

## Before Hawkes Bay Regional Council and Hastings District Council

In the matter of            the Resource Management Act 1991

And

In the matter of            Applications by Hastings District Council and Napier City Council  
(**Applicants**) for approvals relating to Area B at Ōmarunui Landfill  
(**Landfill**)

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### Summary of evidence by Anthony Gerard Bryce (Landfill design)

Dated 28 October 2021

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1. I prepared evidence dated 2 September 2021 and supplementary evidence dated 14 October 2021 on the topic of landfill design. I also contributed to a joint response, dated 28 October 2021, to further queries from the Commissioners.
2. My evidence summarised the key aspects of the design of the landfill, particularly with regard to controlling potential environmental effects from the landfill.
3. The extensions into Area B of Omarunui Landfill will be designed to meet the standards set out in the Technical Guidelines for Disposal to Land, August 2018, prepared by WasteMINZ. This is the primary reference document for landfill design in New Zealand.
4. Potential environmental effects from landfill development and operation include the potential for leachate seepage into the environment, the potential for the discharge of contaminated or sediment laden stormwater and the potential for landfill gas and odour discharge. These potential effects are controlled by a combination of elements of design and operation.
5. To prevent leachate seeping from the base of the landfill, the landfill will be lined with a Type 2 lining system which contains a primary barrier layer of 1.5 mm HDPE geomembrane overlying a geosynthetic clay liner (**GCL**). This overlies a further 600 mm of compacted soil. When sufficient suitable soil is not available for the underlying soil layer, this benefit provided by this component will be replaced by undertaking an electric leak detection survey following construction of the liner to ensure that there is no possibility of leakage in the primary lining system. The lining system also includes a

layer of gravel over the barrier layers to effectively drain leachate from the landfill to prevent a depth of leachate building up over the barrier layers that could cause seepage through possible defects.

6. Leachate generation is also controlled by installing intermediate and final capping layers to reduce the amount of rainfall that can enter the landfill to create leachate.
7. Stormwater is controlled as part of the operation of the landfill to effectively separate any stormwater from placed rubbish. Any stormwater that comes into contact with rubbish is treated as leachate. However, a landfill operation is a large earthworks operation with potential for sediment to be transported from exposed earth surfaces. The design allows for the effective treatment of stormwater in a final sediment pond and wetland at the toe of the Area B landfill. Additional stormwater treatment ponds will be provided for stockpiles that do not discharge to this main pond.
8. A landfill gas (LFG) collection system will be installed progressively as the landfill is developed to remove LFG from the landfill to be used for electricity generation. This will effectively control LFG emissions and control LFG as a source of odour.
9. A set of conditions, with comments, was received from HBRC on 26 October 2021. However, the set of conditions was not the latest set of conditions prepared by the applicant, and the comments dated as far back as July 2021. This set of comments on the conditions has previously been provided by HBRC to the applicant and the comments have already been addressed in preparing the conditions attached to the evidence of Ms Brabant. Therefore, I consider the set of conditions attached to the evidence of Ms Brabant to be appropriate for the proposed landfill development. However, I have suggested some minor changes to address matters raised in my supplementary evidence. Because, as at 10.30 am on 28 October 2021, no comments have been received from HBRC on the Applicants' conditions, I am unaware of any matters that are outstanding between HBRC and the Applicant.
10. In conclusion, I consider that the design for Area B as described in my Engineering Report and my evidence is in accordance with good modern practice and provides a high level of environmental protection.

**Tony Bryce**  
**28 October 2021**