

Levin Landfill – Response to 2015 Notice of Review

Prepared for the Horowhenua District Council
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Horowhenua District Council

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CONTENTS

- 1 Introduction..... 1
- 2 Reasons for the Review 2
- 3 Summary of Proposed Changes to Consent Conditions 3
- 4 Comments on the Conditions Proposed in the Notice of Review 10
 - 4.1 Discharge Permit 6010 10
 - 4.1.1 DP 6010 Proposed New Condition 2A 10
 - 4.1.2 DP 6010 Conditions 3H and 3P 11
 - 4.1.3 DP 6010 Condition 11(a) and Proposed New Condition 11(aa)..... 11
 - 4.2 Discharge Permit 6009 12
 - 4.2.1 DP 6009 Condition 14..... 12
 - 4.3 Discharge Permit 6011 12
 - 4.3.1 DP 6011 Proposed New Condition 3c..... 12
 - 4.3.2 DP 6011 Proposed New Condition 3d 13
 - 4.3.3 DP 6011 Proposed New Condition 3e 14
 - 4.3.4 DP 6011 Proposed New Condition 3f 14
 - 4.3.5 DP 6011 Proposed New Condition 3g 15
 - 4.3.6 DP 6011 Proposed New Condition 3h 15
 - 4.3.7 DP 6011 Proposed New Condition 3i..... 15
 - 4.3.8 DP 6011 Proposed New Condition 3j..... 15
 - 4.3.9 DP 6011 Proposed New Condition 3k..... 16
 - 4.3.10 DP 6011 Proposed New Conditions 3l, 3m and 3n..... 16
 - 4.3.11 DP 6011 Proposed New Condition 6A 17
 - 4.3.12 DP 6011 Proposed New Condition 6B 17
 - 4.3.13 DP 6011 Proposed New Condition 6C 17
 - 4.3.14 DP 6011 Proposed New Condition 6D 18
 - 4.3.15 DP 6011 Proposed New Condition 6E 18
 - 4.3.16 DP 6011 Proposed New Condition 6F 19
 - 4.4 Discharge Permit 102259 19
 - 4.4.1 DP 102259 Condition 7 19
- 5 Conditions Proposed by HDC as invited by the Notice of Review 20
 - 5.1 Discharge Permit 6009 20
 - 5.1.1 DP 6009 Condition 14(m) 20
 - 5.1.2 DP 6009 Condition 28(d) 20

5.1.3	DP 6009 Condition 29	20
5.1.4	DP 6009 Condition 32	20
5.1.5	DP 6009 Condition 33	21
5.1.6	DP 6009 Condition 34	21
5.2	Discharge Permit 6010	23
5.2.1	DP 6010 Condition 3	23
5.3	Discharge Permit 7289	26
5.3.1	DP 7289 Condition 5	26
5.4	Discharge Permit 102259	27
5.4.1	DP 102259 Condition 5	27
5.4.2	DP 102259 Condition 9	27
5.4.3	DP 102259 Condition 19	27
6	References	28

LIST OF TABLES

Table 1-1:	Levin Landfill Resource Consents	1
Table 3-1:	Proposed Changes to Consent Conditions as Stated in the Notice of Review	4
Table 3-2:	Additional Proposed Changes to Consent Conditions by HDC as invited by the Notice of Review	8

APPENDICES

- Appendix A List of Conditions Subject to Review
- Appendix B Stormwater Plan

1 Introduction

The Levin Landfill is subject to the resource consents listed in Table 1-1. The resource consents are effective from 24 May 2002 for a period of 35 years.

Table 1-1: Levin Landfill Resource Consents

Consent No.	Consent Type
6009	Discharge Permit - Discharge solid waste to land
6010	Discharge Permit - Discharge landfill leachate into and onto land
6011	Discharge Permit - Discharge landfill gas, odour and dust to air
6012	Water Permit - Divert stormwater from around the Levin Landfill
7289	Discharge Permit – Discharge liquid waste onto and into land
102259	Discharge Permit – Discharge stormwater to land and potentially to groundwater via ground soakage

All of the resource consents, except for Water Permit 6012 include conditions which state generally: *The Regional Council shall initiate a publicly notified review of Conditions ...of this permit in April 2015, 2020, 2025, 2030 and 2035, unless the Neighbourhood Liaison Group (NLG) agrees that a review is unnecessary...* (Refer to Condition 31 of Discharge Permit (DP) 6009, Condition 30 of DP 6010, Condition 7 of DP 6011, Condition 19 of DP 7289, and Condition 19 of DP 102259). Table A-1 in Appendix A lists those conditions which may be the subject to review, together with the purpose(s) for any such review. In total, there are forty-four conditions which are within scope for review.

In accordance with section 128(1)(a)(iii) of the Resource Management Act 1991 (RMA) Horizons Regional Council (HRC) served notice of its intentions to review the conditions of Discharge Permits 6009, 6010, 6011, 7289 and 102259. HDC considers that the primary ground for this review was unlawful and that the other grounds for the review were not related to effects of the landfill as set out in section 2 below.

Under section 129(1)(d) of the RMA, Horowhenua District Council (HDC), as the Permit Holder, is invited to propose new consent conditions.

Comments are made in section 2 of this report on the reasons for the review, as stated by HRC in its notice of review.

Section 3 of this report summarises the proposed changes to consent conditions, including new conditions, as proposed by HRC and HDC.

Section 4 of this report provides HDC's viewpoint on the acceptability, or otherwise, of those conditions which HRC propose to change or introduce.

Section 5 of this report provides HDC's proposed changes to conditions, including proposed new conditions. This report only deals with those consent conditions which are subject to review. HDC may choose to apply to change or cancel (delete) other resource consent conditions under section 127 of the RMA.

2 Reasons for the Review

Section 129(1)(b) of the RMA states that a notice of review under section 128 "...shall state the reasons for the review".

In HDC's opinion, the reasons for the review of the specific conditions, as set out in HRC's notice of review, are too brief to provide any understanding of the rationale behind the proposed changes or new conditions being proposed. In addition, despite requesting it, HRC has not provided HDC with the information set out in section 131(2) of the RMA.

The notice of review includes a number of specific changes to conditions and also new conditions are proposed, however the evidence to support these changes and new conditions has not been provided.

HRC's primary reason for its review is that "*It is a requirement of the applicable review conditions of each discharge permit that MWRC shall initiate a publicly notified review of the conditions ...*." In addition the actual conditions state: "*...unless the Neighbourhood Liaison Group (NLG) agrees that a review is unnecessary*". HDC's position is that the relevant review conditions are unlawful as they purport to fetter HRC's discretion as set out in section 128(1) of the RMA. Accordingly, HRC's notice of review is invalid. HDC reserves its position to raise this issue at a later stage if necessary.

In addition, the odour and leachate issues that HRC raised as reason for review were addressed at the time and we have complied with all consent conditions therefore, we do not see them as valid matters for initiating the review.

3 Summary of Proposed Changes to Consent Conditions

Table 3-1 on the following pages provides a summary of all proposed changes to consent conditions as stated in the notice of review. Changes proposed by HRC are shown in **red type**, and those proposed by HDC are shown in **blue type**. Deleted words are shown with a ~~double strike through~~, and added words are shown underlined.

Table 3-2 following Table 3-1 provides a summary of all additional changes to consent conditions proposed by HDC, as invited by the notice of review. As has been done for Table 3-1 changes proposed by HDC are shown in **blue type**, deleted words are shown with a ~~double strike through~~, and added words are shown underlined.

Table 3-1: Proposed Changes to Consent Conditions as Stated in the Notice of Review

