

17/04/2020

Hastings District Council and Napier City Council  
Private Bag 9002  
Hastings 4156

Cc: Tonkin & Taylor Ltd  
105 Carlton Gore Road  
Newmarket  
Auckland 1023  
Attn: Rachel Signal-Ross

**Our Ref:** APP-125003 (quote this number when discussing application with HBRC staff)

For the attention of: Martin Jarvis

Dear Martin,

### Request for Further Information

I have reviewed your resource consent application APP-125003 for activities and discharges associated with the construction and operation of Area B of the Oamaru Landfill. The application has been reviewed by Pattle Delamore Partners Limited (PDP), and the review comments have been attached in full, in addition to this letter for your reference. The headings below detail which appendix the requests pertain to within the PDP report. More information is needed so that I can better understand your proposed activities and its potential effects.

In accordance with Section 92 of the Resource Management Act (1991) (RMA) I request the following information:

#### **Geotechnics, Landfill Design and Leachate Collection and Irrigation System (Appendix A)**

1. Please provide reasons for not complying with the WasteMINZ guidelines on permeability criteria for the capping layer.

#### *Excavation of the gully alluvium.*

2. Clarification is required around the removal of this material, especially in relation to the effect on the liner levels which, if excavated as shown on drawing 1000647.1000-2 would suggest that the alluvial material is not all removed. In addition, clarification on the removal of the limestone should also be provided.

*Subsoil drainage.*

3. Please provide clarification on the details of how and where the groundwater would discharge to, should seepage zones be encountered during the earthworks constructions phase. In particular, given that the previous stages of the landfill ma have already been constructed prior to encountering seepage zones. Further detail is required to ensure that the perched groundwater is dealt with and there are no effects on the liner system resulting in the loss of containment.

*Fill Compaction.*

4. The report indicates that the engineered fill areas are to be compacted, however it should refer to the compaction specification contained within the geotechnical report. Please provide confirmation of this.

*Liner Leakage.*

5. The report documents the assumption of 3 manufacturing and 3 installation defects per hectare, however the HELP modelling uses 2 manufacturing and 2 installation defects per hectare. The sensitivity of the HELP model should be checked regarding the difference in terms of seepage flow rates through the liner. Please provide details of this check.

*Leachate collection and irrigation system*

6. Leachate design flows are calculated from the HELP modelling. The HELP modelling scenarios all assume final capped conditions with only 10 m of waste. The engineering report notes that the maximum depth of waste would be 50 m. Please provide the details of the revised sensitivity of the depth of waste on leachate generation rates.
7. The layout of the leachate collection system shows the collection pipelines following single contours without an indication of the expected gradients of the collection pipelines. Please provide details of the expected gradients.
8. Details regarding the redundancy of the leachate sump and pumping system are required to evaluate the potential effect of spillage from the leachate sump in the event of pump failure.
9. Details and calculations regarding the system capacity and leachate water balance are sought to confirm the excess leachate volumes compared with available storage volume to confirm the concept design required leachate storage volumes.

*New Leachate pond on top of Area A.*

10. Issues around formalising the existing pit on top of Area A into a new HDPE lined pond are not discussed. Formalising the existing pit into a lined leachate pond will require the excavation of the closed landfill and breaching of the existing cap and the potential effects of this are not discussed. Please provide clarification on the design and how this work is to be carried out in order to assess the potential effects (odour, stability, LFG, etc.)

*Intermediate bund location.*

11. The engineering report notes that the location and size of the intermediate bund will be determined at the detailed design stage. However, given that the stability assessment given in the geotechnical report has recommended the incorporation of an intermediate bund for stability reasons, this should be considered part of the conceptual design. The location of the edge of Stage 1 is known and if the intermediate bund is to be located at this edge, then the stability model should re-run with the intermediate bund in the correct location to determine if the FoS remains the same as calculated in the geotechnical report. The stability analysis of this scenario is sought to confirm the results given in the geotechnical report.

**Operations and Maintenance and Waste Acceptance (Appendix B)**

The review of the Operational and Monitoring Aspects of the proposal for the landfilling in Area B, including a review of the proposed waste acceptance criteria has generally found the proposed measures are appropriate and consistent with current best practice in New Zealand. The follow further information is sought to clarify some aspects of the information provided:

12. Please provide further information on the sources, tonnages and makeup of industrial wastes accepted to the landfill and the waste acceptance principles applied to these wastes to assist in assessing the environmental risks that pertain to disposal of these substances to the landfill.
13. Please provide commentary on the previous performance of the landfill operation at the site, including provision of previous monitoring reports that discuss compliance against the consents, to assist in understanding how well the landfill operations have been undertaken in practice. Form this, further refinement of the O & M Manual may be required to address deficiencies that will need to be remedied for activities in Area B.
14. Please provide proposed policies and procedures and ongoing reviews for dealing with WAC for emerging contaminants.
15. Please provide an updated list of prohibited substances that will apply to wastes disposed of to Area B.

