If not co-disposed of within the landfill, the biosolids, sludges and similar materials shall be applied to the landfill surface in accordance with the 1992 Ministry of Health Guidelines for the “safe use of sewage effluent and sewage sludge on land”.*

The Levin Landfill Management Plan states: “Biosolids that are not co-disposed or buried should be applied in accordance with MfE and NZWWA Guidelines for the Safe Application of Biosolids to Land in New Zealand (2003). This document supersedes the Ministry of Health’s Public Health Guidelines for the Safe Use of Sewage Effluent and Sewage Sludge on Land (1992) which is the document referred to in the resource consent.”

Condition Compliance Status: Comply – Full

25. *The Permit Holder shall maintain records of:*

- a. The type of waste received;*
- b. The volume of waste received;*
- c. Source of waste; and*
- d. The location in which the material was placed.*

All waste including biosolids and sludge is categorised, weighed and recorded across the RTS weigh bridge prior to disposal at the Levin Landfill. This condition is silent in regard to the provision of these records **it is therefore recommended that copies are provided to Horizons to demonstrate full compliance with this condition.**

Condition Compliance Status: Comply – At Risk

26. *Disposal of site-generated sludge from cess-pits, leachate ponds or other site activities that contain free liquids is acceptable to facilitate site operation, provided this does not adversely affect landfill stability or face operations.*

Leachate generated onsite is piped directly to the Levin Waste Water Treatment Plant.

Condition Compliance Status: Comply – Full

Specific Conditions – Discharge Solid Waste to Land at Lined Landfill

27. *Design specifications and a set of construction drawings for the lined landfill shall be forwarded to the Regional Council (Environmental Protection Manager) for certification, to ensure compliance with the conditions of this consent and all related consents, at least three months prior to the intended construction of the lined landfill begins.*

Appendix B – G of the Levin Landfill Management Plan dated November 2010 details design specifications and includes design drawings for the lined landfill. The latest cell constructed on site was Stage 3. At this time the consent holder engaged Tonkin & Taylor to undertake a peer review of MWH's design specifications for the liner system. Subsequent to Tonkin & Taylor's review the following documents were forwarded to Horizons:

1. MWH Borrow Area Operational Plan Levin Landfill dated August 2010;
2. MWH design drawings B0500663-01-001-C001, C002, C003, C004, C005, C006, C007 all Revision A;
3. Tonkin & Taylor Levin Landfill – Stage 3 Design Peer review dated 13 March 2013;
4. MWH Levin Landfill Stage 3 Design Response to Peer Review Report dated 8 April 2013;

5. MWH Levin Landfill – Change to Side Slope Liner Protection Layer letter dated 12 April 2013;
6. Tonkin & Taylor Levin Landfill – Stage 3 Peer Review – MWH Response to Peer Review Report dated 26 April 2013;
7. Email from Joel Dykstra to Stuart Standen dated 10 May 2013; and
8. Tonkin & Taylor Levin Landfill – Stage 3 Peer Review – Protection Geotextile dated 6 June 2013.

Based on the information contained in this document Horizons sent a letter to the consent holder dated 1 July 2013 certifying the liner design in accordance with condition 27.

Condition Compliance Status: Comply – Full

28. *The Permit Holder shall construct the liner system for all new cells to include the following elements:*
- a. *A smooth base constructed from insitu materials the level of which is above the winter groundwater level.*
 - b. *A geosynthetic clay liner (GCL) a minimum of 5mm thick, with a coefficient of permeability not exceeding 3×10^{-11} m/s. The Permit Holder shall supply documentation from the manufacturer demonstrating quality control procedures ensuring that 95 % of the GCL meets the coefficient of permeability standard required.*
 - c. *A synthetic flexible membrane (high density polyethylene, HDPE with a minimum thickness of 1.5 mm, or polypropylene, PP with a minimum thickness of 1.0 mm).*
 - d. *A protective layer of sand 100 mm thick on the base overlain by a 300 mm thick gravel drainage layer, and on the sides a protective layer of sand 300 mm thick that will be placed progressively as the landfill rises.*
 - e. *Provision for the collection of leachate from the liner and reticulating to a treatment system outside the landfill area.*
 - f. *An alternative to any of the above as agreed from time to time, in writing, between the Permit Holder and the consent authority.*

The documents detailed under condition 27 confirm the liner design conforms to the requirements of this condition.

Condition Compliance Status: Comply – Full

29. *Nine months prior to placement of refuse on the lined landfill, the Permit Holder shall present a Management Plan to the Regional Council including the same items as those described in Condition 14 (a) to (m).*

The consent holder provided a comprehensive management plan on 30 November 2010. This plan addressed points a to m of condition 14.

Condition Compliance Status: Comply – Full

30. *If any ancient human remains or artefacts are discovered during any earthworks activity associated with the construction and maintenance of the landfill, then works shall cease, and the Consent Holder shall immediately inform the Environmental Protection Manager of the Regional Council and relevant iwi. Further work in the vicinity of the find shall be suspended while relevant iwi carry out their procedures for the removal of taonga. The Environmental Protection Manager of the Regional Council will inform the Consent Holder when work can recommence in the vicinity of the find.*

There have been no works on the site resulting in the accidental discovery of human remains or artifacts during this assessment period and consequently no notification to Horizons.

Condition Compliance Status: Not Applicable

31. *The Regional Council shall initiate a publicly notified review of Conditions 2, 8, 14 (a) to (m), 28, 29, 32, 33, and 34 of this permit in April 2015, 2020, 2025, 2030 and 2035, unless the Neighbourhood Liaison Group (NLG) agrees that a review is unnecessary. The reviews shall be for the purpose of:*

- a. Assessing the adequacy of the management plan outlined in Conditions 14 and 29 of this consent; and/or*
- b. Assessing the effectiveness of Conditions 2, 8 and 28 of this consent.*
- c. Assessing the effectiveness of the NLG outlined in Conditions 32, 33 and 34.*

In avoiding, remedying or mitigating adverse effects on the environment surrounding the Levin Landfill, the review of conditions shall allow for:

- d. Modification of the management plan outlined in Conditions 14 and 29 of this consent;*
- e. Deletion or changes to Conditions 2, 8 and 28 of this consent;*
- f. Deletion or changes to Conditions 32, 33, and 34; and*
- g. Addition of new conditions as necessary.*
- h. An alternative to any of the above as agreed from time to time, in writing, between the Permit Holder and the consent authority.*

To avoid, remedy or mitigate adverse effects on the environment surrounding the Levin Landfill.

This is discussed under resource consent 6010, condition 30.

Condition Compliance Status: Comply – Full

Specific Conditions – Neighbourhood Liaison Group (hereinafter “NLG”)

32. *The Permit Holder shall establish a NLG. The following shall be eligible to be members:*

- a. Representation from Lake Horowhenua Trustees and Ngati Pareraukawa;*
- b. The owners and occupiers of those properties adjoining the Levin Landfill property described as A through to N on Drawing 2181 attached;*
- c. Other parties who are invited from time to time as agreed by the Permit Holder and/or the NLG, including but not limited to original submitters; and*
- d. A representative from each of the Horowhenua District and the Regional Council, being consent authorities.*

The consent holder has established a NLG which is open to the members outlined in this condition.

Condition Compliance Status: Comply – Full

33. *The Permit Holder shall:*

- a. Convene one meeting one month after the commencement of the consents;*

These consents commenced on 24 May 2002, the first meeting of the NLG occurred on 24 June 2002 this meeting was attended by four neighbours, one trustee member and representatives of Horizons and the consent holder.

This is detailed in Horizons Compliance Report 600007 and demonstrates compliance with this limb of condition 33. This condition has previously been complied with and is not relevant to this assessment period.

Condition Compliance Status: Not Applicable

- b. Thereafter at intervals of six months for the first 18 months after the date of exercising the consent; and*

Records of these meetings are not available, however; this condition has previously been complied with and is not relevant to this assessment period.

Condition Compliance Status: Not Applicable

- c. *Thereafter at intervals of no more than 12 months unless 80% of the people attending a meeting agree that changes to the intervals are acceptable.*

On 18 June 2015 there was a meeting of the NLG. At this meeting the future meeting dates of the NLG were discussed. Below is an extract from the meeting minutes. These minutes state that the “NLG members will let us know when wanting the next meeting.”

“Review of Consent Conditions, meeting date:

David advised that the NLG will be having a meeting with Horizons Regional Council regarding the Review of Consent Conditions. Greg reminded the group that they can’t meet with Horizons as the NLG without a Horowhenua District Council representative present, you can however meet as the general public.

Issue: NLG meeting with Horizons regarding the Consent Conditions.

Action: NLG members will let us know when wanting the next meeting.”

On 18 July 2017, during this assessment period, Mr Ryan Hughes (HDC Environmental Engineer) was emailed by Mr David Moore who identified himself as the “Chair, Community Members of NLG”. In his email Mr Moore said that he had heard informally that Mr Hughes had suggested an NLG meeting for later in July. Mr Moore expressed concern that many of the NLG members were made up of community volunteers whom would have “other/work commitments during the day” and for that reason NLG meetings were normally scheduled for late afternoon or in the early evening, he also stated that at least two to three weeks’ notice was needed. Mr Moore advised Mr Hughes there had been no NLG meetings since June 2015 and stated that this was a breach of resource consent 6010, condition 33 c. Mr Moore asked Mr Hughes to check and see if there was a date in mid-August and a venue available and if so he would be happy to conform an agenda.

Mr Hughes responded to Mr Moore on the same day and said mid-August would be fine and suggested a 4pm start time so that he could take the NLG to the Levin Landfill for a site visit and then on to another venue for discussions. He invited Mr Moore to provide a date and time, if it were easier and HDC would work around it.

On 7 August 2017 Mr Hughes again contacted Mr Moore and extended an invitation to the NLG to discuss HDC’s Waste Management and Minimisation Plan as part of public consultation, he suggested a meeting time of 18 August 2017 at 4pm. He also suggested that at the conclusion of this meeting there could be an NLG meeting, if this suited.

Later that day Mr Moore replied to Mr Hughes and said that 4pm on a Friday would not be popular, again stating working hours as a potential issue. Mr Moore also raised concerns that a NLG may be premature as there was a mediation process currently occurring in relation to the Levin Landfill. He stated that: “We do not wish to cut across or prejudice any arrangements or agreements which may come out of this process.in [sic] the meantime”.

In assessing compliance with this condition this report considers the following points:

- A review of the last NLG meeting minutes (18 June 2015) shows that there was an action stating that: *"NLG members will let us (HDC) know when wanting the next meeting."*
- Two separate emails were sent by Mr Hughes on 18 July 2017 and 7 August 2017 in an attempt to arrange an NLG Meeting with Mr Moore.
- On both occasions Mr Moore declined Mr Hughes's offers on the grounds that the meeting time would be inconvenient.
- On at least one of his emails Mr Moore identified himself as *"Chair, Community Members of NLG"* and had copied in NLG members.

A review of the email communication outlined above and consideration of the aforementioned points against this condition show that the consent holder has taken all practicable steps to achieve compliance with this condition. It is also noted that there were no objections made by any other NLG members who were copied into emails declining the attempts by the consent holder to arrange NLG meetings.

It is recommended that the consent holder continues attempts to arrange NLG meetings at least every 12 months and copies in the NLG members and Horizons; failure to do so will result in non-compliance with this condition.

Condition Compliance Status: Comply – At Risk

34. *The Permit Holder Shall:*

- a. Supply notes of each meeting to the Group Members;*

There have been no NLG meetings during this assessment period.

Condition Compliance Status: Not Applicable

- b. Forward an annual report to members and to the Regional Council and the District Council;*

The consent holder has provided a copy of the Levin Landfill 2016-17 Annual Report to Horizons; however, there is no evidence held by Horizons to demonstrate that a copy was sent to the other members of the NLG.

Condition Compliance Status: Non-Compliance

- c. *Forward any other information to the Group Members, in accordance with the conditions of the consents; and*

The information assessed as part of this report does not show that any other information in accordance with the consents have been withheld from the NLG.

Condition Compliance Status: Comply – Full

- d. *The Permit Holder shall ensure the NLG members are:*

- i. *Able to advise the Permit Holder of potential members of the NLG.*

There is regular email correspondence between current members of the NLG and the consent holder.

Condition Compliance Status: Comply – Full

- ii. *Given the opportunity to inspect the operations on site on the occasion of NLG meetings, and/or on such other occasions as are agreed by the Permit Holder. The Permit Holder shall not unreasonably withhold such agreement. The Permit Holder shall grant the NLG members access to the landfill property, during working hours, subject to relevant health and safety regulations and the Management Plan.*

As discussed under condition 33c Mr Hughes recommended a site visit to the Levin Landfill in his email dated 18 July 2017.