Resource Consent	Condition Number	HRC proposed changes	HDC proposed changes
6010 – Discharge of Leachate to Land	New Condition 2A	<i>Within six months of the commencement date of the decision of the 2015 review of conditions, the consent holder shall cease the discharge of landfill leachate to the Tatana Drain.</i>	Within six months of the commencement date of the decision of the 2015 review of conditions, the consent holder shall cease the discharge of landfill leachate to the Tatana Drain.
	Condition 3H	HRC proposes a change to Table C to include a new surface water monitoring location called ' <i>Tatana Drain (TD1)</i> '	HDC agrees with the proposed changes in the Notice of Review to condition 3H.
	Condition 3P	HRC proposes a change to Table D to include a new surface water monitoring location called ' <i>TD1</i> ' having location ' <i>Tatana Drain</i> '.	HDC agrees with the proposed changes in the Notice of Review to condition 3P.
	Condition 11(a)	<i>Should any shallow aquifer groundwater and surface water parameters tested for under...</i>	<i>Should any shallow aquifer groundwater and surface water parameters tested for under...</i>
	New Condition 11(aa)	<i>Should any surface water parameters tested for under Condition 3 of this consent, including the Tatana Drain location, exceed the Australian and New Zealand Environment and Conservation Council Water Quality Guidelines (2000) for 95 per cent protection levels for Aquatic Ecosystems the Permit Holder shall report to the Regional Council as soon as practicable on the significance of the result. Where the change can be attributed to landfill leachate the Consent Holder shall consult with the Regional Council to determine if further investigation or remedial measures are required.</i>	Should any surface water parameters tested for under Condition 3 of this consent, including the Tatana Drain location, exceed the Australian and New Zealand Environment and Conservation Council Water Quality Guidelines (2000) for 95 per cent protection levels for Aquatic Ecosystems the Permit Holder shall report to the Regional Council as soon as practicable on the significance of the result. Where the change can be attributed to landfill leachate the Consent Holder shall consult with the Regional Council to determine if further investigation or remedial measures are required.
6009 – Discharge of Solid Waste to Land	Condition 14	<i>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 Regulatory Manager at the Regional Council within six months of the completion of the review of the consents of the commencement date of the decision of the 2015 review of conditions of consent..."</i>	HDC agrees with the proposed changes in the Notice of Review to condition 14.
6011 – Discharge to Air	New Condition 3(c)	<i>From the commencement date of the decision of the 2015 review of conditions, the Consent Holder must place daily cover over the entire operational fill area by the end of each operating day. Daily cover may be 150mm of soil or clay generated on site or imported, but may also be one of a number of non-soil alternative daily cover options of an appropriate thickness where it can be demonstrated that they achieve comparable level of control with respect to odour discharges, vermin, birds and litter. Raw sand cannot be used as daily cover.</i>	From the commencement date of the decision of the 2015 review of conditions, the Consent Holder must place daily cover over the entire operational fill area by the end of each operating day. Daily cover may be 150mm of soil or clay generated on site or imported, but may also be one of a number of non-soil alternative daily cover options. Daily cover shall be of an appropriate thickness where it can be demonstrated that they achieve comparable level of control with respect to such that odour discharges, vermin, birds and litter are kept to a practicable minimum. Raw sand cannot be used as daily cover.
	New Condition 3(d)	<i>From the commencement date of the decision of the 2015 review of conditions, the Consent Holder must ensure that intermediate cover is placed over daily cover to close off a fill area that will not receive additional lifts of waste or final cover for more than three months. The combined depth of cover, including daily cover, over the waste shall be a minimum of 300 millimetres. Raw sand cannot be used as intermediate cover. Intermediate cover shall be stabilized within 20 working days of</i>	From the commencement date of the decision of the 2015 review of conditions, the Consent Holder must ensure that intermediate cover is placed over daily cover to close off a fill area that will not receive additional lifts of waste or final cover for more than three months. The combined depth of cover, including daily cover, over the waste shall be a minimum of 300 millimetres. Raw sand cannot be used as intermediate cover. Intermediate cover shall be stabilized within 20

Resource Consent	Condition Number	HRC proposed changes	HDC proposed changes
		<i>completion.</i>	<i>working days of completion.</i>
	New Condition 3(e)	<i>The Consent Holder must carry out monthly surface emission testing for all areas of the landfill with final or intermediate cover, and the bio-filter bed. The monitoring of surface emissions shall be undertaken utilizing emission testing methods that have been given prior written certification as to their appropriateness by the Manawatu-Wanganui Regional Council's Regulatory Manager. The monitoring of surface emissions shall be undertaken following 72 hours with no rain and on any day where the average wind speed is less than 15 kilometres per hour.</i>	<i>The Consent Holder must carry out monthly surface emission testing for all areas of the landfill with final or intermediate cover, and the bio-filter bed. The monitoring of surface emissions shall be undertaken utilizing emission testing methods that have been given prior written certification as to their appropriateness by the Manawatu-Wanganui Regional Council's Regulatory Manager. The <u>monthly monitoring of surface emissions shall only be undertaken following a 72 hours period with no less than 75mm of rainfall</u> and on any day where the average wind speed is less than 15 kilometres per hour.</i>
	New Condition 3(f)	<i>Surface emissions of methane, as determined by testing carried out by condition 3e shall not exceed 5,000 parts per million (ppm) in any single location. An exceedance of the 5,000ppm requires remedial action to be undertaken within 24 hours and retesting within 24 hours of remediation being completed. If the second testing results in a continued exceedance at the same location then an action plan shall be developed and implemented to reduce methane concentrations below 5,000 ppm and details provided to the Manawatu-Wanganui Regional Council and advised within 48 hours of the retest.</i>	HDC agrees with the proposed new condition 3(f) as stated in the Notice of Review.
6011 – Discharge to Air	New Condition 3(g)	<i>Records of surface emission testing must be included in the Annual Report and provided to Manawatu-Wanganui Regional Council on request.</i>	HDC agrees with the proposed new condition 3(g) as stated in the Notice of Review.
	New Condition 3(h)	<i>With six months of the commencement date of the decision of the 2015 review of conditions, the leachate collection chamber must be ventilated to a bio-filter. The bio-filter must be designed by a suitably qualified and experienced person.</i>	HDC agrees with the proposed new condition 3(h) as stated in the Notice of Review.
	New Condition 3(i)	<i>The Consent Holder must employ a suitably qualified person to undertake a comprehensive assessment of the bio-filter performance on an annual basis. The assessment shall include, but not be limited to, an evaluation of the media size distribution and composition and effectiveness in removing contaminants.</i>	<i>The Consent Holder must employ a suitably qualified person to undertake a comprehensive assessment of the bio-filter performance on an annual a <u>two-yearly</u> basis. The assessment shall include, but not be limited to, an evaluation of the media size distribution and composition and effectiveness in removing contaminants.</i>
	New Condition 3(j)	<i>The Consent Holder shall measure and record the following parameters:</i> <ul style="list-style-type: none"> • <i>Continuous display of differential pressure for the bio-filter;</i> • <i>Weekly recording of pressure across the bio-filter bed;</i> • <i>Weekly general observations of the bio-filter condition, including weed growth, compaction and short circuiting;</i> • <i>Quarterly media moisture content of the upper two thirds layer for the first two years of operation and then six-monthly thereafter;</i> • <i>Quarterly monitoring of the pH of the bio-filter media in the upper two thirds layer for the first two years and then six monthly</i> 	<i>The Consent Holder shall measure and record the following parameters:</i> <ul style="list-style-type: none"> • <i>Continuous display of differential pressure for the bio-filter;</i> • <i>Weekly recording of pressure across the bio-filter bed;</i> • <i>Weekly general observations of the bio-filter condition, including weed growth, compaction and short circuiting;</i> • <i>Quarterly media moisture content of the upper two thirds layer for the first two years of operation and then six-monthly thereafter;</i>

Resource Consent	Condition Number	HRC proposed changes	HDC proposed changes
		<i>thereafter.</i>	<ul style="list-style-type: none"> Quarterly monitoring of the pH of the bio-filter media in the upper two thirds layer for the first two years and then six monthly thereafter.
	New Condition 3(k)	<p><i>The Consent Holder must ensure that the bio-filter and bed complies with the following limits at all times:</i></p> <ul style="list-style-type: none"> <i>The air flow rate shall not exceed 100 cubic metres per hour per metre of bed;</i> <i>The pH of the filter material shall be between 6 and 8 pH units;</i> <i>An even distribution of gas flow through the filter bed; and</i> <i>There shall be no short circuits of untreated air through the filter bed'.</i> 	<p>The Consent Holder must ensure that the bio-filter and bed complies with the following limits at all times:</p> <ul style="list-style-type: none"> The air flow rate shall not exceed 100 cubic metres per hour per metre of bed; The pH of the filter material shall be between 6 and 8 pH units; An even distribution of gas flow through the filter bed; and There shall be no short circuits of untreated air through the filter bed'.
	New Condition 3(l)	<i>Within one month of the commencement date of the decision of the 2015 review of conditions, the Consent Holder shall investigate and identify the odour source identified in the MWH report titled Continuous Ambient Air Quality Monitoring for Hydrogen Sulphide – Levin landfill and dated 10 July 2015'.</i>	Within one month of the commencement date of the decision of the 2015 review of conditions, the Consent Holder shall investigate and identify the odour source identified in the MWH report titled Continuous Ambient Air Quality Monitoring for Hydrogen Sulphide – Levin landfill and dated 10 July 2015'.
6011 – Discharge to Air	New Condition 3(m)	<i>The Consent Holder shall remediate the odour source identified in condition 3(i) should the source be located on the Levin Landfill property.</i>	The Consent Holder shall remediate the odour source identified in condition 3(i) should the source be located on the Levin Landfill property.
	New Condition 3(n)	<i>The Consent Holder shall provide a report to Manawatu-Wanganui Regional Council and the Neighbourhood Liaison Group within 20 working days of condition 3(m) being completed'</i>	The Consent Holder shall provide a report to Manawatu-Wanganui Regional Council and the Neighbourhood Liaison Group within 20 working days of condition 3(m) being completed'
	New Condition 6A	<i>The Consent Holder shall nominate a liaison person to manage any air quality complaint received. The name and contact details of the liaison person shall be provided to the Manawatu-Wanganui Regional Council's Regulatory Manager. The Consent Holder shall ensure a liaison person is available at all times to respond to odour or dust complaints.</i>	HDC agrees with the proposed new condition 6A as stated in the Notice of Review.
	New Condition 6B	<i>The Consent Holder shall ensure that any complaint received from a member of the general public regarding odour or dust is responded as soon as practicable and within 24 hours of the complaint being received, or at a time mutually agreeable with the party making the complaint.</i>	The Consent Holder shall ensure that any complaint received from a member of the general public regarding odour or dust emanating from the landfill site is responded investigated as soon as practicable and within 24 hours of the complaint being received, or at a time mutually agreeable with the party making the complaint.
	New Condition 6C	<i>The Consent Holder shall notify a Manawatu-Wanganui Regional Council Consents Monitoring Officer as soon as practicable after becoming aware of any offensive or objectionable odour, or any complaint from a member of the public regarding odour.</i>	The Consent Holder shall notify a Manawatu-Wanganui Regional Council Consents Monitoring Officer as soon as practicable after becoming aware of any offensive or objectionable odour emanating from the landfill, or any complaint from a member of the public regarding odour. An explanation as to the cause of the incident and details of any remedial and follow-up actions taken shall also be