**Air Quality (Appendix C)**

It is acknowledged that some matters requested below may be addressed within the overall application, however, it is considered that the air quality assessment needs to cross reference the details if available.

16. Surface monitoring of methane is not described in the air discharge assessment, but is an important control for odour, and should be included. It is recommended that monitoring for temporary and final cover is needed to identify hot spots and using trigger thresholds set for odour management to identify where remedial action is required. Please provide comment on this.

17. The standard of the flare specifications and monitoring and maintenance details are not referred to in the air quality assessment, which are important for ensuring good operations and minimising HAPs and should be included. Please provide these.
18. The AEE/air quality assessment refers to minimisation of flare outages. Please provide detail on how flare outages will be minimised, including what testing or maintenance will be undertaken to ensure flare efficiency and reliability.
19. How will NESAQ flare standards be complied with (Regulation 27)?
20. It appears that the flare will burn the majority of the gas i.e. there is not enough generator capacity to handle the gas flow. Since gas flow is permanently going to the flare, Regulation 27(5) requires that a back-up flare be provided, please confirm/clarify the provision for a back-up flare.
21. While there is a section on fires included in the O&M manual, there is no mention of fires in the air quality assessment or management of fire risk. Please confirm how fire risk will be mitigated for Area B and what the contingency is for fire.
22. What is meant by “judicious use” of odour masking or deodorant sprays?
23. The assessment that the working face size should be minimised appears at odds with the proposal to increase the working face area compared to the current consent. What is best practice for working face size?

### **Stormwater, Hydrology and Leachate Irrigation (Appendix D)**

To better understand the proposed stormwater treatment system, potential changes to peak runoff rates, the potential for leachate to enter the stormwater system, and the potential effects on the receiving environment, the following information is requested:

#### *Hydrological Assessment*

24. The Appendix D – Stormwater Calculations of the Engineering Report provides a comparison of peak runoff rates, calculated using the rationed method, for three scenarios. The assessment states that “*design rainfall intensities were sourced from NIWA’s High Intensity Rainfall Design (HIRDs) version 4*”, however the rainfall intensities values were not specified. Please specify the rainfall intensities used for the peak flow calculations (Table 3.1). Furthermore, please advise how climate change was accounted for.
25. Table 2.1 of the Stormwater Calculations states that the slope of Area B in the ‘Developed – capped Stage 5’ scenario is 21%. The runoff coefficient (0.3) does not appear to have been adjusted for the slope. Table 6-1b of the Hawke’s Bay Waterway Guidelines Stormwater Management specifies slope corrections for runoff coefficients. Please revise the assessment or otherwise advise why slope correction is not necessary.
26. Table 2.1 of the Stormwater Calculations states that the time of concentrations ( $t_c$ ) for the various sub-catchments for the three scenarios range from 10 to 12 minutes. Given the size of the sub-catchments, the values for  $t_c$  appear to be low. Please confirm the  $t_c$  values and any changes to the peak flow, if necessary.

27. Please provide an assessment of the capacity of the farm drain (to which the proposed Stage B sediment pond/wetland would discharge to) with reference to the above assessment, in particular with respect to any potential increases in peak runoff as a result of the proposal.
28. Section 6.6.6 of the AEE states that the southern extent of Area B currently drains to the south, and that this southern portion of Area B will become incorporated into the landfill. Please advise whether the incorporation of the southern portion of Area B has been included in the peak flow calculation (Table 3.1 of the Appendix D – Stormwater Calculations).