Condition Compliance Status: Comply – Full

- iii. *Consulted by the Permit Holder as a group prior to any review of the resource consents or any change of conditions pursuant to section 127 of the Resource Management Act 1991 (and/or any consequential amendments).*

The Levin Landfill is currently subject to a review; however, this was initiated by Horizons and falls outside this assessment period.

Condition Compliance Status: Not Assessed

- iv. *Provided by the Permit Holder with a copy of all monitoring reports and other documentation relating to the non-commercially sensitive, environmental operation of the landfill, at the same time as such reports are provided to the Regional Council in accordance with the resource consents.*

The quarterly monitoring reports during this assessment period were emailed to Horizons and members of the NLG at the following addresses on the following dates:

5 July 2018.

Mike Smith (wecare4water@gmail.com)
Christina Paton (malimidwe@gmail.com)
Rachael Selby (rachaelselby@gmail.com)
David Moore (davidmoore@xtra.co.nz)
Malcolm Hadlum (hadlum2@ihug.co.nz)
Peter Everton (marie.everton@xtra.co.nz)

27 February 2018.

Undisclosed recipients.

An email prior to this was sent to Horizons by the consent holder explaining that a group email would be sent to NLG members without disclosing the recipients in said email. For future reference it is recommended that all recipients are shown on such emails to demonstrate full compliance with this condition.

19 October 2017.

Mike Smith (wecare4water@gmail.com)
Christina Paton (malimidwe@gmail.com)
Rachael Selby (rachaelselby@gmail.com)
David Moore (davidmoore@xtra.co.nz)
Malcolm Hadlum (hadlum2@ihug.co.nz)
Peter Everton (marie.everton@xtra.co.nz)
Erl and Gwyn Grange (eg.grange@xtra.co.nz)
Christine Moriarty (camoriarty52@gmail.com)

4 September 2017.

Mike Smith (wecare4water@gmail.com)
Christina Paton (malimidwe@gmail.com)
Rachael Selby (rachaelselby@gmail.com)
David Moore (davidmoore@xtra.co.nz)
Malcolm Hadlum (hadlum2@ihug.co.nz)
Peter Everton (marie.everton@xtra.co.nz)
Erl and Gwyn Grange (eg.grange@xtra.co.nz)
Christine Moriarty (camoriarty52@gmail.com)

As previously noted above there is no evidence showing that the Levin Annual Report was provided to members of the NLG.

Condition Compliance Status: Minor Non-Compliance

- v. *Able to raise with the Permit Holder, as necessary, any matter which the NLG member believes the Permit Holder should address in order to meet the conditions of the consent(s).*

Numerous emails have been sent by members of the NLG to the permit holder in relation to the operation of the landfill. These emails on occasion have been responded to by the consent holders staff and Chief Executive. This demonstrates an ability for the NLG members to communicate with the consent holder and raise issues as necessary.

Condition Compliance Status: Comply-Full

- vi. *Formally acknowledged and considered by the Permit Holder with respect to NLG member's written suggestions to the Permit Holder on possible improvements to, or concerns about, the landfilling operations.*

This assessment considers an email as a written submission and as discussed above emails sent to the Consent holder by members of the NLG have been considered and responded to.

One such example was an email response sent by Peter Thompson, on 27 June 2018 at 0910, to HDC Chief Executive David Clapperton where he raised concerns around odour incident reporting and questioned a landfill closure plan. Later that day Sue Hori Te Pa on behalf of Mr Clapperton responded providing acknowledgement his concerns and providing some explanation. Members of the NLG were copied into this email.

Condition Compliance Status: Comply – Full

- vii. *Kept informed by the Permit Holder as to whether or not progress is being made towards a regional landfill.*

Condition Compliance Status: Not assessed

Charges

35. *Charges, set in accordance with section 36(1)c of the Resource Management Act 1991, and section 690 A of the Local Government Act 1974, shall be paid to the Regional Council for the carrying out of its functions in relation to the administration, monitoring and supervision of this resource consent and for the carrying out of its functions under section 35 (duty to gather information, monitor, and keep records) of the Act.*

[Note: Section 36(1)c of the Act provides that Council may from time to time fix charges payable by holders of resource consents. The procedure for setting administrative charges is governed by section 36(2) of the Act and is currently carried out as part of the formulation of the Council's Annual Plan.]

There are no outstanding charges in relation to this consent.

Condition Compliance Status: Comply – Full

Overall Resource Consent 6009/1 is rated as Comply – On Track

GENERAL CONDITIONS APPLICABLE TO 6010

Consent is granted to the Horowhenua District Council to **discharge landfill leachate onto and into land** at the Levin landfill, Hokio Beach Road, Levin, legally described as Lot 3 DP 40743 Blk II Waitohu Survey District, for a term expiring 35 years from the commencement of the consent subject to the following conditions:

1. Charges, set in accordance with section 36(1)c of the Resource Management Act 1991, and section 690 A of the Local Government Act 1974, shall be paid to the Regional Council for the carrying out of its functions in relation to the administration, monitoring and supervision of this resource consent and for the carrying out of its functions under section 35 (duty to gather information, monitor, and keep records) of the Act.

[Note: Section 36(1)c of the Act provides that Council may from time to time fix charges payable by holders of resource consents. The procedure for setting administrative charges is governed by section 36(2) of the Act and is currently carried out as part of the formulation of the Council's Annual Plan.]

The consent holder has paid all fees in accordance with this condition to date.

Condition Compliance Status: Comply – Full

General Conditions – Discharge leachate to ground

2. Landfill leachate shall not contaminate adjoining land.

A review of the monitoring data provided by these resource consents and a site inspection undertaken on 4 August 2017 does not provide evidence for landfill leachate contaminating adjoining land.

Condition Compliance Status: Comply – Full

3. The Permit Holder shall commence the following monitoring programme:

Table A: Landfill Groundwater Monitoring Locations, Parameters, and Frequency – Deep Aquifer Wells

Location	Parameters and frequency
<i>C2dd, E1d, E2d and any other future deep monitoring well unless installed for background monitoring purposes.</i>	<i>Quarterly comprehensive for 2 years. Subsequently, conditional Annual comprehensive Quarterly indicator.</i>
<i>G1d and any other future deep monitoring well installed for background monitoring purposes.</i>	<i>Quarterly comprehensive for 1 year Subsequently Annual comprehensive Quarterly indicator</i>
<i>All monitoring wells where indicator parameters show leachate influence over 3 consecutive sampling rounds.</i>	<i>Annual pesticide / semi VOC</i>

Wells C2DD, E1D, E2D and G1D were monitored on 19 July 2017, 3 October 2017, 10-11 January 2018 and 19 April 2018 with the results being provided in their respective quarterly reports. Wells C2DD, E1D, E2D and G1D were monitored for all indicator parameters on every monitoring occasion and were monitored for the comprehensive parameters on the 10-11 January 2018 monitoring event. None of these wells have shown influence from leachate and have therefore not been analysed for pesticides or semi VOC. All of the monitored parameters have been compared to relevant Australian and New Zealand Environmental and Conservation Council livestock watering limits (ANZECC) and Drinking Water Standards New Zealand (DWSNZ) limits.

Condition Compliance Status: Comply – Full

Table B: Summary of Landfill Groundwater Monitoring Locations, Parameters, and Frequency – Shallow Aquifer Wells

Location	Parameters and frequency
<i>C1, C2, C2ds, D4 B1, B2, B3s, E1s, E2s and any other shallow Compliance monitoring well installed in the future.</i>	<i>Six monthly comprehensive for 2 years Quarterly indicator Subsequently, conditional Annual comprehensive Quarterly indicator</i>
<i>D5, F1, F2, F3 and any other shallow monitoring well installed to monitor leachate irrigation areas in the future.</i>	<i>Six monthly comprehensive for 2 years Quarterly indicator Conditional Annual comprehensive Quarterly indicator</i>
<i>G1s and any other shallow Background monitoring well installed in the future.</i>	<i>Quarterly comprehensive for 1 year Subsequently, conditional Quarterly indicator</i>
<i>D1, D2, D3r, D6, and any other Early Detection wells installed in the future.</i>	<i>Quarterly comprehensive for 2 years Subsequently, conditional Annual comprehensive Quarterly indicator</i>
<i>All monitoring wells where indicator parameters show leachate influence over 3 consecutive sampling rounds.</i>	<i>Annual pesticide/ semi VOC</i>

Wells C1, C2, C2DS, D4, B1, B2, B3S, E1S and E2S were sampled on 19 July 2017, 3 October 2017, 10-11 January 2018 and 19-24 April 2018 for the indicator parameters. Comprehensive analysis was undertaken on the January 2018 samples. Wells C2, C2DS and B3S were also analysed for semi VOC during the January sampling round.

Wells D5, F1, F2, F3 were sampled on 19 July 2017, 3 October 2017, 10-11 January 2018 and 17 April 2018. Comprehensive analysis was undertaken on the January 2018 samples.

Well G1S was sampled on 19 July 2017, 3 October 2017, 10 January 2018 and 17 April 2018. Comprehensive analysis was carried out on the January 2018 sample.

Wells D1, D2, D3R, D6 were sampled on 19 July 2017, 3 October 2017, 10 January 2018 and 18–19 April 2018. Comprehensive analysis was undertaken on the January 2018 samples.

All of the data from the above sampling and analysis has been included in its respective quarterly report. Where appropriate this data has been compared against the ANZECC and DWSNZ limits.

Condition Compliance Status: Comply – Full

Groundwater levels are to be measured and recorded during each sampling procedure.

Ground water level data taken during sampling has been included in each quarterly report

Condition Compliance Status: Comply – Full

Conditions: *A reduction in sampling frequency at any groundwater monitoring point is conditional on:*

- A. Completion of the initial monitoring program;*

Previous monitoring reports have confirmed completion of the initial monitoring program onsite.

Condition Compliance Status: Comply – Full

- B. Good consistency of groundwater sample analysis results, or a clearly identified reason for inconsistent results that excludes the contaminant source being landfill operations, stored waste or leachate;*
- C. No decline in groundwater quality as determined from indicator parameter trends over a period of four consecutive sampling rounds;*
- D. If a well being monitored on a conditional frequency becomes non-compliant with condition C, the monitoring frequency for that well should return to the initial monitoring frequency until conditions B and C are again being fulfilled.*

Sampling frequency for the shallow monitoring wells installed to monitor proposed leachate irrigation areas as defined in Table B may begin on the conditional basis, however the frequency is to revert to the unconditional frequency if leachate irrigation begins and continues from that date as if the monitoring well had been newly installed.

All leachate is pumped off site to the Levin WWTP.

Condition Compliance Status: Not Applicable

If site management planning indicates any early detection monitoring well is likely to become buried or otherwise destroyed within the following year as a result of normal operations:

- E. This must be communicated to the regional council as soon as practicable;*
- F. A replacement well is to be constructed in a position agreed upon with the Environmental Protection Manager at Horizons Regional Council;*

- G. *The replacement well should be installed in a position suitable to act as an early detection well and be classed as an early detection well; and*
- H. *The replacement well should be constructed as a nested well (or two separate wells) with screens positioned in both shallow and deep aquifers.*

Onsite operations have not eliminated any monitoring wells onsite during this compliance assessment period.

Condition Compliance Status: Not Applicable

Table C: Other Water Monitoring Locations, Frequencies and Parameters

Location	Parameters and frequency
HS1, HS2, HS3	Quarterly comprehensive for 2 years Subsequently, conditional Six monthly comprehensive Quarterly indicator
Leachate Pond Outlet	Quarterly comprehensive for 2 years Six monthly pesticide / semi VOC Subsequently, conditional Six monthly comprehensive Quarterly indicator Annual pesticide / semi VOC

Conditions: *A reduction in sampling frequency at the Hokio Stream monitoring locations is conditional on:*

- I. *Completion of the initial two year monitoring program;*
- J. *Good consistency of water sample analysis results, or a clearly identified reason for inconsistent results that excludes the contaminant source being landfill operations, stored waste or leachate;*
- K. *No decline in water quality between monitoring sites HS1 and HS3 as determined from indicator parameter trends over a period of four consecutive sampling rounds.*
- L. *If the Hokio Stream monitoring locations are being sampled on a conditional frequency and become non-compliant with condition K, the monitoring frequency for all three monitoring locations should return to the base case intensive monitoring until conditions J and K are again being fulfilled.*

Conditions: *A reduction in sampling frequency at the leachate pond outlet is conditional on:*

- M. Completion of the initial 2 year monitoring program;*
- N. Good consistency of water sample analysis results, or a clearly identified reason for inconsistent results;*
- O. No decline in water quality over a period of four consecutive sampling rounds.*
- P. If the leachate pond outlet is being sampled on a conditional frequency and becomes non-compliant with condition O, the monitoring frequency should return to the base case intensive monitoring until conditions N and O are again being fulfilled.*

If existing analysis records indicate that the water quality at a monitoring location complies with the requirements permitting a shift to a conditional sampling schedule, this may be done immediately. If the site complies, sampling for these parameters can be instigated following the base schedule while sampling for the other parameters can be continued based on the conditional schedule.

