

Before Hawkes Bay Regional Council and Hastings District Council

In the matter of the Resource Management Act 1991

And

In the matter of Application by Hastings District Council and Napier City Council to
Hawke's Bay Regional Council for resource consents authorising
the operation of Area B at Ōmarunui Landfill (**consent application**)

And

In the matter of A notice of requirement by Hastings District Council to Hastings
District Council for alteration of designation for the Ōmarunui
Regional Landfill (**NoR**)

Supplementary evidence by Anthony Gerard Bryce responding to s 92 request

Dated 14 October 2021

INTRODUCTION

1. My name is Anthony Gerard Bryce. I gave a statement of evidence on this matter in relation to landfill engineering dated 2 September 2021. My qualifications and experience are set out in that statement. I confirm my earlier statement as to the Code of Conduct for Expert Witnesses and note that this statement has also been prepared in compliance with it.
2. This supplementary statement has been prepared to respond to pre-hearing queries from Commissioner Mark-Brown received by the Applicants on 21 September 2021 in relation to stockpiles. For ease of reference, a copy of the request for information is attached as **Appendix 1**.

STOCKPILES

3. Further information has been requested regarding the three stockpiles shown on Drawing 1000647.1000-21. These stockpiles are described in general terms in Section 3.2.2 of the Engineering Report. That section of the report states that

“Erosion and sediment control for all stockpiles will be in accordance with the requirements of “Hawke’s Bay Waterway Guidelines – Erosion and Sediment Control”, Hawkes Bay Regional Council, April 2009.” Further information relating to the stockpiles is provided below to specifically address the questions raised.

BACKGROUND TO STOCKPILE REQUIREMENTS

4. Soil is required for the operation of the landfill for daily cover as well as intermediate cover and final capping. Overall soil requirements over the lifetime of a landfill amount to approximately 20% of a landfill capacity, which is approximately 650,000 m³ for Area B. This soil is obtained from excavation on the site.
5. Excavation for preparation of the subgrade for Area B of the landfill will yield a large volume of surplus excavated material that will need to be used throughout the life of the landfill. Most of this will be excavated for construction of Stages 1 and 2, with smaller surplus volumes resulting from construction of later stages. The calculated surplus excavation volumes (rounded) are:
 - (a) Stage 1: 400,000 m³
 - (b) Stage 2: 240,000 m³
 - (c) Stage 3: 10,000 m³
 - (d) Stage 4: 30,000 m³
 - (e) TOTAL for stages 1 to 4 is 680,000 m³ and small additional quantities may result from construction of Stage 5.
6. It is proposed that these surplus soils be placed in Stockpiles 1, 2 and 3 identified on drawing 1000647.1000-21. In addition, Stage 5 of the landfill will not be required for approximately 16 years after the landfill commences operation. There would be significant benefit in pre-loading the old quarry area of Stage 5 to minimise the potential for future differential settlement associated with the previously placed fill in this area. Furthermore, this area is the most accessible to the operational areas of the landfill so this area would be a good location for stockpiling of operational fill requirements.
7. Stages 1 to 4 have a total airspace volume of 1.72 Mm³. Daily cover soil requirements for the operation of these stages will be approximately 10% of the

airspace volume, i.e. approximately 170,000 m³. The area of Stage 5 that we would want to pre-load is approximately 26,700 m². Filling this area to a depth of up to 7.5 – 10 m would be feasible and would hold approximately 200,000 m³ to meet much of the soil requirements for the operation of the initial stages of the landfill.

EXPECTED VOLUME AND MAXIMUM HEIGHT OF STOCKPILES

8. The location and layout of the stockpiles is shown on Figures 1 and 2 below. Stockpile 1 is located in the valley to the north of Area C. The other stockpiles are within the Area B valley.