### *Stormwater System*

29. The application states that all short-term drains will be designed for a 10-year ARI event, and all permanent drains for a 100-year ARI event. Based on the information provided in Section 3.5, the expected lifespan of the landfill is approximately 30 years, with 10+ years between Stage 4 and 5. To better understand the proposed drains, and how long the drains would be operational for,
  - a) Please clarify what constitutes a “short-term” drain – how long would a “short-term” drain be operational for (e.g. up to x number of years). Similarly, please confirm what constitutes a “permanent” drain (e.g. operational for more than x number of years).
  - b) Please provide further details on the (conceptual) design and dimensions of the stormwater drains.
30. The application states that only runoff that has not come into contact with waste will enter the stormwater system. Please clarify what measures are proposed to ensure only clean stormwater is able to enter the stormwater system.
31. The application states that the Stage B sediment pond will be designed to meet or exceed the requirements of the Hawke’s Bay Waterway Guidelines – Erosion and Sediment Control 2009 (“the guidelines”). The guidelines provide sizing criteria for sediment retention ponds, which were used to size the proposed Area B pond as described in the AEE. The guidelines refer to sediment retention ponds as temporary ponds, and states that where they are used for more than two years, *“further measures to ensure stability and effectiveness are likely to be needed”*. The application states that the proposed Area B pond will form the basis for sediment treatment for all works within Area B. Area B is expected to provide approximately 30 years of landfill capacity, which suggests the pond will be operating for at least 30 years. To understand the operation of the pond and the potential effect on the receiving environment, please specify:
  - a) What is the expected treatment efficiency of the Area B pond and wetland;
  - b) What ARI storm event the sediment pond is able to accommodate;
  - c) An indication of the likely performance of the sediment pond during storm events greater than the design storm, and/or how these peak flows will be managed and/or if they will mobilise contaminants in the sediment pond and/or wetland;
  - d) How the potential risk of spills, for example from machinery and vehicles operating during the construction and operation of the landfill will be managed;

- e) How the potential risk of run-off or additional leachate generation will be managed in the event of landfill fires, with consideration of the potential contaminants contained in this. There is some information on this in the O&M manual but specific information for Area B is required;
  - f) The expected sediment load of treated stormwater discharged to the unnamed farm drain. How much sediment is expected to deposit in the unnamed farm drain and the Upokohino Stream;
  - g) Please provide details of when/if accumulated sediment would be removed from the proposed sediment pond and wetland;
  - h) Does the proposed geometry of the Area B sediment pond (i.e. the non-rectangular shape) affect the expected treatment efficiency of the pond;
  - i) Appendix D – Stormwater Calculations of the Engineering Report notes that the sediment pond and wetland would provide additional storage capacity and could cause a further lag in the stormwater runoff and potentially reduce the peak flow rate for smaller storm events. Please advise whether the pond and wetland are expected to attenuate flows, and what impact, if any, this may have on the ability of the farm drain and the Upokohino Stream to flush accumulated sediments.
32. Section 6.6.6 of the application states that the proposed Area B sediment pond will block the outlet from the Area C valley, and that it is proposed to install a pipeline within the pond bund to by-pass the Area B sediment pond and discharge to the farm drain downstream of the pond. Please provide details on the proposed bypass pipeline, in particular what the design capacity will be and what the implications would be if the pipeline failed or the capacity was exceeded (e.g. potential flooding, potential for washing out the sediment pond or wetland).

### Monitoring

- 33. The application states that visual checks of the landfill surface will be carried out on a regular basis to check for any potential leachate breakouts. Please specify what the proposed frequency of the visual inspections are to be.
- 34. Please advise if and what type of regular inspections are proposed for monitoring the stormwater system (stormwater drains, sediment pond, etc.).
- 35. The proposed stormwater monitoring (Table 6.1 of the AEE) specifies stormwater monitoring at six monthly intervals for water clarity, pH and conductivity. If the stormwater system were to be impacted by leachate, the proposed sampling would only detect such impacts after potentially six months. Please clarify why more frequent sampling was not considered appropriate, or potentially continuous monitoring of pH and conductivity, which could detect leachate impacts more quickly and allow a more rapid response.
- 36. The proposed stormwater monitoring (Table 6.1 of the AEE) specifies that “*a more extensive suite*” will be analysed on a yearly basis. Please advise which parameters are proposed to be included in the “more extensive suite”.