Locations: *(Unless otherwise stated, locations are described on Figure 4, attached to and forming part of this consent).*

Table D: Monitoring Point Locations

Monitoring group	Monitoring point	Location
<i>Shallow groundwater</i>	<i>B1</i>	
	<i>B2</i>	
	<i>B3s</i>	
	<i>C1</i>	
	<i>C2</i>	
	<i>C2ds</i>	
	<i>D1</i>	
	<i>D2</i>	
	<i>D3r</i>	
	<i>D4</i>	
	<i>D5</i>	<i>Lined landfill area groundwater bore</i>
	<i>D6</i>	<i>Lined landfill area groundwater bore</i>
	<i>E1s</i>	
	<i>E2s</i>	
	<i>F1</i>	<i>Groundwater bore downflow from irrigation area</i>
	<i>F2</i>	<i>Groundwater bore downflow from irrigation area</i>
	<i>F3</i>	<i>Groundwater bore downflow from irrigation area</i>
	<i>G1s</i>	<i>South Eastern boundary of the site (proposed location)</i>
<i>Deep groundwater</i>	<i>C2dd</i>	
	<i>E1d</i>	
	<i>E2d</i>	
	<i>G1d</i>	<i>South Eastern boundary of the site (proposed location)</i>
<i>Stream</i>	<i>HS1</i>	<i>Hokio Stream – upstream of landfill (Refer Fig. 2)</i>
	<i>HS2</i>	<i>Hokio Stream – alongside landfill (Refer Fig. 2)</i>
	<i>HS3</i>	<i>Hokio Stream at or about 50 metres downstream of landfill property boundary(Refer Fig. 2)</i>
<i>Soils</i>	<i>Refer Condition 5</i>	<i>In land disposal area</i>
<i>Leachate</i>		<i>Pond outlet</i>

Parameters: The comprehensive and indicator parameter lists referenced in Tables A, B and C are presented in Tables E and F.

Table E: Comprehensive Analysis List

Type	Parameters
<i>Characterising</i>	<i>pH, electrical conductivity (EC), alkalinity, total hardness, suspended solids</i>
<i>Oxygen demand</i>	<i>COD, BOD</i>
<i>Nutrients*</i>	<i>NO₃-N, NH₄-N, DRP, SO₄</i>
<i>Metals*</i>	<i>Al, As, Cd, Cr, Cu, Fe, Mg, Mn, Ni, Pb, Zn</i>
<i>Other elements</i>	<i>B, Ca, Cl, K, Na</i>
<i>Organics</i>	<i>Total organic carbon, total phenols, volatile acids</i>
<i>Biological</i>	<i>Faecal coliforms</i>

* Analyses performed for nutrients and metals are for dissolved rather than total concentrations.

Table F: Indicator Analysis List

Type	Parameters
<i>Characterising</i>	<i>pH, EC</i>
<i>Oxygen demand</i>	<i>COD</i>
<i>*Nutrients</i>	<i>NO₃-N, NH₄-N</i>
<i>*Metals</i>	<i>Al, Mn, Ni, Pb</i>
<i>Other elements</i>	<i>B, Cl</i>

* Analyses performed for nutrients and metals are for dissolved rather than total concentrations.

Schedule: The sampling regime defined in Tables A to C shall be undertaken based on the following schedule:

Q. The first samples for all parameters shall be taken in July 2010.

This condition has already been complied with and falls outside this assessment period.

Condition Compliance Status: Not Applicable

R. Quarterly monitoring referred to in Tables A and B shall be carried out in January, April, July and October.

The quarterly monitoring referred to in Tables A and B were undertaken on 19 July 2017, 3 October 2017, 10-11 January 2018 and 19 April 2018.

Condition Compliance Status: Comply – Full

- S. Six monthly monitoring referred to in Tables A and B shall be carried out in April and October.*

The six monthly sampling requirement was for the first two years after the commencement of monitoring concluding in 2012.

Condition Compliance Status: Not Applicable

- T. Annual monitoring referred to in Table A shall be carried out in April.*

The consent holder has undertaken the annual monitoring referred to in table A during the January monitoring period rather than April as required. The required sampling has been completed and meet the intention of the consent however is out of sequence. A review of the email correspondence between the consent holder and Horizons has shown that this was the result of a request which was allowed by Horizons which did not subsequently revert back to the original monitoring sequence.

There is no environmental effect due to this change; however, it is expected and recommended that annual comprehensive sampling will be carried out in April henceforth as required by this condition.

Condition Compliance Status: Comply – On Track

- 4. The Permit Holder shall monitor soils in the irrigated areas. The first soil samples from an irrigation area shall be taken in the first year that leachate is irrigated to land in that area and shall be taken prior to irrigation. Thereafter, samples shall be taken on the schedule provided in Table H.*

Leachate from the new landfill was irrigated during the period of 2004 to October 2008. From June 2009 leachate from the Levin Landfill was pumped off site to the Levin WWTP with some recirculation through Stage 1a. Since January 2012 all leachate has been pumped off site to the Levin WWTP. This condition came into effect on 31 May 2010 following a review pursuant to section 128 of the Resource Management Act 1991; this is subsequent to the last occasion leachate was irrigated to the irrigation area. On this basis soil sampling is not required at this time and this condition is not applicable.

Condition Compliance Status: Not Applicable

Table H: Soil Monitoring Locations, Parameters, and Frequencies

Location	Parameters and frequency
All soil sampling locations.	Background prior to irrigation Six monthly metals and other elements for 2 years Annual pesticide / semi VOC Subsequently, conditional Annual metals and other elements

Parameters: The analysis parameters applied for soil monitoring are presented in Table I:

Table I: Irrigated Soil Analysis List

Type	Parameters
Metals	Al, As, Cd, Cr, Co, Hg, Ni, Pb, Zn
Other elements	Cl, B
Organics	Pesticides to screen concentrations Semi-volatile organic compounds

Schedule: The sampling regime defined in Table H shall be undertaken based on the following schedule:

A. Six monthly monitoring referred to in Table H shall be carried out in April and October.

Condition Compliance Status: Not Applicable

B. Annual monitoring referred to in Table I shall be carried out in April.

The first samples required by the schedule in Table H shall be taken during April or October immediately following the start of irrigation, whichever comes first.

Soil sample sites shall be chosen in consultation with the Regional Council. Soil samples shall be obtained from two locations within each leachate irrigation area, with the sampling locations separated by at least 50 m. In addition, a soil sample shall be obtained from one location down gradient from each leachate irrigation area, with the sampling point selected at a low point between dunes. Each soil sample shall consist of a continuous soil core obtained from the surface to a depth of 0.2 m.

Condition Compliance Status: Not Applicable

Conditions: A reduction in soil sampling frequency for the sites located within a leachate irrigation area, based on the mean of the analysis results for the two sites, is conditional on:

C. Completion of the initial two year monitoring program.

Condition Compliance Status: Not Applicable

D. *Good consistency of soil sample analysis results.*

Condition Compliance Status: Not Applicable

E. *No continuous increase in contaminant concentrations in soils as determined from parameter trends for the majority of the metals tested over four consecutive sampling rounds.*

Condition Compliance Status: Not Applicable

F. *If a leachate area being monitored on a conditional frequency becomes non-compliant with condition E, the monitoring frequency for that area should return to the base case intensive monitoring until conditions D and E are again being fulfilled.*

Condition Compliance Status: Not Applicable

G. *Pesticides or semi-volatile organic compounds being below the screen detection limits in the leachate collected from the lined landfill during the previous two sampling rounds.*

Condition Compliance Status: Not Applicable

5. *The results of monitoring under Conditions 3 and 4 of this Permit shall be reported to the Regional Council by 31 August each year for the duration of this Permit.*

Condition 4 is not applicable. The monitoring results under condition 3 are reported to Horizons on a quarterly basis.

Condition Compliance Status: Comply – Full

6. *The Permit Holder shall ensure the above monitoring programme is undertaken by either the Regional Council, or, an independent organisation approved by the Environmental Protection Manager of the Regional Council.*

The above monitoring programme is undertaken by Stantec which is an environmental engineering consultancy. MWH Global previously undertook this work and were approved by Horizons. In 2016 MWH Global was acquired by Stantec; accordingly Horizons approval still stands for Stantec to undertake the monitoring programme.

Condition Compliance Status: Comply – Full

7. *The Permit Holder shall inform the Neighbourhood Liaison Group of the identity of the organisation carrying out the monitoring.*

As demonstrated under condition 34(d)(iv) of resource consent 6009 quarterly monitoring reports are sent out to members of the NLG. Section 1 of each report clearly states that the consent holder has commissioned Stantec to carry out the monitoring programme.

Condition Compliance Status: Comply – Full

8. *The Permit Holder shall meet the costs of the monitoring.*

All costs for monitoring are paid by the consent holder.

Condition Compliance Status: Comply – Full

9. *The Permit Holder shall report the results of the monitoring to the Neighbourhood Liaison Group by 31 August each year for the duration of the Permit.*

As discussed under condition 7 quarterly monitoring reports are forwarded to members of the NLG via email as shown under condition 34(d)(iv) of resource consent 6009.

Condition Compliance Status: Comply – Full

10. *If a laboratory is used for water quality analyses which do not have independent accreditation for the parameters measured, then on each sampling occasion duplicate samples from a least one sampling location shall be analysed by a laboratory with independent accreditation for the parameters measured. Continued analysis by the unaccredited laboratory shall be at the discretion of the Regional Council.*

All water quality analysis is undertaken by Eurofins ELS Ltd laboratory in Lower Hutt. Eurofins ELS Ltd is accredited by International Accreditation New Zealand. The tests reported were performed in accordance with their terms of accreditation with the exception of tests marked 'not IANZ' or is asterixed. Eurofins ELS are accredited for all of the tests in the monitoring reports with the exception of Volatile Fatty Acids. Horizons has allowed the continued analysis of this parameter by Eurofins ELS.

Condition Compliance Status: Comply – Full

11. (a) *Should any shallow aquifer groundwater and surface water parameters tested for under Condition 3 of this consent exceed the Australian and New Zealand Environment and Conservation Council Water Quality Guidelines (2000) for Livestock Watering, the Permit Holder shall report to the Regional Council as soon as practicable on the significance of the result and, where the change can be attributed to landfill leachate, consult with the Regional Council to determine if further investigation or remedial measures are required.*

Each quarterly report provides an executive summary that highlights any exceedances against the ANZECC guideline limits. The following was reported, with attached laboratory reports, in the quarterly reports submitted during this assessment period:

July 2017.

There were no exceedances of the ANZECC livestock drinking water trigger values during this monitoring period.

October 2017.

There were no exceedances of the ANZECC livestock drinking water trigger values during this monitoring period.

January 2018.

Well G1S exceeded the ANZECC livestock drinking water trigger value for faecal coliforms. This well is a background well and is hydraulically up-gradient of the landfill and therefore this exceedance is unlikely to be related to the Levin Landfill.

April 2018.

There were no exceedances of the ANZECC livestock drinking water trigger values during this monitoring period.

Condition Compliance Status: Comply – Full

- (b) *Should any surface water parameters tested for under Condition 3 of this consent indicate a decline in water quality between monitoring points HS1 and HS3, as referred to in Table E, the Permit Holder shall report to the Regional Council as soon as practicable on the significance of the result and, where the change can be attributed to landfill leachate, consult with the Regional Council to determine if further investigation or remedial measures are required.*

Each quarterly report provides surface water monitoring data for monitoring points HS1, HS2 and HS3. These results are compared against the ANZECC livestock drinking water trigger values. The following was reported, with attached laboratory reports, in the quarterly reports submitted during this assessment period:

July 2017.

There were no exceedances of the ANZECC livestock drinking water trigger values during this monitoring period.

October 2017.

There were no exceedances of the ANZECC livestock drinking water trigger values during this monitoring period.

January 2018.

Faecal coliform levels in sampling locations HS1, HS2 and HS3 all exceeded the ANZECC livestock drinking water trigger values. The quarterly report provides the following explanation, as required by this condition:

“There were three exceedances to the resource consent condition at Hokio Stream where faecal coliform levels at HS1, HS2 and HS3 were 330, 480 and 480 col/100mL respectively. The presence of faecal coliform at HS1, which is located up-stream of the old landfill, indicates that water quality at Hokio Stream is being impacted by local ground conditions and/or activities up-gradient of the landfill.