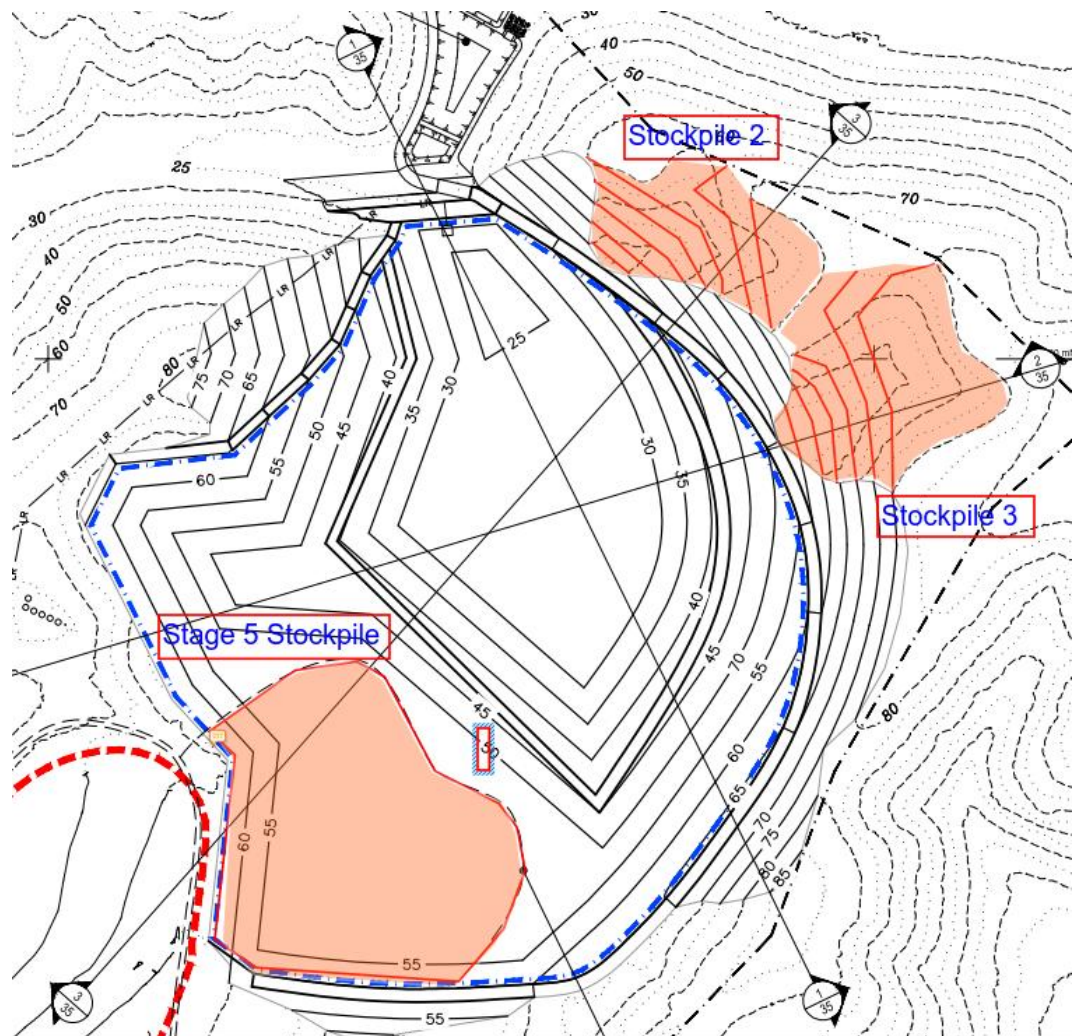


Figure 1: Stockpiles in Area B

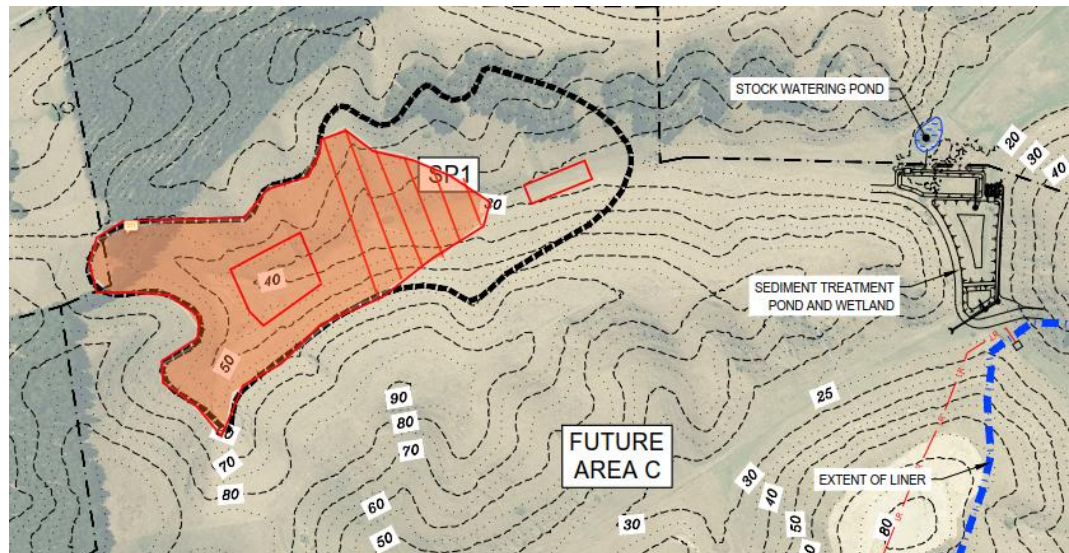


Figure 2: Stockpile 1

9. The volume of each of these stockpiles is described below:
 - (a) Stockpile 1: Up to 400,000 m³ as depicted in Figure 2, but the site has capacity for a greater volume. The stockpile covers an area of approximately 35,000 m².
 - (b) Stockpiles 2 and 3 have a combined maximum capacity of 170,000 m³ (65,000 m³ and 105,000 m³ respectively). However, the actual volume may be less than this (100,000 to 120,000 m³) once the practicalities of operating these stockpiles is considered.
 - (c) Stage 5 Stockpile: Approximately 200,000 m³ as described above, covering an area of approximately 27,000 m².

10. The height of the stockpiles is variable. The heights are generally as follows:
 - (a) Stockpile 1: Toe at approx. 30 mRL and the top of the front face at approximately 60 mRL, rising to a peak of 70 mRL.
 - (b) Stockpile 2: Top level at approximately 70 mRL rising from approximately 40 mRL at the landfill perimeter road.
 - (c) Stockpile 3: Top level at approximately 80 mRL rising from approximately 50 mRL at the landfill perimeter road.

- (d) Stage 5: Constructed on the flat portion of the site, with a depth of 7.5 to 10 m, up to approximately 60 mRL and buttressed against the slope leading up to the landfill access road beside Area A.

STABILITY

- 11. During the detailed design, construction requirements for the stockpiles will be developed to ensure they are stable. The sites will be prepared by stripping topsoil and keying into the existing ground. The face of the stockpiles will be no steeper than 1V:3H with drainage benches included in the final design profile as required. Fill material will be placed in layers to a compaction standard determined during detailed design.
- 12. It is likely that stockpile 1 will require a toe bund and shear key along the base of the valley, with an underfill drainage network running up the valley axis. Detailing of the toe key and drainage system will be confirmed during the detailed design stage.