37. Section 10.6.2.2 of the application proposes to “*monitor spray drift under different weather conditions for the potential to enter stormwater drains to the extent that this may cause contamination*”. Please provide further details of what spray drift monitoring is proposed, and how this will be undertaken to avoid spray drift from potentially entering any temporary or permanent stormwater drains.
38. Section 6.6.6 of the application states that it is proposed to divert run-off water from Area C around the Area B sediment pond, and that clean water diverted from the Area B site will also be diverted to this by-pass where possible. Please advise how it will be determined whether runoff can be diverted to this by-pass, and whether any further ongoing monitoring is proposed to monitor the quality of water diverted by this by-pass.
39. The Operations and Maintenance Manual (Appendix P) specifies leachate monitoring if the existing leachate collection pond, in accordance with the existing consent DP040120Lb. The proposed environmental monitoring (Table 6.1 of the AEE) does not include leachate monitoring from the proposed new 4,800 m<sup>3</sup> pond. Please confirm whether it is proposed to monitor leachate from the new 4,800 m<sup>3</sup> leachate pond, and what parameters would be included, or otherwise clarify why this is not considered necessary.

#### *Leachate Management and Irrigation*

40. The application proposes a 10 m separation distance between the spray zone and stormwater drains. To better understand the proposal and potential effects, please advise:
  - a) Whether the 10 m separation distance applies to permanent stormwater drains only, or whether this applies to all drains (including temporary stormwater drains). It is noted that existing condition 4 of DP 160044L does specify 10 m from any stormwater drain, overland flow paths or other surface water body.
  - b) Why a 10 m separation distance is sufficient, taking into account slopes of the areas proposed to be irrigated in Area B and the potential from contaminants to be entrained in the runoff (as shown in Drawing 1000647.1000-31).
41. Please advise whether the potential for leachate impacted water to enter stormwater drains via interflow through the growth layer of the capping layer has been considered, and how this potential risk has been mitigated or avoided.
42. The application proposes a maximum leachate irrigation of 3 mm/day. Section 5.5.3 of the Engineering Report includes the results of an irrigation capacity versus leachate storage volume assessment, and Section 5.2 provides reductions in leachate irrigation capacity during wetter months which are reported to have been back calculated from the existing leachate irrigation activity. In order to better understand the potential risk of leachate generating runoff or becoming entrained in stormwater runoff, please provide details of soil moisture deficit modelling to justify why the proposed irrigation rates are suitable, how irrigation rates will be managed in consideration of potential lower permeability cap rates, and how the risk of leachate being entrained in stormwater runoff will be mitigated or avoided.

43. The irrigation of leachate has the potential to lead to an accumulation of sodium in soils in the proposed irrigation areas. Please provide an assessment of the potential for sodium accumulation within the proposed irrigation area soils, and any potential increase in the exchangeable sodium percentage (ESP) and any potential effect on surface soil permeability and generation of runoff. Proposed sodium mitigation measures are also requested.
44. The irrigation of leachate furthermore has the potential to lead to the accumulation of heavy metals in soils with the proposed irrigation areas. Please provide an assessment for the potential of heavy metal accumulation, and whether this may have an effect on vegetative cover landfill cap or on the quality of stormwater and the receiving environment, associated with runoff.
45. Please provide information on the risk of other contaminants including emerging contaminants, accumulating in soils, being entrained in runoff or being discharged from the underdrainage system, in line with PDP's review memorandum of the waste acceptance criteria.
46. The Engineering Report specifies that the average leachate generation rate, as modelled in HELP, is expected to be 105 m<sup>3</sup>/day during Stage 5 of the landfill (estimated filling period of 2043 to 2060). Please provide further details on the design of the leachate system, in particular with reference to the risk of leachate spilling and whether this could enter the stormwater system should the design capacity of the system be exceeded (for a year with greater than average rainfall), or in the event of a leachate pump failure.
47. Please provide details of a refined irrigation area to optimise the proposed leachate irrigation area but minimise irrigation of steep slopes.
48. In line with the geotechnical review further information request, please provide details on the calculations regarding the system capacity and leachate water balance to confirm the excess leachate volumes in a year with greater than average rainfall compared with available storage volume to confirm the concept design required leachate storage volumes. The highest year on record rainfall needs to be included in this calculation with allowance for climate change.
49. Also, in line with the geotechnical review further information request, please provide details on the design of the proposed new leachate storage lagoon and how the potential for differential settlement will be managed, particularly in relation to the storage lagoon liner integrity.

### Surface Water Quality and Ecology (Appendix E)

50. The assessment provides a good baseline overview of the Upokohino Stream, detailing its existing condition and the proposed effects from stormwater. It is noted that this assessment has been conducted during summer low flow conditions with dry reaches downstream. Although this is the correct procedure for ecological surveys, higher water flows are likely to be present when stormwater runoff is occurring and therefore an assessment of the potential effects over a wider time period, with discussion on downstream transport and cumulative effects to downstream receptors is required.