Current observations indicate that leachate from the landfill is not having an adverse environmental effect on the Hokio Stream.”

April 2018.

There were no exceedances of the ANZECC livestock drinking water trigger values during this monitoring period.

Condition Compliance Status: Comply – Full

- (c) *In the event that a report is submitted to the Regional Council pursuant to Conditions 11(a) or 11(b) and the Regional Council has determined that further investigation or remediation measures are required, then:*
 - (i) *The Regional Council may require the Permit Holder to develop a mitigation or remediation plan.*
 - (ii) *In the event that the Regional Council determines that a mitigation or remediation plan is required, the Regional Council shall advise the Permit Holder of this requirement in writing within two months of receiving the Condition 11(a) or 11(b) report.*
 - (iii) *Within six months of receipt of advice in writing from the Regional Council pursuant to Condition 11(c) (ii), the Permit Holder shall submit a mitigation or remediation plan to the Regional Council for approval.*

- (iv) *Any mitigation or remediation plan prepared in accordance with Condition 11(c) shall include a timetable for implementation.*
- (v) *Following approval of a mitigation or remediation plan prepared in accordance with Condition 11(c) (iii), if the Regional Council determines that the adverse effects of the landfill activity itself on the shallow groundwater aquifer or surface water will be more than minor, the Regional Council shall require the Permit Holder to implement the plan within the timeframe specified in the timetable for implementation required by Condition 11(c) (iv).*

Based on the information provided in the quarterly reports pursuant to conditions 11(a) and 11(b) the regional council has not determined that further investigation is required.

Condition Compliance Status: Not Applicable

- (d) *The Permit Holder shall annually review the data derived from the groundwater monitoring program and evaluate contaminant mass load projections for discharges from the landfill to the Hokio Stream. The contaminant mass load projections shall be based primarily, but not exclusively, on the monitoring data obtained for the “B” and “C” series bores indicated in Table D of this discharge permit. The annual report required under Condition 5 shall include the following information:*
 - (i) *A summary of the methodology used to calculate the mass load projections.*

An initial report on Levin Landfill Mass Contaminant Loading Assessment was completed in April 2011 a brief summary of the assumptions incorporated into the initial model is detailed in the annual report. Section 7.2 goes on to describe the methodology used to estimate mass loading. The detailed mass contaminant loading calculation is included in Appendix F.

Condition Compliance Status: Comply – Full

- (ii) *The calculated mass loads transported in the groundwater and comparable mass loads in the Hokio Stream.*

This information is provided in tables 7.1 and 7.2 of the 2016-2017 Levin Landfill Annual report.

Condition Compliance Status: Comply – Full

- (iii) *An analysis of the implications of the mass load calculations with respect to ensuring discharges from the landfill would not result in a decline in the water quality in the Hokio Stream under Condition 3.*

Section 7 of the Levin Landfill 2016-2017 Annual Report details the mass loading evaluation for the Hokio Stream. The report states:

“The lower end of the predicted range of concentration from the 2016/2017 mass contaminant load assessment show general agreement with actual monitoring results obtained from HS3. The ammoniacal nitrogen predicted for the downstream site HS3 meets the ANZECC 95% protection level toxicity trigger value, the Livestock Drinking Water standard and the Horizons One Plan guidelines. Actual ammoniacal nitrogen concentrations at HS3 are still likely to be lower than predicted due to nitrification of ammoniacal nitrogen to nitrate nitrogen. It is noted that all predicted and actual results exceed the ANZECC lowland river guidelines, including the actual upstream results (HS1).

Predicted nitrate nitrogen and DRP concentrations show very little or no increase over the upstream concentrations. Predicted and actual nitrate nitrogen and DRP at both upstream and downstream sites do not comply with the Horizons One Plan guidelines or the ANZECC lowland river guidelines (for nuisance growth effects).

The water quality of the Hokio Stream is influenced strongly by the urban and rural catchment. The actual and predicted results indicate that the impact from the Levin Landfill on the Hokio Stream is likely to be minimal.”

Condition Compliance Status: Comply – Full

- (e) *Should the groundwater parameters tested for under Condition 3 of this consent, and subsequent evaluation and indicative assessment of contaminant mass loads under Condition 11(d) of this consent indicate that contaminants sourced from either the closed or active areas of the Levin Landfill are likely to result in a future decline in the water quality of the Hokio Stream, as defined under Condition 3, then:*
 - (i) *The Permit Holder shall include in the annual report required by Condition 5 an analysis of the significance of the result.*
 - (ii) *The Regional Council may at any time require the Permit Holder to undertake further investigations and/or conduct a detailed assessment of mass loads to evaluate the actual likelihood of a future decline in water quality of the Hokio Stream as a result of landfill activities as measured under Condition 3. The Permit Holder shall provide a report to the Environmental Protection Manager at the Regional Council documenting the further investigations undertaken or the methodology, procedure and outcomes of the detailed assessment.*

- (iii) If the work required under Condition 11(e) (ii) discloses an actual likelihood of a future water quality decline of the Hokio Stream as a result of landfill activities, and the Regional Council determines that this decline in water quality would constitute a more than minor effect on the water quality of the Hokio Stream, the Regional Council shall require the Permit Holder to develop a mitigation or remediation plan.*
- (iv) For the purposes of quantifying whether the adverse effects of the landfill activity itself on the water quality of the Hokio Stream will be more than minor, any determination made by the Regional Council may be independently peer reviewed, at the request of either the NLG or the Permit Holder, by an appropriately qualified and experienced person. The request for a peer review must be lodged with the Regional Council within a period of one month following the determination by the Regional Council.*

The peer reviewer shall prepare a detailed report which analyses the determination of adverse effects made by the Regional Council, and provide clear recommendations as to whether implementation of a mitigation or remediation plan is required for the purposes of adopting the best practicable option to remove or reduce the more than minor adverse effect on the water quality of the Hokio Stream. This report shall be completed within a period of three months of the request for a peer review.

Should a peer review of the determination be undertaken, the Regional Council shall take into account the outcome of the review in again determining whether this decline in the water quality of the Hokio Stream would constitute a more than minor effect on the water quality of that stream.

- (v) In the event that the Environmental Protection Manager at the Regional Council determines that a mitigation or remediation plan is required, the Regional Council shall advise the Permit Holder of this requirement in writing within two months of receiving the annual report.*
- (vi) Within six months of receipt of advice in writing from the Regional Council pursuant to Condition 11(e) (v) the Permit Holder shall submit a mitigation or remediation plan to the Regional Council for approval.*
- (vii) Any mitigation or remediation plan prepared in accordance with Condition 11(c) or Condition 11(e) (v) shall include a timeframe or threshold for implementation.*

- (viii) *Following the completion of the mitigation or remediation plan, if the Regional Council determines that the potential adverse effects of the landfill activity itself on the water quality of the Hokio Stream, as monitored under Condition 3, continue to be more than minor, the Regional Council shall require the Permit Holder to implement the plan within the timeframe specified in the timetable for implementation required by Condition 11(c) (vii) or alternatively when the threshold identified is triggered .*

[Advice Note: Condition 11 may be subject to a review pursuant to s 128 (1)(a) of the Resource Management Act 1991 (see condition 31) and it is anticipated such a review will occur in the event of disagreement by either the Permit Holder or NLG with any determination of the Regional Council in relation to condition 11 (a) – (e)]

A review of the groundwater data presented in the quarterly reports, pursuant to condition 3 and the evaluation and indicative assessment of contaminant mass loadings presented in section 7 of the Levin Landfill 2016-2017 annual report, pursuant to condition 11(d), do not currently indicate a future decline of the water quality in the Hokio Stream. Therefore at this time Horizons is not requiring the consent holder to undertake an additional detailed analysis of the mass loading as per condition 11(e)(ii).

It is noted however that the Levin Landfill 2016-2017 annual report recommends:

“that the assumptions driving the mass loading model be reviewed during the next annual report given the observed change in the spatial patterns in the plume as discussed in Section 4.4.4”.

Section 4.4.4 notes a variance in the ammoniacal nitrogen levels between wells C2 and B2 since 2009 and that this suggests a shift in the leachate plume in the last 5 years. Similarly Section 4.4.1 of the annual report notes an increase of conductivity and nitrate nitrogen in wells D1 and D6. Consequently the report recommends an increase or regular monitoring of groundwater levels on all wells so that:

“groundwater flow and the depth of the unsaturated zone can be assessed. This will enable more conclusions to be drawn in the next annual report as to the source of the elevated nitrate nitrogen and conductivity values.”

This report supports this recommendation.

Condition Compliance Status: Comply – On Track

12. *Should any parameters tested for under Condition 3 of this consent from the deeper gravel aquifer (bores identified as C2dd, E1, E2, the proposed G1d and any other monitoring bore intersecting the deep gravel aquifer), exceed the requirements of the Ministry of Health's Drinking Water Standards for New Zealand 2000, the Permit Holder shall report to the Regional Council as soon as practicable on the significance of the results and, where the change can be attributed to landfill leachate, consult with the Regional Council to determine if further investigation or remedial measures are required.*

The parameters monitored under condition 3 are reported in the quarterly monitoring reports sent to Horizons as required by the Levin Landfill resource consents. The following information has been reported to Horizons with respect to exceedances of the DWSNZ in the deep aquifer wells.

July 2017.

There was one exceedance of Manganese in well C2DD of 0.608 mg/L with respect to the DWSNZ limit which is 0.4mg/L.

The report notes:

"Manganese concentrations at bore C2DD exceeded the DWSNZ MAV. Manganese concentrations in these bores have occasionally exceeded the DWSNZ limit and current monitoring results are within the range expected from historical monitoring."

A review of historical data in previous reports supports this statement.

Given there is not an increasing trend of manganese levels or corresponding exceedances in other parameters in said well there is insufficient evidence to support a hypothesis of leachate influence; accordingly, further investigation is not warranted at this time.

October 2017.

There was one exceedance of Manganese in well E2D of 0.570 mg/L with respect to the DWSNZ limit which is 0.4mg/L.

Again, this is within the historical variance of Manganese for these wells and is not matched by a corresponding increase in other parameters. The consent holder reported this exceedance in an email on 4 December 2017 following their own review of the report confirming that the exceedance was in the range of historical monitoring.

January 2018.

During the January 2018 monitoring there was a pattern of irregular faecal coliform levels at many of the monitoring locations, the report notes:

"Some of the samples show exceedances in faecal coliform concentrations, including a few of the background bores. The inconsistency in the locations of these exceedances, in addition to the unusually

high concentrations, suggests that it is a result of cross contamination that occurred either during or after sampling. This may also account for other parameters that were recorded at their highest concentrations since sampling began (but were still within consent conditions)."

Wells C2DD, E2D and G1D exceeded the DWSNZ. Well G1D is a background well, up-gradient of the landfill and is likely due to sample contamination given the faecal coliform level of 5000cfu/100ml rather than from leachate influence, as identified in the report. Wells C2DD and E2D also marginally exceeded the faecal coliforms level at 4 cfu/100ml. As identified in the report these levels are very low and do not present any cause for alarm.

The consent holder advised Horizons via email on 22 February 2018 of the faecal coliform exceedance and as noted in the report, identified that there was no pattern to the exceedances as they were spread across up gradient and down gradient wells. Nevertheless the consent holder stated that:

"Have arranged for an environmental sampling expert from Stantec/MWH to come up and walk the guys through the procedure and highlight important aspects, as well as make recommendations for improvements."

April 2018.

During this round there was one exceedance of manganese in well G1D. Again this was within historical ranges and was not accompanied by spikes in other parameters. This is discussed in the quarterly report.

Although there have been occasional exceedances in some parameters over this assessment period these have been reported by the consent holder with explanations related to the significance of the results. There is no pattern arising from these exceedances that suggest influence from leachate contamination and on this basis Horizons does not require further investigation at this stage.

Condition Compliance Status: Comply – Full

13. *Sampling of the groundwater wells within a 1.5 km radius down-flow or across-flow from the landfill property boundary is to be carried out by the Permit Holders representative upon receiving a written invitation from the bore owners. The frequency of sampling is to be decided through discussion between the bore owner and the Permit Holder. Initial analyses from individual bores are to be tested for the parameters in the Comprehensive Analysis List in Condition 3. Subsequent testing may be performed based on the Indicator Analysis List in Condition 3. Should analysis of water obtained from any groundwater wells used for human drinking water show concentrations of parameters which exceed the requirements of the Ministry of Health's Drinking Water Standards for New Zealand 2000, or repeated sampling from a specific bore indicates a decrease in water quality, the Permit Holder shall report to the Regional Council and the bore owner as soon as practicable on the significance of the results. Where the exceedance or decreasing water quality can be attributed to landfill leachate, the Permit Holder shall consult with the Regional Council and the bore owner to determine if further investigation or remedial measures are required.*

There has been no report of bore owners pursuant to this condition approaching the consent holder for groundwater sampling.