- 13. Stockpiles 2 and 3, within smaller gully systems in Area B, will be formed by stripping topsoil, keying into the existing ground, largely into competent sandstone and limestone rock, and placing fill in layers. A spring has previously been observed on the footprint of Stockpile 3 and this would need to be drained (subsoil drains) to the landfill perimeter surface drain at the toe of the stockpile.

DURATION

- 14. The stockpiles within Valley B (Stockpiles 2, 3 and Stage 5) will be filled first. These will hold much of the volume of soils excavated from Stage 1 construction, but it will be necessary to open Stockpile 1 for the balance of the Stage 1 excavation. It is expected that the Stage 1 bulk earthworks will be undertaken over two construction seasons. It is thus likely that Stockpiles 2 and 3 will be formed in the first season and grass established. The Stage 5 stockpile will be commenced in the first construction season and completed in the second construction season with the balance of material taken to Stockpile 1. The stockpiles will be stabilised with grass on completion or at the end of each construction season.
- 15. Surplus material from Stage 2 construction would be taken to Stockpile 1, which would then be stabilised with grass. Only small volumes of surplus excavation would be produced after that which should be deposited on the Stage 5 stockpile.

16. The Stage 5 stockpile is closest to the landfill operation and must be removed for further landfill development after Stage 4. This will provide the source for daily and intermediate cover material during the operation of Stages 1 to 4 and hence areas of this stockpile will be worked on an ongoing basis over the life of these stages.
17. It will take in the order of 15 to 16 years to fill Stages 1 to 4 so there would be no need to go back into Stockpiles 1, 2 and 3 over this period.