Resource Consent	Condition Number	HRC proposed changes	HDC proposed changes
6011 – Discharge to Air	New Condition 6D	<i>The Consent Holder must undertake monthly odour surveys around the boundary of the site, particularly those sections of the boundary that are between the landfill and residential houses, until such time as discharges of refuse to the landfill ceases. Thereafter, the frequency on inspection shall be determined in consultation with the Manawatu-Wanganui Regional Council. The monitoring shall be undertaken using a method that is consistent with the German VDI standard 3940 or subsequent method.</i>	<i>provided to the Regional Council Consents Monitoring Officer.”</i> <i>The Consent Holder must undertake monthly odour surveys around the boundary of the site, particularly those sections of the boundary that are between the landfill and residential houses, until such time as discharges of refuse to the landfill ceases. Thereafter, the frequency on inspection shall be determined in consultation with the Manawatu-Wanganui Regional Council. The monitoring shall be undertaken using a method that is consistent with the German VDI standard 3940 or subsequent method.</i>
	New Condition 6E	<i>The Consent Holder must carry out a weekly walk-over survey of all of the landfill surfaces, including the area around the bio-filter and leachate pond. The purpose of the walk-over survey is to check for odour, cracks in the landfill cap surface and integrity of any gas collection or leachate pipework.</i>	<i>The Consent Holder must carry out a weekly walk-over survey of all of the landfill surfaces, including the area around the bio-filter and leachate pond. The purpose of the walk-over survey is to check for odour, cracks in the landfill cap surface and integrity of any gas collection or leachate pipework.</i>
	New Condition 6F	<i>The Consent Holder shall maintain a log of all inspections, investigations and actions taken in accordance with all monitoring and odour inspection conditions of this consent. The log shall be made available to the Manawatu-Wanganui Regional Council on request and submit a summary of all results and assessments presented in the Annual Report.</i>	HDC agrees with the proposed new condition 6F as stated in the Notice of Review.
102259 – Discharge of Stormwater to Land	Condition 7	<i>There shall be no ponding in the stormwater soakage areas 12 hours after the last rain event.</i>	HDC agrees with the proposed changes in the Notice of Review to condition 7.

Table 3-2: Additional Proposed Changes to Consent Conditions by HDC as invited by the Notice of Review

Resource Consent	Condition Number	HDC proposed changes
6009 – Discharge of Solid Waste to Land	Condition 14(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'
	Condition 28(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 slopes a confining layer of gravel 300 mm thick, lain on top of a protective geofabric and geogrid, appropriately designed for the site conditions'
	Condition 29	'Nine months prior to the 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)'
	Condition 32	'The Permit Holder shall re-establish, chair, manage and conduct a Neighbourhood Liaison Group (NLG) in 2016. The following shall each be eligible to be members have one representative: <ol style="list-style-type: none"> a. Representation from The 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. A technical advisor as appointed by the Permit Holder. 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 Council and the Regional Council, being consent authorities. e. The Permit Holder (in addition to the representative nominated under 32(d))'.
	Condition 33	The purpose of the NLG is solely to review and provide comment to the Permit Holder on environmental and monitoring results in relation to environmental mitigations at the Levin landfill in accordance with the conditions of consent. The Permit Holder may accept or reject any comments with reasons to be provided to the NLG. The Permit Holder shall: <ol style="list-style-type: none"> a. Convene one meeting one month after the commencement of the consent; b. Thereafter at intervals of six months for the first 18 months after the date of exercising the consent; and c. Thereafter hold meetings at intervals of no more than 12 months unless 80% of the people attending a meeting agree that changes to the intervals are acceptable.'
Condition 34	'The Permit Holder shall: <ol style="list-style-type: none"> a. Supply notes of each meeting to the Group Members; b. Forward an annual report to members and as sent to the Regional Council and the District Council; c. Forward any other information to the Group Members, in accordance with the conditions of the consents; and d. The Permit Holder shall ensure the NLG members are: <ol style="list-style-type: none"> i. Able to advise the Permit Holder of potential members of the NLG. 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 and Landfill Operator. 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. 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). iv. Provided by the Permit Holder with a copy of all monitoring reports and 	

Resource Consent	Condition Number	HDC proposed changes
6009 – Discharge of Solid Waste to Land	Condition 34	<p>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.</p> <p>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).</p> <p>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. Given reasons for any comments from the NLG at the annual meeting on environmental and monitoring results in relation to environmental mitigations at the Levin Landfill being rejected.</p> <p>vii. Kept informed by the Permit Holder as to whether or not progress is being made towards a regional landfill.</p>
6010 – Discharge of Leachate to Land	Condition 3	<p>HDC proposes various minor changes to Tables A, B, C and D under condition 3:</p> <ul style="list-style-type: none"> Amend the frequency description for the Deep Aquifer (Table A), Shallow Aquifer (Table B) Monitoring Wells, and Water Monitoring Locations (Table C) since the "2 year" and "1 year" periods were completed following the 2010 review. Include the sampling of bore G2s in Table B since this is currently occurring. Include for sampling of a second new surface monitoring location called 'TD2' within Tatana Drain in Table C. In Table D, amend the locations for bores G1s and G1d, and include bore G2s and surface water monitoring locations of Tatana Drain.
7289 – Discharge of Liquid Waste to Land	Condition 5	<p>'The Permit Holder shall notify the Regional Council's Environmental Protection Regulatory 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.</p> <p>The Permit Holder shall detail the reason for the discharge, volume of discharge and timing of the discharge.</p> <p>Each nominated representative of the Neighbourhood Liaison Group shall be notified in writing by post.</p>
	Condition 5	<p>'The Permit Holder shall ensure that the inspect the stormwater system on a fortnightly basis, including all drains and ponds, is kept and clear it of refuse at all such times'.</p>
102259 – Discharge of Stormwater to Land	Condition 9	<p>'As far as practically possible, the Permit Holder shall ensure that all stormwater from the existing landfill area is directed to a the centralised-soakage areas to the south of the existing fill, as shown on Plan C 102259 the latest version of the Stormwater Plan'.</p>
	Condition 19	<p>'The Regional Council shall may initiate a publicly notified review of all conditions of this Permit in April 2015, 2020, 2025, 2030 and 2035 and thereafter at ten yearly intervals (2025 and 2035) unless the Neighbourhood Liaison Group (NLG) agrees that a review is unnecessary. The reviews shall be for the purpose of:...'</p>

4 Comments on the Conditions Proposed in the Notice of Review

Section 4 addresses those conditions which HRC proposes to change, or to introduce, under the 2015 review.

HRC's proposed changes to conditions are shown in **red type**, whilst those proposed by HDC are shown in **blue type**. Deleted words are shown with a **double strike through**, and added words are shown **underlined**.

4.1 Discharge Permit 6010

4.1.1 DP 6010 Proposed New Condition 2A

HRC's proposed condition 2A states:

2A *Within six months of the commencement date of the decision of the 2015 review of conditions, the consent holder shall cease the discharge of landfill leachate to the Tatana Drain.*

This proposed condition is unacceptable for the reasons outlined below, and HDC proposes to delete it entirely.

~~2A~~ ~~Within six months of the commencement date of the decision of the 2015 review of conditions, the consent holder shall cease the discharge of landfill leachate to the Tatana Drain.~~

However, HDC agrees that additional surface water monitoring should be undertaken within the Tatana Drain. This is discussed in section 4.1.2 below.

The HDC presumes that new condition 2A is intended to prevent 'groundwater containing landfill leachate' entering the Tatana Drain, rather than strictly 'landfill leachate'. Notwithstanding this, there are no reasons cited to support the imposition of new Condition 2A, and the rationale for its inclusion is not effects-based. To comply with this condition would require a groundwater cut-off drain (or similar) to be installed – however HRC presents no information on why it considers this condition needs to be imposed.

MWH investigated the water quality in the Tatana Drain in early 2015 on behalf of HDC, and produced a report (reference 1) and addendum (reference 2) to that report.

The report concluded, amongst other matters, the following:

'This report has identified that shallow groundwater is impacted by landfill leachate from the landfill and some of this groundwater appears to be emerging (daylighting) as surface water within a drain to the north of the landfill. The groundwater that emerges is likely to be contributing to the elevated concentrations of some parameters within the drain, however surrounding land uses, in particular the presence of stock that have unrestricted access to the drain, are likely to also affect the water quality within the drain.'