Condition Compliance Status: Not Assessed

14. *Any currently active and future lined landfill area shall be closed and remediated by:*

The lined portions of the Levin Landfill are yet to reach their final slope dimensions therefore some of the following sub-conditions are not applicable. Where appropriate data is provided, a compliance rating has been given. In addition to this comments have been made based on information contained on the Levin Landfill reports and Management Plan.

- a) *Compacting refuse to such an extent and consistent with CAE guidelines of 600-800 kg/m³, to ensure post closure settlement is minimised as far as practicable; and*

The last refuse density survey data is presented in the Levin Landfill 2016-17 Annual Report. Refuse density is calculated by using waste quantity data obtained from weighbridge records and the corresponding volume of airspace used from sequentially performed topographical surveys. The density achieved during the 2016-17 period was 1000 kilograms per cubic meter.

Condition Compliance Status: Comply – Full

- b) *Grading to a final slope of less or equal to 1V:3H (1 in 3) on any face; and*

The Levin Landfill management plan requires all temporary fill batters to be a ratio 1V:3H.

Condition Compliance Status: Not Assessed

- c) *Ensuring the landfill cap incorporates a layer at least 700 mm thick with a permeability of no greater than 1×10^{-7} m/s, or has a material and layer structure that reduces rainwater infiltration to the waste to an equivalent extent; and*

The Levin Landfill Management Plan requires capping material to meet the standard set by this condition.

Condition Compliance Status: Not Assessed

- d) *Establishing and maintaining a grass or tussock vegetation cover on the capped landfill, unless it can be demonstrated to the Regional Council's satisfaction that a different vegetation cover can produce clear benefits through reducing infiltration to the covered waste. Any vegetation cover should be consistent with an ongoing capacity to monitor and maintain the ongoing integrity of the landfill cap.*

In-situ refuse density shall be determined through annual calculation based on information derived from topographic surveys of the landfill and borrow areas, and from weighbridge records. The survey shall be carried out within one month of the anniversary of the previous survey.

As discussed final capping of the existing lined landfill is yet to occur. This being said previous site inspections and communications have noted that Stage 1A has a well-established grass cover over its interim capping. A final determination of compliance with this condition cannot be assessed until final capping is in place.

Condition Compliance Status: Not Assessed

Specific Conditions – discharge leachate to ground from existing landfill

15. *The Permit Holder shall close and remediate the existing unlined landfill by April 2011 by:*

Final capping of the old existing landfill was detailed in the 2010 -2011 Levin Landfill Compliance Report and has been previously assessed and complied under compliance report 42517 dated 19 May 2011. There are annual reporting requirements as per the sub-conditions below; where appropriate, information provided in the Levin Landfill reporting data has been used to provide a compliance rating. An onsite inspection of the old landfill site will occur to verify compliance of sub-conditions that have been noted as not assessed.

- a) *Grading to a final slope on the landfill faces and caps of between 1V:3H (1 in 3) and 1V:40H (1 in 40);*

This has previously been complied but needs reassessment onsite.

Condition Compliance Status: Not Assessed

- b) *Ensuring the final landfill surface is sloped to promote run-off toward the outside of the landfill footprint and prevent surface water ponding on the landfill cap;*

This has previously been complied but needs reassessment onsite.

Condition Compliance Status: Not Assessed

- c) *Ensuring the landfill cap incorporates a layer at least 700 mm thick. All material added to the existing cap to bring the thickness up to 700 mm, or for future cap maintenance purposes, is to have a permeability of no greater than 1×10^{-7} m/s;*

This has previously been complied but needs reassessment onsite.

Condition Compliance Status: Not Assessed

- d) *Establishing and maintaining a grass or tussock vegetation cover on the capped landfill consistent with an ongoing ability to monitor and maintain the integrity of the landfill cap. The vegetation is to be managed to exclude tree species that can potentially develop root systems capable of disrupting the landfill cap and thereby enhancing rainwater infiltration;*

This has previously been complied but needs reassessment onsite.

Condition Compliance Status: Not Assessed

- e) *Monitoring the landfill cover on an annual basis to identify areas of differential settlement slope stability issues, erosion and changing vegetation patterns, including a topographic survey to ensure Conditions 15(a) to (d) continue to be met; and*

Ten monitoring points to monitor settlement were established on top of the old landfill as part of the survey which was carried out in June 2014. The locations of the monitoring points are shown in Appendix I of the Levin Landfill 2016-17 Annual Report. Also shown is the extent of settlement estimated by comparing the current year's survey information with that done last year. The maximum settlement for the 2016-17 monitoring period is 150mm. The report also makes observations pursuant to this condition.

Condition Compliance Status: Comply – Full

- f) *The Permit holder shall submit an annual report to the Regional Council by 31 August each year for the duration of this Permit documenting the condition of the unlined landfill and any maintenance carried out during the previous year. The annual report shall address but not be limited to those aspects listed in Conditions 15(a) to (e) above. The annual report shall include a plan of the unlined landfill specifically documenting the shape of the closed landfill and any changes during the previous year. [The annual report can be written in conjunction with the annual report required as part of Condition 14 for Consent Number 6009].*

The area of the existing landfill to be remediated is defined as Area A on Figure 1 attached.

The information required by this condition is included in the Levin Landfill 2016-17 Annual Report. This report was finalized on 22 September 2017 reviewed by the consent holder and then sent to Horizons on 29 September 2017. It was explained by the consent holder that the report was late due to resampling being required for the April 2017 quarterly report and the number of reports being processed by Stantec at the time.

Condition Compliance Status: Minor Non – Compliance

16. *Within one month following the remediation of the Levin landfill, the Permit Holder shall report in writing to the Regional Council of the Permit Holder's compliance with Conditions 14 and 15 of this permit.*

Final remediation has not yet occurred therefore this condition cannot currently be assessed.

Condition Compliance Status: Not Assessed

Specific Conditions – Discharge leachate to ground from lined landfill

Environmental Effects

17. *There shall be no disposal of leachate sludge from the pond onto irrigation areas. Leachate sludge shall be disposed of in accordance with Condition 26 of consent number 6009 and Condition 18 of consent number 7289.*

All leachate from the Levin Landfill is piped directly to the Levin WWTP; there is no irrigation of leachate to land at the Levin Landfill.

Condition Compliance Status: Not Applicable

18. *The rate of application of leachate irrigated to land shall not exceed 200 kg Nitrogen/hectare per year.*

All leachate from the Levin Landfill is piped directly to the Levin WWTP; there is no irrigation of leachate to land at the Levin Landfill.

Condition Compliance Status: Not Applicable

19. *There shall be no ponding or runoff of leachate on or beyond the irrigation areas.*

All leachate from the Levin Landfill is piped directly to the Levin WWTP; there is no irrigation of leachate to land at the Levin Landfill.

Condition Compliance Status: Not Applicable

20. *Subject to Condition 19 of this permit, application of leachate on to soil shall not exceed 50 millimetres per day. Notwithstanding, the maximum rate of application shall not exceed 5 millimetres per hour.*

All leachate from the Levin Landfill is piped directly to the Levin WWTP; there is no irrigation of leachate to land at the Levin Landfill.

Condition Compliance Status: Not Applicable

21. *There shall be no discharge of offensive or objectionable odour at or beyond the legal boundary of the Levin Landfill property as shown on Figure 1 resulting from leachate irrigation.*

All leachate from the Levin Landfill is piped directly to the Levin WWTP; there is no irrigation of leachate to land at the Levin Landfill.

Condition Compliance Status: Not Applicable

22. *Should the quality of leachate being irrigated exceed the STV parameters set out in the Australian and New Zealand Environment and Conservation Council Water Quality Guidelines (2000) for metals in Irrigation Water the Permit Holder shall report to the Regional Council as soon as practicable on the significance of the result and in consultation with the Regional Council determine if further investigation or remedial measures are required.*

All leachate from the Levin Landfill is piped directly to the Levin WWTP; there is no irrigation of leachate to land at the Levin Landfill.

Condition Compliance Status: Not Applicable

Process Management

23. *The daily volume of leachate irrigated to land shall be metered and recorded.*

All leachate from the Levin Landfill is piped directly to the Levin WWTP; there is no irrigation of leachate to land at the Levin Landfill.

Condition Compliance Status: Not Applicable

24. *The Permit Holder shall make regular and at least weekly, inspections of the irrigation system, including pumps, pipes, irrigators and vegetation to ensure that the system is operating efficiently and that vegetation is in good health.*

All leachate from the Levin Landfill is piped directly to the Levin WWTP; there is no irrigation of leachate to land at the Levin Landfill.

Condition Compliance Status: Not Applicable

25. *The Permit Holder shall have carried out the works described in Condition 14(a) to (d) of this permit to rehabilitate:*
- a. Any lined landfill area within four months following the closure of that lined landfill area, if the landfill area is closed before 35 years from the granting of this consent.*
 - b. Any lined landfill area before 35 years from the granting of this consent.*

[Note: "lined landfill area" is defined as a distinct "cell" or stage of the landfill.]

Stage 1a, although not closed, has interim capping in place and is in general accordance with conditions 14(a) to (d).

Condition Compliance Status: Comply – Full

Monitoring and Reporting

26. *A plan of the leachate irrigation system shall be prepared to the satisfaction of the Regional Council's Environmental Protection Manager nine months prior to placement of refuse on the lined landfill. The plan shall include:*
- a. A map showing areas to be irrigated;*
 - b. Design of the recirculation, treatment and irrigation systems;*
 - c. Contingency measures in case of failures in the irrigation system;*
 - d. Criteria for installing aerators in the leachate pond;*
 - e. Assessment of options for recirculating leachate over the lined landfill;*
 - f. Assessment of groundwater profile beneath the irrigation area and effects leachate irrigation will have on groundwater;*
 - g. Groundwater and soil monitoring programme, including a map showing sampling locations; and*
 - h. Any other relevant matter.*

This plan was completed by MWH in 2010 and titled *Levin Landfill Leachate Management Plan*. This plan is included under Appendix B of the Levin Landfill Management Plan.

Condition Compliance Status: Comply – Full

27. *The Permit Holder shall keep a log of:*

- a. The dates and times of leachate irrigation;*
- b. The total volume of leachate irrigated daily;*
- c. The volumes of leachate irrigated to specific areas;*
- d. Weather and ground conditions during irrigation;*
- e. Observations made during the weekly inspections of the pump, irrigation system and irrigation areas; and*
- f. Repairs and maintenance carried out on the irrigation system.*

Copies of this log shall be forwarded to the Regional Council's Environmental Protection Manager on 28 February and 31 August of each year that the irrigation system is operated.

There is no irrigation on the Levin Landfill site. All Leachate is piped to the Levin WWTP.

Condition Compliance Status: Not Applicable

28. *The Permit Holder shall inspect the landfill for leachate break out, settlement and other adverse environmental effects at least once per month until such time as discharge of refuse to the landfill ceases. Thereafter, the frequency of inspection shall be determined in consultation with the Regional Council.*

The Levin Landfill 2016-17 Annual Report states:

"The current landfill is inspected weekly and observations recorded on the Weekly Site Walkover Sheet. Three minor leachate breakouts were detected during the 2016-2017 reporting period, 2 incidents in December 2016 and one in May 2017, and were immediately contained. There were no other signs of ground settlement and other adverse environmental effects detected during the 2016-2017 reporting period. A copy of the weekly site walkover records is not included in this report but can be provided by HDC if required."

Condition Compliance Status: Comply – Full

29. *The Permit Holder shall record the date, time, observations and any remedial action as a result of Condition 28. The record shall be made available to the Regional Council on request.*

These records will be requested during the next site inspection undertaken by Horizons.

Condition Compliance Status: Not Assessed

Review

30. *The Regional Council shall initiate a publicly notified review of Conditions 3, 4, 11 (a) – (e), 12, 13, 14, 24, 27, 28 and 29 of this Permit in April, 2015, 2020, 2025, 2030 and 2035, unless the Neighbourhood Liaison Group (NLG) agrees that a review is unnecessary. The reviews shall be for the purpose of:*

- a. Assessing the adequacy of monitoring outlined in Conditions 3 and 4 of this consent; and/or*
- b. Assessing the effectiveness of Conditions 11(a) – (e), 12, 13, 14, 24, 27, 28 and 29 of this consent,*

in avoiding, remedying or mitigating adverse effects on the environment surrounding the Levin Landfill.