In addition to the above, the following is requested:

51. An assessment of effects is needed to determine the risk of contaminant transport from landfill activities (leachate, spills etc.) and additional proposed controls to mitigate risk to receiving waterways.
52. Please provide details of the management/response plan if contaminants are discovered in surface water samples. What are the trigger levels for turbidity/TSS in the stream to warrant action?
53. An assessment of effects needs to be completed for the Tutaekuri River and Lake Te Rotokare, including cumulative effects, with controls developed to ensure no effects are caused from the proposed activities.
54. There is no reference of Figure 4.2 in the report, what is the importance/context of this figure and the spring system to the application?
55. Results indicate that the current and historic landfill activities may already be having an impact on Upokohino Stream, with elevated levels of multiple parameters, including ammoniacal-N at 11.6 g/m<sup>3</sup> (background levels at < 0.010 g/m<sup>3</sup>) in water quality samples collected in February 2018. Given these potentially toxic levels and the dead eels observed, further investigation into whether the landfill is currently having an adverse effect on aquatic life is required. Please provide an assessment of the cumulative effects of the proposed discharge on the already stressed environment in Upokohino Stream.
56. Please provide an assessment of effects of the potential adverse effects of the treatment pond and wetland, including effects of wildlife using these habitats and proposed maintenance of the pond and wetland (and its effects) for sediment accumulation removal. This should include an assessment of nutrient accumulation in the pond which could lead to nuisance algal blooms.
57. Section 6.1 states that high water temperatures recorded are due to lack of riparian shade, however no mitigation methods are proposed to increase riparian planting along the affected section of Upokohino Stream. Please provide plans for any mitigation or restoration activities planned.

### **Groundwater (Appendix F)**

58. Please provide details of the calculations (for example a spreadsheet print-out) for auditing purposes of the leachate dilution modelling.
59. There is a potential pathway from the irrigation of leachate I the landfill cap, should runoff or underflow occur outside the landfill footprint, resulting in leaching to groundwater. This should be further considered based on the runoff and underflow issues raised in PDP's review memorandum of the stormwater, drainage and leachate irrigation. Please provide comments on this.
60. Comparison of water quality sampling with the NZDWS, 2018 and ANZG, 2018 and explanation of the choice of the 95% protection values. The long-term groundwater record provided with the application is relatively short and there appears to be some uncertainty regarding the existing groundwater divide and the groundwater flow directions. Bores located further away from Area B should also be included in any groundwater level

monitoring/piezometric surveys to determine groundwater flow directions in the wider area. Any existing water level information should be considered together with the levels recorded in the bores around Area B to help refine and understand the groundwater flow directions. A longer groundwater level record would also be useful to determine how groundwater levels change seasonally and if seasonal fluctuations result in any changes in flow direction or groundwater divides. It is recommended the applicant commence this as soon as possible, or provide information on why this is not considered to be required at this stage.

61. Groundwater quality data suggest some localised contamination has occurred in the groundwater system beneath the proposed Area B landfill from localised landuse potentially not associated with landfill activities, although leachate contamination from adjacent landfill activities cannot be ruled out. A review of historic landuse information would be useful to confirm if any elevated concentrations area related to historic landuse. Comparison with water quality monitoring data for all bores around the landfill beyond would be useful to help establish whether the elevated concentrations could be due to existing landfill impacts.
62. Groundwater sampling over a long time period (ideally at least one year) would be useful to determine if there are any seasonal trends in contaminant concentrations. It is recommended the applicant commence this as soon as possible, or provide information on why this is not considered to be required at this stage. Bores located within a wider radius from the boundary of the Area B landfill should also be included during any groundwater level monitoring and groundwater sampling to provide additional background water level and quality information.

### Consultation (HBRC)

63. During the site visit on 30 January 2020 it was discussed that ongoing consultation has been undertaken with relevant mana whenua, statutory acknowledgement groups and local residents. Please provide an update on the consultations and any issues/outcomes/proposals that have arisen as a result of the consultation.

Due to the current COVID-19 lockdown situation (Alert Level 4 at the time of writing), we realise that the information requested may be unobtainable until the alert levels lower. Therefore, we request that you respond in writing to this request, before 8 May 2020 and do one of the following:

- a) Acknowledge you have received the request for further information, and agree to provide the information as soon as practicably possible.
- b) Tell us that you refuse to provide the information.

I have put processing of your application on hold until we receive your response.

Please contact me on 027 200 5965 if you have any questions.

Yours faithfully



Greg Shirras

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