The water in the drain discharges into the Hokio Stream, this being the recognised 'river' receiving environment referred to in Condition 11 of the consents. The results of surface water quality monitoring within the Hokio Stream show that the drain discharge does not appear to be adversely affecting water quality in the stream downstream of the point of discharge.

We recommend that additional monitoring be undertaken to confirm, or otherwise, the preliminary conclusions reached above. Some of the monitoring results appear to be conflicting. For example, the Horizons monitoring shows an opposite trend in the result between the upstream and downstream drain sites compared with the HDC monitoring results in respect of total ammoniacal nitrogen. A schedule for recommended further monitoring is attached...'

HDC agreed to implement the recommendation to undertake additional monitoring and this was conducted on four separate occasions between 27 March 2015 and 15 April 2015.

The report addendum concluded the following:

'The additional monitoring results collected generally support the conclusions drawn in the March 2015 report. It is likely that the drain is impacted by leachate-influenced shallow groundwater from the unlined Levin Landfill. However as noted in the March 2015 report this drain was artificially constructed to intercept leachate and therefore is not considered the true receiving environment.

Additional sampling has indicated that the drain may be impacting the Hokio Stream, resulting in slightly elevated nitrogen results. However as discussed this impact is minimal and does not result in any exceedances of the guideline values. Given this the effect on the Hokio Stream is likely to be less than minor".

The following recommendations were made in the report addendum:

'It is recommended that monitoring locations SW1 and SW4 be included in the regular consent monitoring programme. These locations should be sampled at the same time as the Hokio Stream for the same suite of parameters. This means that in the future any increase in nitrogen concentrations can be related to changes in concentration within the drain to determine whether the impact is likely to be attributable to the drain and therefore the closed landfill'

For the reasons outlined above, proposed new condition 2A is unnecessary. However, HDC is undertaking surface water monitoring in the Tatana Drain.

4.1.2 DP 6010 Conditions 3H and 3P

HRC proposes to amend Table C in condition 3H and Table D in condition 3P to include a new surface water monitoring location, to be known as "*Tatana Drain (TD1)*".

Whilst details of the exact location of the proposed new surface water monitoring location are not given, it is accepted, as recommended in the report addendum (reference 2) that additional surface water monitoring is appropriate within the Tatana Drain.

However, HDC proposes that surface water monitoring be conducted at two locations along the Tatana Drain (to be called '*TD1*' and '*TD2*'). These are described in section 5.2.1 of this report

The standards against which the surface water quality should be measured are another matter, and this is discussed in section 4.1.3 below.

4.1.3 DP 6010 Condition 11(a) and Proposed New Condition 11(aa)

HRC proposes to change condition 11(a) by striking out words in the first sentence, as follows:

11(a) *Should any shallow aquifer groundwater ~~and surface water~~ parameters tested for under ..."*

HRC proposes a new condition 11(aa) as follows:

11(aa) Should any surface water parameters tested for under Condition 3 of this consent, including the Tatana Drain location, exceed the Australian and New Zealand Environment and Conservation Council Water Quality Guidelines (2000) for 95 per cent protection levels for Aquatic Ecosystems the Permit Holder shall report to the Regional Council as soon as practicable on the significance of the result. Where the change can be attributed to landfill leachate the Consent Holder shall consult with the Regional Council to determine if further investigation or remedial measures are required.

HDC proposes that condition 11(a) reverts back to the original wording in the first sentence, as follows:

11(a) *Should any shallow aquifer groundwater and surface water parameters tested for under ..."*

HDC proposes to delete new condition 11(aa) as follows:

~~*11(aa) Should any surface water parameters tested for under Condition 3 of this consent, including the Tatana Drain location, exceed the Australian and New Zealand Environment and Conservation Council Water Quality Guidelines (2000) for 95 per cent protection levels for Aquatic Ecosystems the Permit Holder shall report to the Regional Council as soon as practicable on the significance of the result. Where the change can be attributed to landfill leachate the Consent Holder shall consult with the*~~

~~Regional Council to determine if further investigation or remedial measures are required.~~

The proposed changes to 11(a) and provision of new condition 11(aa) essentially change the receiving water standard for the Hokio Stream from stock drinking to aquatic ecosystem standards and also applies the same standard to the water quality within Tatana Drain. The aquatic ecosystem standards are considered inappropriate for the Tatana Drain as this is a man-made drain with no ecological values. The HRC should provide more details as to the rationale behind this proposed change as all changes should be based on sound evidence.

For these reasons the proposed changes are unnecessary.

4.2 Discharge Permit 6009

4.2.1 DP 6009 Condition 14

HRC proposes to change condition 14 as follows:

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~~ Regulatory Manager at the Regional Council within six months ~~of the completion of the review of the consents~~ of the commencement date of the decision of the 2015 review of conditions of consent...*

HDC agrees with the proposed changes to condition 14.

4.3 Discharge Permit 6011

4.3.1 DP 6011 Proposed New Condition 3c

HRC proposes the following new condition 3c:

- 3c *'From the commencement date of the decision of the 2015 review of conditions, the Consent Holder must place daily cover over the entire operational fill area by the end of each operating day. Daily cover may be 150mm of soil or clay generated on site or imported, but may also be one of a number of non-soil alternative daily cover options of an appropriate thickness where it can be demonstrated that they achieve comparable level of control with respect to odour discharges, vermin, birds and litter. Raw sand cannot be used as daily cover.'*

HDC accepts most of proposed new condition 3c but proposes the following changes for the reasons outlined below:

- 3c *'From the commencement date of the decision of the 2015 review of conditions, the Consent Holder must place daily cover over the entire operational fill area by the end of each operating day. ~~Daily cover may be 150mm of soil or clay generated on site or imported, but may also be one of a number of non-soil alternative daily cover options.~~ Daily cover shall be of an appropriate thickness where it can be demonstrated that they achieve comparable level of control with respect to such that odour discharges, vermin, birds and litter are kept to a practicable minimum. Raw sand cannot be used as daily cover.'*

HDC has spent over \$120,000 in investigating odours at the landfill. MWH carried out the first investigations late last year and in the first part of this year MWH reported on its findings (see reference 3). A follow-up report (see reference 4) in letter format was prepared in October 2015 after completion of a three month continuous ambient air quality monitoring for H₂S at the property of the nearest residential neighbor to the landfill.

Section 6.1.3 of the report (reference 3) provides the following information about daily cover:

'HDC should ensure that the landfill contractor has an adequate supply of suitable daily cover to ensure that the depth and type of cover used is effective in the mitigation of odour releases at the working face. Daily cover should be progressively applied and should comprise of non-putrescible, non-odorous, noncombustible material and may include soil and sand. In other words, daily cover material should not be itself a source of odour. Typical depths of daily cover at the working face and flanks should be approximately 150 mm (for soils and sand) by the end

of each working day. However, the type and thickness of daily cover required will depend on the nature and age of the waste, the meteorological conditions (including the surface and air temperature) and the wind speed (usually low winds speeds are associated with odour complaints) and wind direction in relation to sensitive receptors, and the rate of site filling. A degree of caution is required if shredded green waste is to be used as daily cover as some waste may have composted and, therefore, may have become a source of odour.

Whilst sand is readily available at the project site, HDC considers that, on occasion, soils or mulched woody material (MWM), such as wood chips or bark, could be used. MWM or soil-based cover materials containing micro-organisms may promote oxidation of trace organic chemicals diffusing through it, thereby reducing the odour potential of the emission source. It may be necessary to apply thicker layers of daily cover, from time to time, or to designate certain cells for intermediate cover (e.g. areas where filling will not be daily). However, a degree of caution is needed if non-draining soil types are to be used. The main problems arising from the use of non-draining soil types (e.g. soils with a high clay and silt content) include the formation of low permeability layers within the waste when subsequent layers of waste are compacted, which could result in difficulties in leachate and landfill gas control. Careful consideration should also be given to the use of contaminated soils, if applicable, as this may be a source of odour. Furthermore, emissions to air of dust and particulate matter from the storage, transfer and application of soil or sand as a daily cover material should be effectively mitigated such that there are no dust nuisance effects at or beyond the site boundary.'

It is agreed that daily cover is an important mitigation measure in reducing odours at a landfill. However, the draft *Land Disposal Guidelines* (see reference 5), which are in the process of being finalized, are intended to replace the *CAE Landfill Guidelines* (see reference 6) as the definitive guide to best practice for landfilling in New Zealand. The *Land Disposal Guidelines* state: "...daily cover may be soil or other materials..." In other words, sand is not excluded and there is no stated thickness of depth for cover materials in the draft *Land Disposal Guidelines*.

MWH recommended a depth of "...approximately 150 mm (for soils and sand)..." of daily cover in its odour report. However, the imposed restriction in the last sentence of the proposed condition: "Raw sand cannot be used as daily cover" is considered unacceptable. If this is to mitigate any effects from dust then, as far as HDC is concerned there have been no issues to date with regards to dust complaints.