The review of conditions shall allow for the:

- c. Modification of monitoring outlined in Conditions 3 and 4 of this consent;*
- d. Deletion or changes to Conditions 11(a) – (e), 12, 13, 14, 24, 27, 28 and 29 of this consent;*
- e. Addition of new conditions as necessary ,*

to avoid, remedy or mitigate adverse effects on the environment surrounding the Levin Landfill.

On 30 October 2015 notice was given to the consent holder of Horizons intent to undertake a review pursuant to this condition. On 10 December 2015 Horizons gave public notification of this review. On 29 January 2016 submissions for this review closed. The result of this review was subsequently appealed; a series of mediation meetings have failed to resolve this appeal and consequently the matter is due to be heard in the environment court.

Condition Compliance Status: Comply – Full

31. *The Regional Council may initiate a publicly notified review of Conditions 11 (a) – (e) of this Permit at any time outside those reviews required by Condition 30. The review shall be carried out pursuant to section 128 (1)(a)(i) of the Resource Management Act 1991 and shall be for the specific purpose of:*

- a. Assessing the need and appropriateness of implementing a mitigation or remediation plan as the best practicable option to remove or reduce any adverse effect on the water quality of the Hokio Stream.*

The review of conditions shall allow for the:

- b. Deletion or changes to Conditions 11(a) – (e) of this consent;*
- c. Addition of new conditions as necessary, to avoid, remedy or mitigate adverse effects on the environment surrounding the Levin Landfill.*

The review of conditions shall have regard to:

- d. The nature of the discharge and the receiving environment; and*
- e. The financial implications for the applicant of including that condition; and*
- f. Other alternatives, including a new condition requiring the observance of minimum standards of quality of the receiving environment, having regard to the need to be satisfied that including that condition is the most efficient and effective means of removing or reducing that adverse effect.*

As discussed, a review has occurred been appealed and is due to be heard before the Environment Court. This process must be concluded before a further review can be considered.

Condition Compliance Status: Not Applicable

Overall Resource Consent 6010/1 is rated as Comply

GENERAL CONDITIONS APPLICABLE TO 6011

Consent is granted to the Horowhenua District Council to **discharge landfill gas, odour and dust to air** at the Levin landfill, Hokio Road, Levin, legally described as Lot 3 DP 40743 Blk II Waitohu Survey District, for a term expiring 35 years from the commencement of the consent subject to the following conditions:

1. Charges, set in accordance with section 36(1)c of the Resource Management Act 1991, and section 690 A of the Local Government Act 1974, shall be paid to the Regional Council for the carrying out of its functions in relation to the administration, monitoring and supervision of this resource consent and for the carrying out of its functions under section 35 (duty to gather information, monitor, and keep records) of the Act.

[Note: Section 36(1)c of the Act provides that Council may from time to time fix charges payable by holders of resource consents. The procedures for setting administrative charges are governed by section 36(2) of the Act and is currently carried out as part of the formulation of the Council's Annual Plan.]

There are no outstanding charges related to this consent.

Condition Compliance Status: Comply – Full

Environmental Effects

2. The Permit Holder will ensure dust is controlled on access roads and on the landfill, if necessary, by watering or other methods.

There have been no complaints to Horizons related to dust from the site. Previous site inspections have confirmed that access up to the Levin Landfill site office is sealed and the main haul roads are metaled.

Condition Compliance Status: Comply – Full

3. There shall be no discharge of odour or dust from the landfill that in the opinion of a Regional Council Enforcement Officer is noxious, dangerous, offensive, or objectionable beyond the property boundary. The Permit Holder will also ensure that:

When deciding whether an odour is offensive or objectionable Horizons enforcement officers (Officers) must consider the frequency, intensity, duration, offensiveness/character and location of an odour event. These parameters are known as the FIDOL factors and are described in **Table 1** below. Odour is monitored by officers using odour complaint & assessment forms. In completing these forms the officer uses an interval method, noting the odour intensity every 10 seconds for 10 minutes. The officer will indicate the hedonic tone of the odour and note the type of land use affected by the odour. This information is recorded on the assessment form along with weather information.

To determine the frequency and duration of odour events an officer may request that an odour diary is kept by affected complainants. This approach is consistent with best practice in assessing odour as per the Ministry for the Environment Guidelines titled, *“Good Practice Guide for Assessing and Monitoring Odour”*, dated 2016.

Frequency	How often an individual is exposed to the odour.
Intensity	The strength of the odour. Measured on a scale of 0 to 6.
Duration	The length of exposure.
Offensiveness/character	The character relates to the ‘hedonic tone’ of the odour, which may be pleasant, neutral or unpleasant. On a scale of -4 (Extremely unpleasant) to 4 (Extremely pleasant).
Location	The type of land use and nature of human activities in the vicinity of an odour source.

Table 1: Description of the FIDOL factors.

During this assessment period Horizons has received a number of complaints in relation to odour from the Levin Landfill. Initially these complaints were primarily coming from one complainant, at one address, who shared a mutual boundary with the landfill. To assess compliance with this condition Horizons had been working with this complainant requesting they keep an odour diary and notify Horizons via the Pollution Hotline during odour events.

During the initial part of this assessment period, between 1 July 2017 and 7 December 2017, many of the notifications from this complainant and others were predominantly sent by email, after odour events had occurred, meaning a direct assessment could not be undertaken. Of the 40 complaints received, between 1 July 2017 and 7 December 2017, 24 were received via email after an event had occurred and 16 were called in to the Pollution Hotline. Of the 16 Pollution Hotline calls there were five occasions when staff were available to undertake site inspections or odour assessments.

As a result of the above assessments there were two incidents where objectionable odour detected beyond the property boundary, these are as follows;

- On the evening of 4 September 2017 a Horizons Enforcement Officer undertook an inspection in response to odour complaints received from members of the public in relation to the Levin Landfill. During his inspection the officer undertook two odour assessments at a residential address neighboring the landfill. At the time of his assessments the officer described the odour as *“landfill leachate gas odour”* and deemed the odour as *“objectionable and of an unpleasant nature”*. As a result of this inspection the consent holder was issued with Infringement Notice 639.
- On 11 September 2017 another Horizons Enforcement Officer undertook a site inspection following a call relating to odour from the Levin Landfill. At 1520 hours the officer undertook an odour assessment at the complainants address. As a result of this assessment the officer *“considered the odour to be objectionable”*. Horizons undertook an investigation following this incident and considered that further enforcement action was not appropriate at this time.

At some time during February 2018 the primary complainant moved and the property was subsequently bought by the consent holder. Around the time said property was purchased the number or complaints dropped significantly with there being no complaints for six months.

Complaints started again on 8 June 2018, since this time there have been 12 more complaints logged with Horizons. Of these 12 complaints six were notified by email after the event with the remaining six being called into the pollution hotline. Four of the complaints that were received by the pollution hotline resulted in site inspections. None of these resulted in objectionable odour being detected.

A breakdown of the notifications discussed above are summarised below in **Figure 2**

Week Beginning	# Complaints	Email	Phone	Assessment	Objectionable Odour
9/07/2017	2	2	-	-	-
16/07/2017	2	2	-	-	-
23/07/2017	2	2	-	-	-
30/07/2017	5	2	3	2	-
6/08/2017	-	-	-	-	-
13/08/2017	2	1	-	-	-
20/08/2017	12	3	9	-	-
27/08/2017	2	1	-	1	-
3/09/2017	3	1	2	1	1
10/09/2017	2	1	1	1	1
17/09/2017	-	-	-	-	-
24/09/2017	1	-	1	-	-
1/10/2017	-	-	-	-	-
8/10/2017	3	3	-	-	-
15/10/2017	-	-	-	-	-
22/10/2017	-	-	-	-	-
29/10/2017	2	2	-	-	-
5/11/2017	-	-	-	-	-
12/11/2017	1	1	-	-	-
19/11/2017	1	1	-	-	-
26/11/2017	1	1	-	-	-
3/12/2017	2	2	-	-	-
No Complaints between 7/12/17 and 8/06/2018.					
3/06/2018	1	1	-	-	-
10/06/2018	1	1	-	-	-
17/06/2018	2	1	1	-	-
24/06/2018	1	-	1	-	-
1/07/2018	2	2	-	-	-
8/07/2018	1	-	1	1	-

15/07/2018	-	-	-	-	-
22/07/2018	1	-	1	1	-
29/07/2018	3	1	2	2	-

Figure 2: Complaints Received and Horizons assessments 9 July 2017 – 4 August 2018.

The previous assessment of this condition and resource consent resulted in a significant non-compliance rating being allocated. This was based on odour diaries kept by the primary complainant and odour assessments by Horizons Enforcement Officers confirming the presence of objectionable odour. During this assessment period there were two site inspections undertaken in September 2017 which resulted in odour being detected beyond the Levin Landfill property that was objectionable in the opinion of an enforcement officer.

The verified objectionable odour events described above show there had been continued significant non-compliance from the last assessment period into the beginning of this assessment period; given there is a retrospective element to this resource consent this has effected the resultant compliance rating for this condition and resource consent, on this occasion. This being said, it is noted that the significant non-compliance issued for this condition and consent is based on the objectionable odour events identified above. There has been a marked improvement in 2018, with significantly fewer complaints and no verified objectionable odour beyond the Levin landfill.

Condition Compliance Status: Significant Non-Compliance

- a. On-site and off-site Health and Safety Effects of landfill gas being emitted by the old landfill should be quantified by sampling groundwater monitoring wells for evidence of landfill gas when groundwater samples are taken from the wells. As a minimum, the gases tested for are to include methane, carbon dioxide and oxygen; and*

Appendix G of the Levin Landfill 2016-17 Annual Report provides all of the gas monitoring data taken during groundwater well monitoring. Readings for CH₄, CO₂ and H₂S were not detected in any of these wells and O₂ was consistent with naturally occurring atmospheric concentrations.

Condition Compliance Status: Comply - Full

- b. Any building constructed on the landfill site is adequately ventilated.*

The only buildings on the Levin Landfill site is the main office and storage shed area. This building has roller doors and windows and doors throughout which can be opened to ventilate the building.

Condition Compliance Status: Comply – Full

4. *There shall be no deliberate burning of waste or other material at the landfill. If fires occur at the landfill they shall be extinguished as quickly as possible.*

There have been no verified reports or complaints made to Horizons relating to fires at the Levin Landfill. Section 4.8 of the Landfill Management Plan prohibits the burning of fires on the site.

Condition Compliance Status: Comply – Full

5. *The Permit Holder shall take all practicable steps to avoid, remedy or mitigate significant adverse effects of the discharge of landfill gases to air.*

The following improvements, as noted in the Levin Landfill 2016-17 Annual Report, have been made in relation to the mitigation of landfill gas onsite.

“The following development occurred at the landfill site in 2016/2017:

- Modifications to the leachate pumping system enabling the leachate pond to be by-passed.*
- Additional capping of the back of Stage 2.*
- Commissioning of a bio-filter to capture gases emanating from the leachate collection manhole to mitigate potential odour from landfill gas emissions.*
- Installation of a new landfill gas flare, and upgrading of the landfill gas collection network.”*

The developments described above demonstrate compliance with this condition.

As previously recommended please update the Landfill Management Plan to incorporate procedures to balance and monitor the landfill gas wells and flare, to optimise LFG capture and destruction. A means of surveying the Landfill for any weaknesses/LFG breakouts in the capping layer should also be incorporated.

Condition Compliance Status: Comply – On Track

Monitoring and Reporting

6. *The Permit Holder shall keep a record of any complaints received. The complaints record shall include the following, where possible:*
- a. Names and addresses of complainant;*
 - b. Nature of complaint;*
 - c. Date and time of the complaint and alleged event;*
 - d. Weather conditions at the time of the event; and*

- e. *Any action taken in response to the complaint.*

The record shall be made available to the Regional Council on request.

The permit holder has provided this information to Horizons on 26 September 2017 following a request to do so. The permit holder also has an online system that provides Horizons with a notification when a complaint is made.

Condition Compliance Status: Comply – Full

The Permit Holder shall also keep a record of landfill gas monitoring results including:

- a. *Date and time of sampling;*
- b. *The concentrations of gasses detected.*
- c. *Weather conditions at the time of sampling.*

The monitoring results shall be made available to the Regional Council on a quarterly basis.

The landfill gas monitoring required by this consent is only defined in condition 3, that being: “*sampling groundwater monitoring wells*”. This sampling has been undertaken quarterly and been included in the Levin Landfill 2016-17 Annual Report.

In the future it is recommended that this information is included in the quarterly reports.