VISUAL EFFECT

18. The top level of each of Stockpiles 2 and 3 is no higher than the level of the ridge-line adjacent to the stockpiles. There is no direct line of sight to these stockpiles from off-site either during filling or after filling.
19. The top level shown for Stockpile 1 is at 70 mRL with the adjacent ridges being up to 90 mRL. Again, there is no direct line of site to this stockpile from off site.
20. The Stage 5 stockpile is on the landfill footprint and its height is less than the proposed waste height.

DISCHARGE OF SEDIMENT FROM STOCKPILES

21. Stockpiles 2 and 3 and the Stage 5 stockpile are located within the landfill catchment. All of these will drain to the overall landfill stormwater treatment system, and their contribution has been taken into account for the design of the stormwater treatment for the landfill.
22. Stockpile 1 is located in a different valley to Area B and will not discharge to the Area B stormwater pond. Separate stormwater treatment is required, and a sedimentation pond will be constructed below the toe of the stockpile with all runoff from the stockpile diverted to the pond. For a pond volume based on 3% of the stockpile area a volume of 1,000 m³ is required. The indicative pond shown in Figure 2 can provide this volume. There is no defined water course in this valley. Any discharge from the pond would flow overland at the low point in the valley (as happens with current run-off from the valley) and will discharge from the landfill property at the same location as the discharge from the Area B stormwater pond and wetland. There will be no increase in catchment area for this discharge and the runoff characteristics from this northern valley will remain the same as at present

for most of the time. Therefore, I do not expect the magnitude of the discharge from this valley to change.

23. We have undertaken USLE calculations for Stockpile 1. Assuming 75% treatment efficiency in the sediment pond, these calculations show a soil loss of 45 tonnes per annum compared with 2 tonnes per annum from the existing grassed site. This will only occur only for the relatively short periods when all of the stockpile is open. The discharge from the stormwater pond flows overland on the HDC site for quite a distance until it combines with the discharge from the Area B stormwater pond. It is expected that much of the sediment would have been further removed by filtration or sedimentation over this flow path.
24. The evidence presented by Mr Van de Munckhof, paragraph 32, describes that a project specific ESCP will be prepared for the landfill development. This will also include erosion and sediment control for the stockpiles. I have attached a typical table of contents for an ESCP to this supplementary evidence in **Appendix 2**.

PROPORTION OF MATERIAL TO BE RETAINED IN STOCKPILES

25. The volume of material to be placed in stockpiles is approximately equivalent to the volume of material required for the Area B landfill operation. However, the re-use of the soils from the stockpiles will be determined based on the suitability of the soils for their intended use. All soils will be suitable for daily and intermediate cover, but only a selected range may be suitable for the compacted attenuation layer construction and final capping. Some attenuation and capping soils may need to be imported from off site. Furthermore, if it appears that Area C of the landfill will be required after Area B, there would be advantage in obtaining final capping soils for Area B from the Area C footprint, in anticipation of future development, rather than by removing them from Stockpiles 1, 2 and 3. It is possible that only about half of the stockpiled volumes may be reused over the life of the landfill. Therefore, some stockpiles, particularly Stockpiles 2 and 3 and a large part of Stockpile 1 may become permanent spoil disposal areas.

REVEGETATION

26. It is proposed that grass will be established on the surface of the stockpiles as soon as this can be achieved. Landscape planting will be established for any stockpiles that may fall within the proposed landscape planting areas.

CONDITIONS

27. Draft consent conditions of the Solid Waste Consent that relate to stormwater and sediment management include:
- (a) Condition 6, requiring a section of the O&M Manual to address stormwater and sediment control.
 - (b) Conditions 17 and 18 that relate specifically to the required performance of the Area B stormwater pond.
 - (c) Condition 31 requiring all runoff from exposed surfaces to be treated in the Area B stormwater pond.
 - (d) Condition 32 that relates to the maintenance of the Area B stormwater pond.
28. From my review of these conditions, as they are currently worded, I consider that they are specific to runoff only from Area B and are not general enough to also include treatment of sediment from Stockpile 1. Therefore, I propose that these conditions should be amended as follows, with proposed additions underlined and deletions struck through:
- (a) Condition 17: The Area B and Stockpile 1 stormwater ponds shall be designed to remove at least 75% of suspended solids for the inflows from at least 50% AEP design rainfall event.
 - (b) Condition 18: Any outflow of water from the ~~Area B~~ stormwater ponds shall be effectively dispersed to prevent scouring.
 - (c) Condition 31: All stormwater run-off from exposed surfaces of Area B shall be treated in the Area B Stormwater Pond. All stormwater runoff from exposed surfaces of Stockpile 1 shall be treated in the Stockpile 1 stormwater pond.
 - (d) Condition 32: The Consent Holder shall be responsible for the structural integrity and maintenance of the ~~Area B Stormwater Pond~~ stormwater treatment ponds and for any erosion control and energy dissipation works that become necessary as a result of the exercise of this consent. All channels shall be engineered to prevent excessive channel erosion at peak velocities.