Soils have been traditionally used as a daily cover material and may be of a free draining type such as sand, or non-draining such as clay. Also, there are inherent problems with using soils in a modern sustainable landfill, particularly the non-draining types. The main problems arise from the clay and silt content forming low permeability layers within the waste when subsequent layers of waste are compacted. This results in difficulties in leachate and landfill gas control. Leachate may become perched within a site and preferential lateral pathways may form for landfill gas, increasing the risk of off-site migration. This has been mentioned in the MWH odour report.

Additionally, the odour monitoring did not find the working face to be a significant source of odour. Rather, and following the Pareto principle or 80/20 rule, it is likely that the Stage 2 emission hotspots and the leachate collection manhole (i.e. the 20% of the sources) are responsible for 80% of the odour effects. This is further corroborated by the recent round of ambient hydrogen sulphide (H₂S) monitoring undertaken onsite which indicates that the leachate pond, even whilst being desludged, was not a significant odour source and that the Stage 2 emission hotspots and the leachate collection manhole are likely to be the principle emission sources.

For the above reasons it is proposed that the wording of new condition 3c be changed, as shown.

4.3.2 DP 6011 Proposed New Condition 3d

HRC proposes the following new condition 3d:

3d *'From the commencement date of the decision of the 2015 review of conditions, the Consent Holder must ensure that intermediate cover is placed over daily cover to close off a fill area that will not receive additional lifts of waste or final cover for more than three months. The combined depth of cover, including daily cover, over the waste shall be a minimum of 300 millimetres. Raw sand cannot be used as*

intermediate cover. Intermediate cover shall be stabilized within 20 working days of completion.'

HDC accepts most of proposed new condition 3d but proposes the second last sentence be deleted for the reasons outlined in section 4.3.1:

3d 'From the commencement date of the decision of the 2015 review of conditions, the Consent Holder must ensure that intermediate cover is placed over daily cover to close off a fill area that will not receive additional lifts of waste or final cover for more than three months. The combined depth of cover, including daily cover, over the waste shall be a minimum of 300 millimetres. ~~Raw sand cannot be used as intermediate cover.~~ Intermediate cover shall be stabilized within 20 working days of completion.'

4.3.3 DP 6011 Proposed New Condition 3e

HRC proposes the following new condition 3e:

3e 'The Consent Holder must carry out monthly surface emission testing for all areas of the landfill with final or intermediate cover, and the bio-filter bed. The monitoring of surface emissions shall be undertaken utilizing emission testing methods that have been given prior written certification as to their appropriateness by the Manawatu-Wanganui Regional Council's Regulatory Manager. The monitoring of surface emissions shall be undertaken following 72 hours with no rain and on any day where the average wind speed is less than 15 kilometres per hour.'

HDC accepts most of proposed new condition 3e but with the following amendments:

3e 'The Consent Holder must carry out monthly surface emission testing for all areas of the landfill with final or intermediate cover, and the bio-filter bed. The monitoring of surface emissions shall be undertaken utilizing emission testing methods that have been given prior written certification as to their appropriateness by the Manawatu-Wanganui Regional Council's Regulatory Manager. The monthly monitoring of surface emissions shall only be undertaken following a 72 hours period with no less than 75mm of rainfall and on any day where the average wind speed is less than 15 kilometres per hour.'

75 mm of rainfall over 72 hours relates to a light rain fall intensity of a little over 1 mm/hr. If monthly monitoring is restricted to periods only following 72 hours of no rain, then it would be difficult to find a suitable window of opportunity for sampling during winter.

Monthly surface emissions monitoring using a portable methane or landfill gas monitor, as was done as part of the odour investigation work, is considered reasonable, but HDC notes that there will be an ongoing cost to comply with this. Regular monitoring was recommended as an odour management "tool" in the MWH odour report as it would enable LFG (and potentially odour) emission hotspots to be determined. Monthly monitoring is best practice and would enable any corrective actions (eg. repairs to cracks in the capping layer) to be implemented as required.

4.3.4 DP 6011 Proposed New Condition 3f

HRC proposes the following new condition 3f:

3f 'Surface emissions of methane, as determined by testing carried out by condition 3e shall not exceed 5,000 parts per million (ppm) in any single location. An exceedance of the 5,000ppm requires remedial action to be undertaken within 24 hours and retesting within 24 hours of remediation being completed. If the second testing results in a continued exceedance at the same location then an action plan shall be developed and implemented to reduce methane concentrations below 5,000 ppm and details provided to the Manawatu-Wanganui Regional Council and advised within 48 hours of the retest.'

HDC accepts proposed new condition 3f.

Proposed new condition 3f is considered acceptable since it essentially adopting best practice as stated in the National Environmental Standard for Air Quality. It also allows for a threshold concentration against which the monitoring required in proposed new condition 3e can be assessed.

4.3.5 DP 6011 Proposed New Condition 3g

HRC proposes the following new condition 3g:

- 3g 'Records of surface emission testing must be included in the Annual Report and provided to Manawatu-Wanganui Regional Council on request.'*

HDC accepts proposed new condition 3g.

4.3.6 DP 6011 Proposed New Condition 3h

HRC proposes the following new condition 3h:

- 3h 'With six months of the commencement date of the decision of the 2015 review of conditions, the leachate collection chamber must be ventilated to a bio-filter. The bio-filter must be designed by a suitably qualified and experienced person.'*

HDC accepts proposed new condition 3h.

4.3.7 DP 6011 Proposed New Condition 3i

HRC proposes the following new condition 3i:

- 3i 'The Consent Holder must employ a suitably qualified person to undertake a comprehensive assessment of the bio-filter performance on an annual basis. The assessment shall include, but not be limited to, an evaluation of the media size distribution and composition and effectiveness in removing contaminants.'*

HDC accepts most of proposed new condition 3i but with the following amendments:

- 3i 'The Consent Holder must employ a suitably qualified person to undertake a comprehensive assessment of the bio-filter performance on ~~an annual~~ a two-yearly basis. The assessment shall include, but not be limited to, an evaluation of the media size distribution and composition and effectiveness in removing contaminants.'*

HDC accepts that a regular assessment of the bio-filter performance is appropriate, but considers that the assessment should be conducted every two years, as opposed to yearly. The proposed new condition 3j sets out a comprehensive list of performance monitoring requirements (which HDC propose to include in the Landfill Management Plan) for the bio-filter which will detect if the bio-filter is working correctly or not, and therefore a yearly assessment should not be necessary.

4.3.8 DP 6011 Proposed New Condition 3j

HRC proposes the following new condition 3j:

- 3j 'The Consent Holder shall measure and record the following parameters:*
- Continuous display of differential pressure for the bio-filter;*
 - Weekly recording of pressure across the bio-filter bed;*
 - Weekly general observations of the bio-filter condition, including weed growth, compaction and short circuiting;*
 - Quarterly media moisture content of the upper two thirds layer for the first two years of operation and then six-monthly thereafter;*
 - Quarterly monitoring of the pH of the bio-filter media in the upper two thirds layer for the first two years and then six monthly thereafter'.*

HDC proposes to delete proposed new condition 3j, as it proposes to implement the monitoring requirements stated in proposed condition 3j through an amended Landfill Management Plan, rather than through a new condition of consent, as described further below.

- ~~*3j 'The Consent Holder shall measure and record the following parameters:*~~
- ~~*• Continuous display of differential pressure for the bio filter;*~~
 - ~~*• Weekly recording of pressure across the bio filter bed;*~~

- ~~• Weekly general observations of the bio-filter condition, including wood growth, compaction and short-circuiting;~~
- ~~• Quarterly media moisture content of the upper two thirds layer for the first two years of operation and then six monthly thereafter;~~
- ~~• Quarterly monitoring of the pH of the bio-filter media in the upper two thirds layer for the first two years and then six monthly thereafter'.~~

HDC accepts the new monitoring requirements proposed for the new bio-filter in proposed new condition 3j, but proposes to incorporate these requirements in an amended Landfill Management Plan. HDC also notes that the measurements of differential pressure (DP) can be incorporated into the bio-filter design and the weekly pressure monitoring could be incorporated into the continuous DP monitoring.

4.3.9 DP 6011 Proposed New Condition 3k

HRC proposes the following new condition 3k:

- 3k The Consent Holder must ensure that the bio-filter and bed complies with the following limits at all times:*
- The air flow rate shall not exceed 100 cubic metres per hour per metre of bed;*
 - The pH of the filter material shall be between 6 and 8 pH units;*
 - An even distribution of gas flow through the filter bed; and*
 - There shall be no short circuits of untreated air through the filter bed'.*

HDC proposes to delete proposed new condition 3k, but accepts that a bio-filter is needed, as agreed under proposed condition 3h.

- ~~3k The Consent Holder must ensure that the bio-filter and bed complies with the following limits at all times:~~
- ~~• The air flow rate shall not exceed 100 cubic metres per hour per metre of bed;~~
 - ~~• The pH of the filter material shall be between 6 and 8 pH units;~~
 - ~~• An even distribution of gas flow through the filter bed; and~~
 - ~~• There shall be no short circuits of untreated air through the filter bed'.~~

HDC proposes to include a requirement in an amended Landfill Management Plan for a bio-filter to be designed fit for purpose by a suitably qualified and experienced person. As such, prescribing design limits through the conditions of consent is not considered appropriate.