Condition Compliance Status: Comply – On Track

7. *The Regional Council shall initiate a publicly notified review of Conditions 3 and 6 of this permit in April 2015, 2020, 2025, 2030 and 2035, unless the Neighbourhood Liaison Group (NLG) agrees that a review is unnecessary. The reviews shall be for the purpose of:*

a. Assessing the effectiveness of Conditions 3 and 6 of this consent;

in avoiding, remedying or mitigating adverse effects on the environment surrounding the Levin Landfill, the review of conditions shall allow for the:

b. Changes to Conditions 3 and 6 of this consent; and

c. Addition of new conditions as necessary;

to avoid, remedy or mitigate adverse effects on the environment surrounding the Levin Landfill.

This has been previously discussed under resource consent 6010, condition 30.

Condition Compliance Status: Comply – Full

Overall Resource Consent 6011/1 is rated as Significant Non – Compliance

GENERAL CONDITIONS APPLICABLE TO 7289

Consent is granted to the Horowhenua District Council to **discharge liquid waste onto and into land** at the Levin landfill, Hokio Road, Levin, legally described as Lot 3 DP 40743 Blk II Waitohu Survey District, for a term expiring 35 years from the commencement of the consent subject to the following conditions:

1. Charges, set in accordance with section 36(1)c of the Resource Management Act 1991, and section 690 A of the Local Government Act 1974, shall be paid to the Regional Council for the carrying out of its functions in relation to the administration, monitoring and supervision of this resource consent and for the carrying out of its functions under section 35 (duty to gather information, monitor, and keep records) of the Act.

[Note: Section 36(1)c of the Act provides that Council may from time to time fix charges payable by holders of resource consents. The procedure for setting administrative charges is governed by section 36(2) of the Act and is currently carried out as part of the formulation of the Council's Annual Plan.]

The consent holder has no overdue charges in relation to this consent.

Condition Compliance Status: Comply – Full

2. Liquid wastes shall only be placed at the Levin Landfill as a contingency to normal disposal.

The Levin Landfill Management Plan requires that any liquid waste, even that not meeting the definition of condition 3, must follow the application process for hazardous waste. The Levin Landfill 2016-17 Annual Report states that the waste log for the Levin Landfill shows no loads of hazardous waste was received by the Levin Landfill over the period of the report

Condition Compliance Status: Comply –Full

3. For the purposes of this Permit, contingency conditions are circumstances where liquid waste is unable to be treated and disposed of at its regular location, for reasons of either, unforeseen events, breakdown or temporary closure for maintenance purposes.

There has been no disposal of liquid waste during this assessment period therefore this condition can not be fully assessed.

Condition Compliance Status: Not Assessed

4. *Liquid wastes are defined as the following:*

- a. *Septic tank waste (“septage”);*
- b. *Grease trap waste;*
- c. *Sewage; and*
- d. *Any material that contains free liquids.*

The presence of free liquids may be determined by either of the following methods, whichever is most practicable at the time:

- i. *The “Paint Filter Test”; or*
- iii. *Material which may be located, transported and deposited at the landfill without the risk of free liquid seeping from the material, and without the risk of having the deposited material flow under gravity down any slope on the landfill shall be deemed to not contain free liquids.*

The Levin Landfill Management Plan defines liquid waste as per this condition.

Condition Compliance Status: Comply – Full

5. *The Permit Holder shall notify the Regional Council’s Environmental Protection Manager and the Neighbourhood Liaison Group as soon as practicably possible after receiving notification of the intention to dispose of waste at the landfill under the terms of this consent, or as soon as practicable following urgent disposal in accordance with Condition 3.*

The Permit Holder shall detail the reason for the discharge, volume of discharge and timing of the discharge.

Each nominated member of the Neighbourhood Liaison Group shall be notified in writing by post.

There has been disposal of liquid waste to the Levin Landfill during this assessment period.

Condition Compliance Status: Not Applicable

6. *The maximum annual volume of liquid waste discharged shall not exceed 150 cubic metres (150 m³) in any calendar year. (Calendar year is defined as being over any 12 month or 365 day period.)*

There has been disposal of liquid waste to the Levin Landfill during this assessment period.

Condition Compliance Status: Not Applicable

7. *Subject to Condition 6, the volume of liquid waste discharge shall not exceed 75 cubic metres (75 m³) during any seven day period.*

There has been disposal of liquid waste to the Levin Landfill during this assessment period.

Condition Compliance Status: Not Applicable

8. *Subject to Condition 6 and 7 the maximum daily volume of liquid waste discharged shall not exceed 20 cubic metres (20 m³).*

There has been disposal of liquid waste to the Levin Landfill during this assessment period.

Condition Compliance Status: Not Applicable

9. *The liquid material shall be placed in trenches which are no more than 2m wide, 1.5m deep and 5m long which are excavated in compacted refuse which is at least six months old and located within a lined landfill area.*

Condition Compliance Status: Not Applicable

10. *Only one trench shall be open at any one time.*

Condition Compliance Status: Not Applicable

11. *Trenches shall be at least 10 metres from any landfill batter slope.*

Condition Compliance Status: Not Applicable

12. *The open trench shall be open for no longer than two weeks.*

Condition Compliance Status: Not Applicable

13. *Trenches shall be filled with liquid wastes to a depth of not less than 1m below the prior refuse surface level and reinstated with appropriate compaction with previously removed refuse and cover.*

Condition Compliance Status: Not Applicable

14. *The location of placement and cumulative volume will be identified on a site plan which shall be made available to the Regional Council upon request.*

Condition Compliance Status: Not Applicable

15. *The location and placement shall be appropriately signed and fenced.*

There has been no disposal of liquid waste to the Levin Landfill during this assessment period.

It is recommended that the consent holder reviews the Levin Landfill Management Plan to ensure that the requirements of conditions 9 to 15 are adhered to should liquid waste be disposed of.

Condition Compliance Status: Not Applicable

16. *The Permit Holder will ensure odours, vermin and flies are not generated from or do not accumulate in open trenches.*

There has been disposal of liquid waste to the Levin Landfill during this assessment period.

Condition Compliance Status: Not Applicable

17. *The Permit Holder shall maintain records of:*
- a. *The type of liquid waste received;*
 - b. *The volume of liquid waste received;*
 - c. *The source of liquid waste; and*
 - e. *The location in the landfill in which the material was placed.*

As stated above the Levin Landfill Management Plan requires any liquid waste being disposed of at the Levin Landfill must go through the hazardous waste application process. There has been disposal of liquid waste to the Levin Landfill during this assessment period.

Condition Compliance Status: Not Applicable

18. *In addition to the material that is accepted on the basis set out above, the consent holder may dispose of site-generated sludges that contain free liquids from cess-pits, leachate ponds or other site activities to facilitate site operation, provided this does not adversely affect landfill stability or face operations. The disposal of such materials is not to be included within the quantity restrictions as set out in Conditions 6, 7 and 8 of this permit.*

All leachate is piped from site to the Levin WWTP.

Condition Compliance Status: Not Applicable

19. *The Regional Council shall initiate a publicly notified review of Conditions 5, 9, 12 and 17 of this permit in April 2015, 2020, 2025, 2030 and 2035, unless the Neighbourhood Liaison Group (NLG) agrees that a review is unnecessary. The reviews shall be for the purpose of:*

- a. Assessing the adequacy of the monitoring conditions outlined in Conditions 5 and 17; and*
- b. Assessing the effectiveness of Conditions 9 and 12 of this consent, in avoiding, remedying or mitigating adverse effects on the environment surrounding the Levin Landfill.*

The review of conditions shall allow for the:

- c. Modification of monitoring outlined in Conditions 5 and 17;*
- d. Changes to Conditions 9 and 12 of this consent; and*
- e. Addition of new conditions if necessary, to avoid, remedy or mitigate adverse effects on the environment surrounding the Levin Landfill.*

This has been previously discussed under resource consent 6010, condition 30.

Condition Compliance Status: Comply – Full

Overall Resource Consent 7289/1 is rated as Comply – Full

GENERAL CONDITIONS APPLICABLE TO 102259

*The Team Leader Consents of the Manawatu-Wanganui Regional Council (trading as horizons.mw) has considered this non-notified application. On 15 May 2002 the Team Leader pursuant to delegated authority under section 34 of the Resource Management Act, grants Discharge Permit 102259 pursuant to section 105 of the Act, to Horowhenua District Council to **discharge stormwater to land and potentially to groundwater via ground soakage** from the Levin landfill, Hokio Beach Road, Levin, subject to the following conditions.*

1. *This Permit shall be for a term of 35 years from the date of commencement of Levin Landfill Consents 6009 – 6011 and 7289.*

This consent is currently active.

Condition Compliance Status: Comply – Full

2. *Pursuant to section 125(1) of the Resource Management Act 1991, this Permit shall not lapse within its duration of 35 years.*

This consent has not lapsed.

Condition Compliance Status: Comply – Full

3. *The activities authorised by this Permit shall be restricted to the discharge of stormwater to land via ground soakage originating from the existing fill site or any part of the new lined landfill that has had, or is intended to have, refuse placed beneath or upon it, as shown on Plan C102259 attached to and forming part of this Discharge Permit.*

The current activities undertaken on site are in accordance with the description given by this condition.

Condition Compliance Status: Comply – Full

4. *All works and structures relating to this Discharge Permit shall be designed and constructed to conform to best engineering practices and shall at all times be maintained to a safe and serviceable standard.*

Previous inspections have shown that the various stormwater drains on site have been maintained to a serviceable standard. A site inspection of the stormwater infrastructure was not undertaken during this assessment period and therefore this condition cannot be fully assessed by this report.

Condition Compliance Status: Not Assessed

5. *The Permit Holder shall ensure that the stormwater system, including all drains and ponds, is kept clear of refuse at all times.*

This condition will be assessed onsite during the next site inspection.

Condition Compliance Status: Not Assessed

6. *The Permit Holder shall ensure the stormwater soakage ponds are inspected regularly and maintained to optimise their performance at all times. This shall include de-sludging or remediating the ponds as required.*

The stormwater management plan requires stormwater drains to be inspected not less than monthly; however, it is silent with respect to maintenance of the stormwater soakage ponds.

It is recommended that the management plan is amended to include this information to ensure maintenance of the stormwater soakage ponds is undertaken in accordance with this condition.

Condition Compliance Status: Not Assessed

7. *There shall be no ponding in the stormwater soakage areas 12 hours after the last rain event.*

Condition Compliance Status: Not Assessed

8. *There shall be no runoff or existing discharge of stormwater beyond the property boundary that has originated on any landfill area or new lined landfill area that has had, or is intended to have, refuse placed on it.*

Previous inspections have verified that any stormwater on site is either contained and soaks within the lined area of stages 2 or 3 of the Levin Landfill and leaves the site as leachate piped to the Levin WWTP or lands on the stormwater drainage network and soaks in stormwater ponds 1, 2 or 4. Compliance with this condition was verified during a site inspection undertaken on 8 August 2017.

Condition Compliance Status: Comply - Full

Management – Existing Landfill

9. *As far as practically possible, the Permit Holder shall ensure that all stormwater from the existing landfill area is directed to a centralised soakage area to the south of the existing fill, as shown on Plan C 102259.*

The existing Landfill is shaped to largely ensure stormwater is directed to stormwater pond. This will be checked during the next site inspection.

Condition Compliance Status: Not Assessed

Management – New Landfill

10. *Where it is practical and economical to do so, the Permit Holder shall ensure that within the operational landfill cell the minimum amount of stormwater shall be allowed to come into contact with refuse. This shall be effected by constructing impermeable barriers, diversion drains or bunds on the side slopes and within the base of the landfill.*

All stormwater falling on the operational landfill is treated as leachate and is collected by the leachate collection system and subsequently piped to the Levin WWTP. For the purpose of compliance with this condition it is expected that diversion drains and bunds are constructed to ensure stormwater falling on any operational cell stays within that operational cell and is collected by the leachate collection system; this is addressed by Condition 11 below.

Condition Compliance Status: Not Assessed

11. *There shall be no contamination of stormwater with leachate. Leachate includes any stormwater within an operational cell that is not separated from refuse by a barrier as defined in Condition 10.*

During the last assessment of this consent this condition was assessed as being a minor non-compliance due to a small breakout of leachate that occurred on 12 May 2017. Since this incident the consent holder has made upgrades to the containment bunds in this area and has communicated this to Horizons. This upgrade was confirmed during a site inspection on 4 August 2017.

Condition Compliance Status: Comply – Full

12. *The Permit Holder shall ensure that a suitable stormwater soakage area is available for a given design storm and the area of the operational cell from which the stormwater is collected.*

All stormwater landing on an operational cell is treated as leachate and sent to the Levin WWTP.