29. With these changes, I consider the conditions adequately provide for stormwater control from the establishment of the stockpiles.
30. The Applicants will produce an updated full set of conditions at the hearing to include these suggested amendments.

Anthony Gerard Bryce
October 2021

Appendix1: Request for information

21/09/2021

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

Cc: Tonkin & Taylor Ltd
105 Carlton Gore Road
Newmarket
Auckland 1023
Attn: Laila Alkamil

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

Nigel Mark-Brown, one of the commissioners for the Omarunui Landfill Area B hearing for APP-125003 has been reviewing the application documents and officer's reports. Nigel has requested more information to better understand your proposal and its potential effects.

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

1. There are 3 proposed stockpiles as shown on dwg 1000-21. From my calcs for the area of these stockpiles they are going to need to be over 10 m high to provide the required volume if all of the 600,000 to 800,000 m³ excavated goes to these nominated stockpile areas. There is no discussion about the stockpiles that I can see re stability, visual effects, duration, size and interim and final landform and cover. There is also very little discussion of erosion and sediment control requirements except some text in the AEE and the geotech report that an erosion and sediment control plan shall be prepared. There is nothing in the draft conditions or in the O&M plan requiring an ESCP or other detailed discussion of stockpiles.

Nigel would like more information on the stockpiles including:

- expected maximum volume and maximum height of various stockpiles, description of measures that will be used to ensure stability (e.g. stockpile management plan?)
- duration and area of stockpiles that will be operating in a bare condition i.e. being used as source of construction fill or cover material for the construction of the Area B landfilling or other purposes
- visual effect of the stockpiles

- assessment of discharge of sediment from stockpiles e.g by USLE calculations and comparison with discharge from existing (grassed?) conditions
 - table of contents for a detailed ESCP to be provided within the O&M manual - suggest it may be appropriate for to be certified by HBRC prior to earthworks
 - estimates of how much of the stockpiled material is to be used in construction of Area B and how much incorporated in final land form outside Area B
 - revegetation proposed for stockpiles that will be incorporated in the final land form outside Area B.
2. In addition to the above, Nigel has requested a copy of Figure 4.1 of the Assessment of Ecological Effects Area B as the existing figure has been corrupted in the electronic and hard copies he has received.

Please contact me if you have any questions.

Further to s92 I request that you respond in writing to this request, as soon as possible and by no later than Tuesday 12th October and do one of the following:

- a) Provide the information.
- b) Tell us that you agree to provide the information, but propose an alternative reasonable date (but this can be no later than Thursday 14th October to comply with s92(3B)).
- c) Tell us that you refuse to provide the information.

It is important that you respond to this request.

Yours faithfully



Malcolm Miller
Consents Manager
Policy and Regulation Group
Phone: (06) 835 9200
Email: malcolm@hbrc.govt.nz

Appendix 2: ESCP draft table of contents

Table of contents

- 1 Introduction**
 - 1.1 Purpose of this plan
 - 1.2 Site description
 - 1.2.1 Site environmental settings
 - 1.3 Proposed development
 - 1.3.1 Scope of this CESMP
- 2 Plan management and control**
 - 2.1 Roles and responsibilities
 - 2.2 Distribution
 - 2.3 Review and update
- 3 Earthworks management requirements and constraints**
 - 3.1 Regulatory requirements
 - 3.2 Site specific constraints
- 4 Requirements for individual works**
- 5 Earthwork management controls**
 - 5.1 Standard earthworks management controls
 - 5.2 Area specific requirements
- 6 Monitoring and maintenance**