4.3.10 DP 6011 Proposed New Conditions 3l, 3m and 3n

HRC proposes the following new conditions 3l, 3m and 3n:

- 3l Within one month of the commencement date of the decision of the 2015 review of conditions, the Consent Holder shall investigate and identify the odour source identified in the MWH report titled Continuous Ambient Air Quality Monitoring for Hydrogen Sulphide – Levin landfill and dated 10 July 2015'.*
- 3m The Consent Holder shall remediate the odour source identified in condition 3(i) should the source be located on the Levin Landfill property.*
- 3n The Consent Holder shall provide a report to Manawatu-Wanganui Regional Council and the Neighbourhood Liaison Group within 20 working days of condition 3(m) being completed'.*

HDC proposes to delete new conditions 3l, 3m and 3n as follows:

- ~~3l Within one month of the commencement date of the decision of the 2015 review of conditions, the Consent Holder shall investigate and identify the odour source identified in the MWH report titled Continuous Ambient Air Quality Monitoring for Hydrogen Sulphide – Levin landfill and dated 10 July 2015'.~~

~~3m The Consent Holder shall remediate the odour source identified in condition 3(i) should the source be located on the Levin Landfill property.~~

~~3n The Consent Holder shall provide a report to Manawatu-Wanganui Regional Council and the Neighbourhood Liaison Group within 20 working days of condition 3(m) being completed.~~

However, HDC proposes to investigate the odour source to the north-west of the landfill outside of the consent requirements. This is not likely to be a significant odour source and it is considered that the investigation for it should not be specified in the consent conditions.

Any source of odour is covered by the catch-all condition at the start of condition 3, which states that there shall be no odour that is offensive or objectionable beyond the boundary. Furthermore, there is no certainty that the source is located on-site.

It is recommend that this be done by a walkover survey using handheld methane and H₂S monitors, or a real time H₂S monitor using a more cost effective instrument than the reference system that was used at the neighbouring residential property, and more recently at the leachate pond.

HDC also proposes to install an automatic weather station on-site and the data generated will be useful to interpret any complaints that are received by neighbours under north-westerly winds (or any wind direction for that matter). In addition to monitoring wind speed and direction, rainfall could be monitored (which would enable compliance with condition 3e), along with temperature, humidity and pressure at relatively little additional cost.

4.3.11 DP 6011 Proposed New Condition 6A

HRC proposes the following new condition 6A:

6A The Consent Holder shall nominate a liaison person to manage any air quality complaint received. The name and contact details of the liaison person shall be provided to the Manawatu-Wanganui Regional Council's Regulatory Manager. The Consent Holder shall ensure a liaison person is available at all times to respond to odour or dust complaints.

HDC accepts proposed new condition 6A. Note that the nominated person shall be the person who fulfills the role of Solid Waste Coordinator at HDC.

4.3.12 DP 6011 Proposed New Condition 6B

HRC proposes the following new condition 6B:

6B The Consent Holder shall ensure that any complaint received from a member of the general public regarding odour or dust is responded as soon as practicable and within 24 hours of the complaint being received, or at a time mutually agreeable with the party making the complaint.

HDC accepts proposed new condition 6B except that the word "...responded..." is vague and does not indicate what is to be done. The wording proposed for new condition 6C spells out what constitutes an 'investigation'. Additionally, the complaint should be about odour or dust from the landfill site, as opposed to another site. It is considered more appropriate to re-word proposed condition 6B as follows:

6B The Consent Holder shall ensure that any complaint received from a member of the general public regarding odour or dust emanating from the landfill site is responded investigated as soon as practicable and within 24 hours of the complaint being received, or at a time mutually agreeable with the party making the complaint.

4.3.13 DP 6011 Proposed New Condition 6C

HRC proposes the following new condition 6C:

6C The Consent Holder shall notify a Manawatu-Wanganui Regional Council Consents Monitoring Officer as soon as practicable after becoming aware of any offensive or objectionable odour, or any complaint from a member of the public regarding odour.

HDC accepts most of proposed condition 3C but recommends that an additional sentence should be added at the end as it provides more context around the word '...investigate...' (rather than '...respond...') used in condition 6B:

- 6C *The Consent Holder shall notify a Manawatu-Wanganui Regional Council Consents Monitoring Officer as soon as practicable after becoming aware of any offensive or objectionable odour emanating from the landfill, ~~or any complaint from a member of the public regarding odour.~~ An explanation as to the cause of the incident and details of any remedial and follow-up actions taken shall also be provided to the Regional Council Consents Monitoring Officer."*

Whilst this condition places an onus on HDC to notify HRC as soon as possible after becoming aware of any offensive or objectionable odour, it helps to 'close the loop', so to speak, between the public, the Permit Holder and the Compliance Authority. This is a common condition of consent.

It will help to establish if odour complaints can be linked to a single event, as opposed to multiple events, and gives the HRC the opportunity to investigate odour complaints itself and to establish facts about the event such as weather conditions prevailing at the time.

In instances where the Permit Holder may become aware of an odour emanating from outside of the landfill site, reporting this to the HRC will help to address complaints from members of the public who may 'automatically' claim that the landfill is the source of the odour.

4.3.14 DP 6011 Proposed New Condition 6D

HRC proposes the following new condition 6D:

- 6D *The Consent Holder must undertake monthly odour surveys around the boundary of the site, particularly those sections of the boundary that are between the landfill and residential houses, until such time as discharges of refuse to the landfill ceases. Thereafter, the frequency on inspection shall be determined in consultation with the Manawatu-Wanganui Regional Council. The monitoring shall be undertaken using a method that is consistent with the German VDI standard 3940 or subsequent method.*

HDC accepts most of proposed new condition 6D but with the following amendment:

- 6D *The Consent Holder must undertake monthly odour surveys around ~~the boundary of the site, particularly~~ those sections of the boundary that are between the landfill and residential houses, until such time as discharges of refuse to the landfill ceases. Thereafter, the frequency on inspection shall be determined in consultation with the Manawatu-Wanganui Regional Council. The monitoring shall be undertaken using a method that is consistent with the German VDI standard 3940 or subsequent method.*

With the additional environmental monitoring proposed, together with a requirement to construct a bio-filter, it is considered that monthly odour surveys should be conducted only along the boundary between the landfill and residential houses, as opposed to the whole of the landfill site boundary.

The proposed standard (German VDI standard 3940) is essentially a 'sniff test' and it requires an HDC staff member to be trained to conduct the test method. Depending on the weather and site operating conditions, it may be possible to coordinate this monitoring with the monthly surface monitoring required in condition 3e.

In scheduling tests, the person responsible for undertaking the tests should be aware of the wind direction at the time of the site visit and should endeavor to do the tests when wind speed conditions are light (e.g. less than 15 km/hr), and when the wind direction is from the principal odour emissions sources located at the landfill towards the residential houses.

4.3.15 DP 6011 Proposed New Condition 6E

HRC proposes the following new condition 6E:

- 6E *The Consent Holder must carry out a weekly walk-over survey of all of the landfill surfaces, including the area around the bio-filter and leachate pond. The purpose of the walk-over survey is to check for odour, cracks in the landfill cap surface and integrity of any gas collection or leachate pipework.*

HDC proposes to delete new conditions 6E as follows:

- ~~6E *The Consent Holder must carry out a weekly walk-over survey of all of the landfill surfaces, including the area around the bio-filter and leachate pond. The purpose of*~~

~~the walk-over survey is to check for odour, cracks in the landfill cap surface and integrity of any gas collection or leachate pipework.~~

HDC considers that proposed condition 6E duplicates the environmental monitoring that is already required under the following existing and proposed conditions, and so is not needed:

- condition 28 of consent 6010 - monthly inspection of the landfill for leachate break out, settlement and other adverse environmental effects;
- proposed new condition 3e of consent 6011 - monthly surface emission testing for all areas of the landfill with final or intermediate cover, and the bio-filter bed;
- and proposed new condition 3k of consent 6011 - weekly general observations of the bio-filter condition, including weed growth, compaction and short circuiting to be implemented through an amended Landfill Management Plan.

4.3.16 DP 6011 Proposed New Condition 6F

HRC proposes the following new condition 6F:

6F The Consent Holder shall maintain a log of all inspections, investigations and actions taken in accordance with all monitoring and odour inspection conditions of this consent. The log shall be made available to the Manawatu-Wanganui Regional Council on request and submit a summary of all results and assessments presented in the Annual Report.

HDC accepts proposed new condition 6F.

4.4 Discharge Permit 102259

4.4.1 DP 102259 Condition 7

HRC proposes to delete condition 7 as follows:

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

HDC accepts that condition 7 should be deleted.

5 Conditions Proposed by HDC as invited by the Notice of Review

Section 5 addresses those conditions which HDC proposes to change, or to introduce, under the 2015 review.