Condition Compliance Status: Comply – Full

13. *Areas designated for stormwater discharge to land and their catchment and reticulation system shall be identified and located on site plans and their dimensions submitted for approval by horizons.mw's Team Leader Compliance prior to their use.*

This condition has previously been complied with and is no longer applicable.

Condition Compliance Status: Not Applicable

Monitoring

14. *The Permit Holder shall monitor groundwater quality in at least one upgradient and one downgradient bore of the existing landfill stormwater soakage area, and at least one upgradient and two downgradient bores of the new landfill area. The location and number of bores is to be determined in consultation with horizons.mw's Team Leader Compliance. Groundwater samples shall be taken quarterly in January, April, July and October for the term of this Discharge Permit, beginning in October 2002, and analysed for the following parameters:*
- *PH*
 - *Conductivity*
 - *Ammonia-N*
 - *Nitrate-N*
 - *Sodium*
 - *Boron*
 - *Chloride*
 - *Iron*

Water sampling is carried out from the monitoring wells, quarterly. The monitoring wells are up and down gradient of the existing landfill stormwater soakage area and the new landfill area pursuant to this condition. The required parameters are analysed and the results provided in the quarterly reports.

Condition Compliance Status: Comply – Full

15. *Monitoring bores required in Condition 14 of this Discharge Permit can be incorporated into the monitoring programme of other Levin Landfill Consents (6009-6011 and 7289), providing the information sought is obtained at the frequency specified and reported as required for this Permit.*

The data pursuant to condition 14 is incorporated into the quarterly reports and is obtained and the frequency specified.

Condition Compliance Status: Comply – Full

16. *The results of monitoring under Condition 14 of this permit shall be reported to Horizon Manawatu's Team Leader Compliance by 31 August each year for the duration of this Permit beginning 31 August 2003. The annual report shall be supplemented by the raw water quality analysis data being forwarded to the Regional Council as soon as practically possible following the receipt of laboratory analysis certificates.*

Results pursuant to condition 14 are forwarded on a quarterly basis in the quarterly reports.

Condition Compliance Status: Comply – Full

17. *If a laboratory is used for water quality analyses which does not have independent accreditation for the parameters measured, then on each sampling occasion duplicate samples from at least one sampling location shall be analysed by a laboratory with independent accreditation for the parameters measured. Continued analysis by the unaccredited laboratory shall be at the discretion of horizons.mw.*

All parameters monitored under condition 14 are analysed by Eurofins ELS Ltd laboratory which is holds an IANZ accreditation for the parameters required.

Condition Compliance Status: Comply – Full

18. *Should any groundwater and surface water parameters tested for under Condition 14 of this consent exceed the Australian and New Zealand Environment and Conservation Council Water Quality Guidelines (2000) for Livestock Watering, the Permit Holder shall report to horizons.mw's Team Leader Compliance as soon as practicable on the significance of the result, and where the change can be attributed to the landfill operation, consult with horizons.mw's Team Leader Compliance to determine if further investigation or remedial measures are required.*

Results for the parameters that require testing pursuant to condition 14 are all within the limits set by the ANZECC livestock drinking water standards.

Condition Compliance Status: Comply – Full

19. *The Regional Council shall initiate a publicly notified review of all conditions of this Permit in April 2015, 2020, 2025, 2030 and 2035, unless the Neighbourhood Liaison Group (NLG) agrees that a review is unnecessary. The reviews shall be for the purpose of:*

- i. reviewing the effectiveness of these conditions in avoiding or mitigating any adverse effects on the environment; and/or*
- ii. reviewing the adequacy of the monitoring programme required by this discharge permit.*

The review of conditions shall allow for:

- i. the deletion or amendment to any conditions of this permit; and*
- ii. the amendment or addition of new conditions as necessary to avoid, remedy or mitigate any adverse effects on the environment*

If necessary and appropriate, the review provided for under this condition shall require the Permit Holder to adopt the best practicable options to avoid, remedy or mitigate any significant adverse effects on the environment.

This has been previously discussed under resource consent 6010, condition 30.

Condition Compliance Status: Comply – Full

20. *Charges, set in accordance with section 36(1)c of the Resource Management Act 1991, and section 690 A of the Local Government Act 1974, shall be paid to horizons.mw for the carrying out of its functions in relation to the administration, monitoring and supervision of this resource consent and for the carrying out of its functions under section 35 (duty to gather information, monitor, and keep records) of the Act.*

[Note: Section 36(1)c of the Act provides that horizons.mw may from time to time fix charges payable by holders of resource consents. The procedure for setting administrative charges is governed by section 36(2) of the Act and is currently carried out as part of the formulation of horizons.mw's Annual Plan.]

There are no outstanding charges in relation to this consent.

Condition Compliance Status: Comply – Full

Overall Resource Consent 102259/1 is rated as Comply – Full

CONCLUSION

As a result of this assessment the following compliance ratings have been allocated have been allocated against the subsequent resource consents held by HDC for the operation of the Levin Landfill.

Resource consent	Nature of resource consent	Compliance Rating
6009/1	Discharge of solid waste onto land.	Comply – On Track
6010/1	Discharge of landfill leachate onto and into land.	Comply
6011/1	Discharge of landfill gas, odour and dust to air.	Significant Non-Compliance
7289/1	Discharge of liquid waste onto and into land.	Comply – Full
102259/1	Discharge of stormwater to land and potentially to groundwater via soakage.	Comply – Full

RECOMMENDATIONS

Resource Consent 6009

Condition 6

It is recommended that the Levin Landfill Management Plan documents a process where incidences of noxious weed control is recorded to demonstrate full compliance with this condition.

Condition 8

It is recommended that any future annual reports include an appendix with a copy of the hazardous waste log even if there are no entries.

Condition 18

It is recommended that the Levin Landfill Management Plan is updated to ensure dead animals are buried at the appropriate buffer distance from batter slopes.

Condition 25

This condition is silent in regard to the provision of Refuse Transfer Station waste records, it is therefore recommended that copies are provided to Horizons, as part of annual reporting, to demonstrate full compliance with this condition.

Condition 33(c)

It is recommended that the consent holder continues attempts to arrange NLG meetings at least every 12 months and copies in the NLG members and Horizons; failure to do so will result in non-compliance with this condition.

Condition 34(d)(iv)

For future reference it is recommended that all recipients are shown on emails providing reporting information to members of the NLG to demonstrate full compliance with this condition. The consent holder must also demonstrate that the Levin Landfill Annual Report has been sent to members of the NLG to prevent a non-compliance with this condition.

Resource Consent 6010

Condition 3 T

It is expected and recommended that annual comprehensive sampling will be carried out in April henceforth as required by this condition.

Condition 11

It is noted that the Levin Landfill 2016-2017 annual report recommends:

“that the assumptions driving the mass loading model be reviewed during the next annual report given the observed change in the spatial patterns in the plume as discussed in Section 4.4.4”.

Section 4.4.4 notes a variance in the ammoniacal nitrogen levels between wells C2 and B2 since 2009 and that this suggests a shift in the leachate plume in the last years. Similarly Section 4.4.1 of the annual report notes an increase of conductivity and nitrate nitrogen in wells D1 and D6. Consequently the report recommends an increase or regular monitoring of groundwater levels on all wells so that:

“groundwater flow and the depth of the unsaturated zone can be assessed. This will enable more conclusions to be drawn in the next annual report as to the source of the elevated nitrate nitrogen and conductivity values.”

This report supports this recommendation.

Resource Consent 6011

Condition 5

Update the Landfill Management Plan to incorporate procedures to balance and monitor the landfill gas wells and flare, to optimise LFG capture and destruction. A means of surveying the Landfill for any weaknesses/LFG breakouts in the capping layer should also be incorporated.

Condition 6

The landfill gas monitoring required by this consent is only defined in condition 3, that being: *“sampling groundwater monitoring wells”*. This sampling has been undertaken quarterly and been included in the Levin Landfill 2016-17 Annual Report. In the future it is recommended that this information is included in the quarterly reports.

Resource Consent 7289

Condition 15

It is recommended that the consent holder reviews the Levin Landfill Management Plan to ensure that the requirements of conditions 9 to 15 are adhered to should liquid waste be disposed of.

Resource Consent 102259

Condition 6

It is recommended that the management plan is amended to include this information to ensure maintenance of the stormwater soakage ponds is undertaken in accordance with this condition.

If you have any queries about the attached report, please contact me via email hamish.sutherland@horizons.govt.nz or on 0508 800 800.

Kind regards,

A handwritten signature in black ink, appearing to read 'Hamish Sutherland'.

Hamish Sutherland
SENIOR CONSENTS MONITORING OFFICER

Table 1. Compliance Assessment Guideline for Individual Consents

Site Grade	Compliance	Examples
Comply - Exceeds		<ul style="list-style-type: none"> Consent holder has implemented practices, procedures, systems that are over and above that required by the resource consent or consents for the site which are having a tangible environmental benefit.
Comply - Full		<ul style="list-style-type: none"> Complying with all conditions of consent; and/or A non-compliance has occurred beyond the control of the consent holder; and/or
Comply		<ul style="list-style-type: none"> One Minor Non-Compliance with a condition of the resource consent.
Comply – At Risk		<ul style="list-style-type: none"> At Risk grading identified against key condition(s) of one or more of consents for the site.
Comply – On Track		<ul style="list-style-type: none"> At risk grading identified AND site has entered into a Compliance Pathway Agreement (CPA) to reduce system risks and achieve best practice.
Non-Compliance		<ul style="list-style-type: none"> There have been two ‘first time’ Non -Compliances with the conditions of consent; and/or There has been one repeat Minor Non-Compliance with the same or similar condition.
Significant Compliance	Non-	<ul style="list-style-type: none"> There has been at least one Significant Non-Compliance Rating with a condition; and/or There has been at least two repeat Non- Compliance Ratings associated with the same or similar condition; and/or There have been three or more ‘first time’ Non Compliance Ratings.
Not assessed		<ul style="list-style-type: none"> Monitoring has not been undertaken of this consent during the reporting period.

Table 2. Compliance Assessment Guideline for Individual Conditions

Condition Compliance Grade		Adverse Effects Scale	Examples (not exhaustive)
Comply – Excellent	–	Nil.	Consent holder has implemented practices, systems, and procedures that are over and above that required by the resource consent and are having tangible environmental benefit.
Comply - Full		Nil.	Conditions of consent are fully complied with. Sampling out of sequence or late due to circumstances outside of consent holders control (e.g. flow related sampling).
Comply – At Risk		Nil – de-minimus. (<i>dictionary</i> : de-minimus - need not be considered. In terms of the RMA the term means an effect which is less than minor, of no consequence, so trifling that it should be disregarded).	Compliant at time of inspection but management / system deficiencies indicate there is a real risk of a non-compliance occurring (e.g. insufficient effluent storage, poor irrigator performance).
Comply – On Track	–	Nil – de-minimus.	System has been identified as At Risk, but the consent holder has agreed to enter into a Compliance Pathway Agreement (CPA) to ensure compliance is consistently achieved. Consent holder is currently complying with conditions of consent.
Minor Non-Compliance		De-minimus to less than minor.	One-off failure to comply with a condition of consent (e.g. One off minor exceedance in key parameter in 6-months worth of sampling (allows for two minor exceedances in a 12-month period). Intent of condition met however data and / or report provided late (no later than 6 weeks). First up failure to install a water meter for a small take (stockwater), provide management plan or environmental information (e.g. water quality information) within required timeframes.
Non - Compliance		More than minor and / or ongoing (<i>dictionary</i> : defines ‘minor’ as lesser or comparatively small in size or importance). Ongoing (<i>dictionary</i> : continuing to exist).	Four minor exceedances of key parameters for one year’s worth of sampling / data. Repeat failure to provide a report or monitoring data. Repeat Failure to undertaken sampling. Failure to install water meter for a more than minor take (e.g. irrigation).
Significant Non-Compliance		More than minor to significant, serious and / or ongoing. Significant (<i>dictionary</i> : important, noteworthy, consequential). Serious (<i>dictionary</i> : important, demanding consideration, not slight). Ongoing: (<i>dictionary</i> : continuing to exist).	Water quality results indicate there is a potential for or an actual effect which is more than minor that is not authorised by the resource consent. Unauthorised discharge of wastewater / effluent into water or onto land where it may enter water, excessive ponding of effluent on the land surface. Repeated failure to provide a report/monitoring data/ management plans/install water metering equipment etc. Repeated failure to undertake sampling. Repeated failure to comply with authorised discharge or water take volumes.
Not Applicable			Applies to conditions that are no longer applicable. Generally relates to historic conditions that may require provision of a management plan, which has been provided and consent requires no further action.
Not Assessed			Monitoring not undertaken of consent condition.