HDC's proposed changes to conditions are shown in blue type. Deleted words are shown with a double strike through, and added words are shown underlined.

5.1 Discharge Permit 6009

5.1.1 DP 6009 Condition 14(m)

HDC proposes that condition 14(m) be deleted in its entirety, as follows, because it has been addressed.

~~14 (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.'~~

Condition 14(m) was a new condition included as a result of the 2010 review process. It requires an assessment to be made of the feasibility of carrying out greenwaste composting operations on top of the closed landfill.

This was addressed in section 5.5 of the LMP which concluded that this would not be appropriate since it would hamper monitoring of settlement of the landfill cap, and the possible maintenance of the cap.

5.1.2 DP 6009 Condition 28(d)

HDC proposes to amend condition 28(d) as follows:

28 (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 slopes a confining layer of gravel 300 mm thick, lain on top of a protective geofabric and geogrid, appropriately designed for the site conditions'

Condition 28(d) describes the protection layer and leachate drainage layer on the base and side slopes. The side slope liner configuration was changed for Stage 3, with HRC's approval. It is proposed that this change be included in the wording of Condition 28(d) to reflect current best practice.

5.1.3 DP 6009 Condition 29

Condition 29 requires HDC to present a LMP to HRC nine months prior to placement of refuse on the lined landfill. This has been complied with and so it should be deleted as follows:

~~29. 'Nine months prior to the 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).'~~

5.1.4 DP 6009 Condition 32

HDC proposes to amend condition 32 as follows:

- 32 The Permit Holder shall re-establish, chair, manage and conduct, a Neighbourhood Liaison Group (NLG) in 2016. The following shall each be eligible to be members have one representative:
- a. ~~Representation from~~ The 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. ~~*A technical advisor as appointed by the Permit Holder. 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 Council and the Regional Council, being consent authorities.*~~
- e. *The Permit Holder (in addition to the representative nominated under 32(d)).*

Condition 32 was changed in the 2010 review to enlarge the representation of the NLG. Since then, attendance at NLG meetings has increased as other parties have been invited to meetings, predominantly by NLG members other than HRC and HDC.

Under such circumstances it has been easy to “stack” the NLG with parties who oppose the Permit Holder’s viewpoint. There is limited guidance within the consent conditions on how NLG meetings are to be conducted, other than the frequency at which they should be held.

The proposed changes to condition 32 are intended to rationalise the membership of the NLG.

5.1.5 DP 6009 Condition 33

HDC proposes to amend condition 33 as follows:

- 33. *The purpose of the NLG is solely to review and provide comment to the Permit Holder on environmental and monitoring results in relation to environmental mitigations at the Levin Landfill in accordance with the conditions of the consent. The Permit Holder may accept or reject any comments with reasons to be provided to the NLG. The Permit Holder shall:*
 - a. ~~*Convene one meeting one month after the commencement of the consent;*~~
 - b. ~~*Thereafter at intervals of six months for the first 18 months after the date of exercising the consent; and*~~
 - c. ~~*Thereafter*~~*Hold meetings at intervals of no more than 12 months unless 80% of the people attending a meeting agree that changes to the intervals are acceptable.*

Original condition 33 stated the frequency at which the Permit Holder shall convene NLG meetings. Conditions 33a and 33b have been complied with and meetings are now held at least annually, if not more frequently, as defined under condition 33c.

It is considered that the timing of meetings stated in conditions 33a and 33b are now redundant and condition 33c is sufficient to enforce the frequency of meetings.

Original condition 33c was unworkable because there were no clear guidelines on representation and how to interpret the term ‘...80% of the people attending a meeting agree...’. The amendments to condition 32 clarify representation and allows condition 33c to be acted upon.

There is limited guidance within the consent conditions on how NLG meetings are to be conducted, other than the frequency at which they should be held. HDC proposes to clarify the purpose of the NLG in condition 33.

5.1.6 DP 6009 Condition 34

HDC proposes to amend condition 34 as follows:

- 34 *The Permit Holder shall:*
 - a. *Supply notes of each meeting to the Group Members;*
 - b. *Forward an annual report to members ~~and~~ as sent to the Regional Council ~~and the District Council;~~*
 - c. *Forward any other information to the Group Members, in accordance with the conditions of the consents; and*
 - d. *The Permit Holder shall ensure the NLG members are:*

- ~~i. Able to advise the Permit Holder of potential members of the NLG.~~
- 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 and Landfill Operator. 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.*
- 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).*
- 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 consent conditions.*
- ~~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).~~
- ~~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 land filling operations. Given reasons for any comments from the NLG at the annual meeting on environmental and monitoring results in relation to environmental mitigations at the Levin Landfill being rejected.~~
- ~~vii. Kept informed by the Permit Holder as to whether or not progress is being made towards a regional landfill.~~

HDC proposes to delete condition 34(d)(i) since it proposes to limit the membership of the NLG as defined under condition 32.

The interpretation of the various sub-conditions has been a source of frustration during NLG meetings, particularly with respect to the scope of information to be provided and the general condition encompassed within original condition 34 (d)(v) which says that the Permit Holder shall ensure that NLG members "...are 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)..."

It is considered that proposed condition 33 provides clarity around which matters are appropriate for NLG members to raise, and therefore condition 34(d)(v) is considered redundant.

5.2 Discharge Permit 6010

5.2.1 DP 6010 Condition 3

HDC proposes the following minor changes to Tables A, B, C and D under condition 3:

- Amend the frequency description for the Deep Aquifer (Table A), Shallow Aquifer (Table B) Monitoring Wells, and Water Monitoring Locations (Table C) since the “2 year” and “1 year” periods were completed following the 2010 review.
- Include the sampling of bore G2s in Table B since this is currently occurring.
- Include for sampling of Tatana Drain in Table C.
- In Table D, amend the locations for bores G1s and G1d, and include bore G2s and surface water monitoring locations of Tatana Drain.

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

Location	Parameters and frequency
C2dd, E1d, E2d and any other future deep monitoring well unless installed for background monitoring purposes.	Quarterly comprehensive for 2 years after May 2010 . <i>Subsequently, conditional</i> Annual comprehensive Quarterly indicator.
G1d and any other future deep monitoring well installed for background monitoring purposes.	Quarterly comprehensive for 1 year after May 2010 . <i>Subsequently</i> Annual comprehensive Quarterly indicator
All monitoring wells where indicator parameters show leachate influence over 3 consecutive sampling rounds.	Annual pesticide / semi VOC

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

Location	Parameters and frequency
C1, C2, C2ds, D4 B1, B2, B3s, E1s, E2s, G2s and any other shallow Compliance monitoring well installed in the future.	Six monthly comprehensive for 2 years after May 2010 . Quarterly indicator <i>Subsequently, conditional</i> Annual comprehensive Quarterly indicator
D5, F1, F2, F3 and any other shallow monitoring well installed to monitor leachate irrigation areas in the future.	Six monthly comprehensive for 2 years after May 2010 . Quarterly indicator <i>Conditional</i> Annual comprehensive Quarterly indicator

Location	Parameters and frequency
G1s and any other shallow Background monitoring well installed in the future.	Quarterly comprehensive for 1 year after May 2010 . <i>Subsequently, conditional</i> Quarterly indicator
D1, D2, D3r, D6, and any other Early Detection wells installed in the future.	Quarterly comprehensive for 2 years after May 2010 . <i>Subsequently, conditional</i> Annual comprehensive Quarterly indicator
All monitoring wells where indicator parameters show leachate influence over 3 consecutive sampling rounds.	Annual pesticide/ semi VOC

Table C: Other Water Monitoring Locations, Frequencies and Parameters.

Location	Parameters and frequency
HS1, HS2, HS3, Tatana Drain (TD1 and TD2)	Quarterly comprehensive for 2 years after May 2010 <i>Subsequently, conditional</i> Six monthly comprehensive Quarterly indicator
Leachate Pond Outlet	Quarterly comprehensive for 2 years after May 2010 Six monthly pesticide / semi VOC <i>Subsequently, conditional</i> Six monthly comprehensive Quarterly indicator Annual pesticide / semi VOC

Table D: Monitoring Point Locations.

Monitoring group	Monitoring point	Location
Shallow groundwater	B1	
	B2	
	B3s	
	C1	
	C2	
	C2ds	
	D1	
	D2	
	D3r	
	D4	
	D5	Lined landfill area groundwater bore

Monitoring group	Monitoring point	Location
	D6	Lined landfill area groundwater bore
	E1s	
	E2s	
	F1	Groundwater bore downflow from irrigation area
	F2	Groundwater bore downflow from irrigation area
	F3	Groundwater bore downflow from irrigation area
	G1s	South Eastern boundary of the site (proposed location)
	<u>G2s</u>	<u>North of wetland pond near landfill entrance</u>
Deep groundwater	C2dd	
	E1d	
	E2d	
	G1d	South Eastern boundary of the site (proposed location)
Stream	HS1	Hokio Stream – upstream of landfill (Refer Fig. 2)
	HS2	Hokio Stream – alongside landfill (Refer Fig. 2)
	HS3	Hokio Stream at or about 50 metres downstream of landfill property boundary (Refer Fig. 2)
<u>Tatana Drain</u>	<u>TD1</u>	<u>Top end of drain near Bore C2</u>
	<u>TD2</u>	<u>5 m upstream of inlet to road culvert under Hokio Beach Road</u>
Soils	Refer Condition 5	In land disposal area
Leachate		Pond outlet

5.3 Discharge Permit 7289

5.3.1 DP 7289 Condition 5

HDC proposes to change condition 5 as follows:

5. *~~The Permit Holder shall notify the Regional Council's Environmental Protection Regulatory 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.*~~

Condition 5 was amended in the 2010 review to require the Permit Holder to notify HRC and NLG members as soon as is practicably possible after receiving notification of the intention to dispose of liquid waste at the landfill under DP 7289, or as soon as possible following urgent disposal in accordance with Condition 3.

Previously the Permit Holder was to do the notification within three days after the discharge event, and so the 2010 amendment was considered appropriate. However, there should be no need to involve the NLG in a matter of this nature because it is an operational matter, and HRC is responsible for ensuring environmental compliance. The NLG will be informed of any discharges of liquid through the Annual Report. Such discharges are only permitted as a contingency to normal disposal and, to the best of our knowledge, have not occurred at the landfill.

5.4 Discharge Permit 102259

5.4.1 DP 102259 Condition 5

HDC proposes to change condition 5 as follows:

5. *'The Permit Holder shall ~~ensure that the~~ inspect the stormwater system on a fortnightly basis, including all drains and ponds, ~~is kept~~ and clear it of refuse at all such times'.*

Condition 5 requires the Permit Holder to keep the stormwater system "...clear of refuse at all times...". So, the inference is that as soon as there is any litter in the system (drains, ponds etc), then the Permit Holder is in a situation of non-compliance. This seems somewhat impractical, hence the proposed changes. The proposed changes are also consistent with condition 4 of Consent 6009.

5.4.2 DP 102259 Condition 9

HDC proposes to change condition 9 as follows:

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

The soakage areas have changed since the consent was first adopted so the condition needs to change to reflect the latest plan in place of the original Plan C102259. An update of the latest plan (Z1518107/G002/E) is included in Appendix B.

5.4.3 DP 102259 Condition 19

HDC proposes to change condition 19, as follows, for the reasons outlined below:

19. *'The Regional Council ~~shall~~ may initiate a publicly notified review of all conditions of this Permit ~~in April 2015, 2020, 2025, 2030 and 2035~~ at ten yearly intervals after the commencement date of the decision of the 2015 review of conditions ~~unless the Neighbourhood Liaison Group (NLG) agrees that a review is unnecessary.~~ The reviews shall be for the purpose of:...*

Condition 19 sets out the scope and purpose of a review of the conditions of Discharge Permit 102259. The wording of Condition 19 was amended in 2010 on two main accounts. Firstly, it was changed from "horizons.mw... may initiate a review of..." to (emphasis added) "The Regional Council shall initiate a publicly notified review of ..." Secondly, the following clause was added in 2010: "...unless the Neighbourhood Liaison Group (NLG) agrees that a review is unnecessary..."

The changes to Condition 19 are also reflected in the review conditions of the other discharge permits, even though, technically speaking, those other conditions were not subject to review in 2009/2010. As indicated in HRC's Levin Landfill Review of Conditions Report (reference 7), "Horowhenua District Council, in the spirit of trust and inclusion, had magnanimously agreed to change a number of consent conditions which were technically beyond the scope of the Review".

It would appear, however, that the changes to these conditions are now being used as a mechanism to force a review and because of the issues with the NLG such reviews are confrontational, as opposed to working in a spirit of trust and inclusion which was originally intended.

In this current environment of distrust, it is also clear that there are problems with interpreting the wording "...unless the NLG agrees..."

The NLG has grown since the 2010 review as other parties have been invited to meetings. Under such circumstances it has been easy to "stack" the NLG with parties who oppose the Permit Holder's viewpoint. There is limited guidance within the consent conditions on how NLG meetings are to be conducted, other than the frequency at which they should be held. Neither is there guidance for determining what constitutes an "agreement" within the NLG.

Finally, and most importantly, as set out in section 2, the wording of the condition is unlawful as it restricts the discretion HRC has under section 128(1) of the RMA.

In light of these issues, HDC proposes to change the wording of Condition 19.

6 References

1. *Levin Landfill Water Quality Investigation*; Report prepared for the Horowhenua District Council by MWH, March 2015.
2. *Report Addendum – Additional Sampling Final v2*; Addendum prepared for Horowhenua District Council by MWH, May 2015.
3. *Levin Landfill Odour Assessment*; Report prepared for Horowhenua District Council by MWH, February 2015.
4. *Continuous Ambient Air Quality Monitoring for Hydrogen Sulphide – September 2015 – Levin Landfill*; Letter Report prepared for Horowhenua District Council by MWH, October 2015.
5. *Technical Guidelines for Disposal to Land*, Draft version, Waste Management Institute of New Zealand, August 2014.
6. *Landfill Guidelines – Towards Sustainable Waste Management in New Zealand*; Centre for Advanced Engineering, University of Canterbury, Christchurch, April 2000.
7. *Levin Landfill Review of Conditions Report*, prepared by Horizons Regional Council, 31 May 2010.

Appendix A List of Conditions Subject to Review

Table A-1: Consent Conditions subject to Review

Resource Consent	HRC may initiate a review of conditions:	For the purpose of:	The review of conditions shall allow for the:
6009 – Discharge of Solid Waste to Land	2, 8, 14(a) – (m), 28, 29, 32, 33 & 34	<p>(a) assessing the adequacy of the management plan outlined in conditions 14 and 29 of this consent; and/or</p> <p>(b) assessing the effectiveness of conditions 2, 8 and 28 of this consent,</p> <p>(c) assessing the effectiveness of the NLG outlined in conditions 32, 33 and 34.</p> <p>in avoiding, remedying or mitigating adverse effects on the environment surrounding the Levin Landfill</p>	<p>(d) modification of the management plan outlined in conditions 14 and 29 of this consent;</p> <p>(e) deletion or changes to conditions 2, 8 and 28 of this consent;</p> <p>(f) deletion or changes to conditions 32, 33 and 34; and</p> <p>(g) addition of new conditions as necessary,</p> <p>(h) an alternative to any of the above as agreed from time to time, in writing, between the Permit Holder and the consent authority.</p> <p>to avoid, remedy or mitigate adverse effects on the environment surrounding the Levin Landfill.</p>
6010 – Discharge of Leachate to Land	3, 4, 11(a) – (e), 12, 13, 14, 24, 27, 28 & 29	<p>(a) assessing the adequacy of monitoring outlined in conditions 3 and 4 of this consent; and/or</p> <p>(b) assessing the effectiveness of conditions 11(a) – (e), 12, 13, 14, 24, 27, 28 and 29 of this consent,</p> <p>in avoiding, remedying or mitigating adverse effects on the environment surrounding the Levin Landfill</p>	<p>(c) modification of monitoring outlined in conditions 3 and 4 of this consent;</p> <p>(d) deletion or changes to conditions 11(a) – (e), 12, 13, 14, 24, 27, 28 and 29 of this consent; and</p> <p>(e) addition of new conditions as necessary,</p> <p>to avoid, remedy or mitigate adverse effects on the environment surrounding the Levin Landfill.</p>
6011 – Discharge to Air	3 & 6	<p>(a) assessing the effectiveness of conditions 3 and 6 of this consent,</p> <p>in avoiding, remedying or mitigating adverse effects on the environment surrounding the Levin Landfill</p>	<p>(b) changes to conditions 3 and 6 of this consent; and</p> <p>(c) addition of new conditions as necessary,</p> <p>to avoid, remedy or mitigate adverse effects on the environment surrounding the Levin Landfill.</p>
6012 – Diversion of Stormwater	No conditions subject to review by Regional Council	Not Applicable	Not Applicable
7289 – Discharge of Liquid Waste to Land	5, 9, 12 & 17	<p>(a) assessing the adequacy of the monitoring conditions outlined in conditions 5 and 17; and</p> <p>(b) assessing the effectiveness of conditions 9 and 12 of this consent,</p> <p>in avoiding, remedying or mitigating adverse effects on the environment surrounding the Levin Landfill</p>	<p>(c) modification of monitoring outlined in conditions 5 and 17 of this consent;</p> <p>(d) changes to conditions 9 and 12 of this consent; and</p> <p>(e) addition of new conditions as necessary,</p> <p>to avoid, remedy or mitigate adverse effects on the environment surrounding the Levin Landfill.</p>
102259 – Discharge of Stormwater to Land	All conditions	<p>(i) reviewing the effectiveness of these conditions in avoiding or mitigating any adverse effects on the environment; and/or</p> <p>(ii) reviewing the adequacy of the monitoring programme required by this discharge permit.</p>	<p>(i) the deletion or amendment to any conditions of this permit; and</p> <p>(ii) the amendment or addition of new conditions as necessary to avoid, remedy or mitigate any adverse effects on the environment.</p>

Appendix B Stormwater Plan