

**sBefore 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**)

---

**Statement of evidence by Robert Alan Van de Munckhof on behalf of  
Hastings District Council and Napier City Council**

Dated 2 September 2021

---

**INTRODUCTION**

1. My name is Robert (Rob) Alan Van de Munckhof. I am a Principal Environmental Engineer at Tonkin & Taylor Ltd (T+T). I hold the qualifications of Bachelor of Engineering (Chemical and Materials) from the University of Auckland. I have 20 years' experience as an environmental engineer and have been employed in this role at T+T for 15 years. I have been involved in water quality assessments for a number of landfill projects in New Zealand.
2. I have undertaken water quality assessments for a wide range of industries and have extensive experience in the waste industry. In particular, I prepared the water quality assessments for the proposed Auckland Regional Landfill and the re-consenting of the Redvale Landfill and have prepared water quality assessments for numerous refuse transfer stations, composting facilities, and recycling facilities throughout New Zealand.
3. My evidence relates to planning approvals which are being sought to authorise the operation of a landfill at Ōmarunui Regional Landfill (**Landfill**) in Area B, specifically:

- (a) Application by Hastings District Council and Napier City Council, as owners of the Landfill, for regional consents from Hawke’s Bay Regional Council (**HBRC**); and
  - (b) A notice of requirement by Hastings District Council as requiring authority to Hastings District Council (**HDC**) to alter Designation D123 – Ōmarunui Landfill in the Hastings District Plan.
4. I refer to Hastings District Council in its capacity as requiring authority and applicant, and Napier City Council as applicant, together as the **Applicants**, and the application and notice of requirement together as the **Proposal**.
5. I have been engaged by the Applicants to provide evidence on surface water quality and sediment in relation to the Proposal.
6. In preparing this statement of evidence I have read the application documents and the submissions received on the Proposal. I have also read the section 42A reports prepared by Mr McKay on the NoR, and that prepared by Mr Shirras in relation to the consent applications.
7. I am familiar with the Ōmarunui Landfill site having visited the site on the 29 July 2021.

#### **CODE OF CONDUCT**

8. I confirm that I have read the Expert Witnesses Code of Conduct contained in the Environment Court of New Zealand Practice Note 2014. My evidence has been prepared in compliance with that Code in the same way as I would if giving evidence in the Environment Court. In particular, unless I state otherwise, this evidence is within my sphere of expertise and I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

#### **SCOPE OF EVIDENCE**

9. In my evidence I will:
- (a) Describe the existing environment in terms of surface water quality and levels of sedimentation.

- (b) Describe the range of activities at the site and sources of potential contaminants and sediment.
  - (c) Outline the proposed erosion and sediment control measures including the treatment system and monitoring.
  - (d) Outline the proposed surface water contaminant controls.
  - (e) Describe any proposed contingency measures.
  - (f) Respond to matters in the section 42A Report that relate to my area of expertise, including comment on the proposed conditions of consent.
10. I note that all submissions are dealt with by other witnesses, and I have not addressed submissions in my evidence.

#### **EXISTING RECEIVING ENVIRONMENT**

11. The proposed Area B development will discharge stormwater into an existing farm pond, which drains overland to the Upokohino Stream which ultimately discharges into the Tutaekuri River and then to the sea.
12. A full description of the Upokohino stream and Tutaekuri River is discussed in Mr Miller's evidence, so I will not describe the streams in detail but will summarise the key aspects relevant to the discharge of sediment and contaminants within the surface water discharges from the site. I will discuss the different sections each in turn being the pond and overland flow path, the Upokohino stream and the Tutaekuri River.
13. The outlet from the main surface water treatment system will discharge via a single outlet at the existing flow path for runoff from the site which discharges directly into an existing farm pond on the neighbouring property. This pond currently receives flow from a number of valleys including:
- (a) the valley subject to the Area B development
  - (b) and the future Area C valley
  - (c) the valley located to the north of the overall site.

14. The proposed Area B landfill area has previously been used as a quarry. The total contributing catchment is approximately 60 hectares, with the majority of the land currently comprising grazed farmland (being 42 hectares of the 60 hectares).
15. While the contributing catchment is quite large, there is no formal channel at the base of either valley, indicating that the majority of runoff flows do not flow through the base of the valleys and therefore, discharges to land rather than flowing through the existing pond.
16. Even with the historic operation of the quarry in the location of the proposed Area B development, there is limited evidence of any erosion or sedimentation within the pond or areas subject to overland flow.
17. From the pond, surface water flows approximately 300 metres to the Upokohino stream. There is a low flow channel from the pond to the stream located at the toe of the sloping land to the north but, as is the case upstream of the pond, there is no evidence of a defined channel or flow path for larger flows.
18. The head of the Upokohino Stream appears to be a wetland area approximately 1,200 metres upstream of the discharge location and flows for approximately 6 km downstream before it flows into the Tutaekuri River. The stream flows through a large highly modified channel from the discharge location to the Tutaekuri River, with the stream including lengths which are typically dry (such as the length downstream of crossing Ōmarunui Road), and other lengths with ponded water. The stream is typically either not flowing or has a very low flow.
19. It is likely that any on-going sedimentation occurring within the catchment is being discharged to land with limited sediment flowing through the Upokohino Stream to the Tutaekuri River.
20. Based on the ecological assessment presented in the evidence of Dean Miller the stream has been assessed as having a low ecological value. While the hills in the catchment are prone to erosion, there is limited evidence of sedimentation within the stream bed. Further, while the hills that are upstream of the stream are steep, there is limited evidence of any defined channels or tributaries which flow into the stream.

## PROPOSED ACTIVITIES

21. The proposed Area B development includes a range of activities which can generally be divided into four main areas being:
  - (a) Initial construction including preparatory earthworks
  - (b) Cell development
  - (c) Waste placement and operations; and
  - (d) Capping and closure.
22. In terms of potential sediment and contaminant generation, the initial construction works comprise the highest risk of sediment generation as this will comprise the largest area of earthworks and exposed soils.
23. The cell development, waste placement and operations and capping and closure will still generate sediment, but due to the smaller areas at any point in time, the overall potential for sediment generation is lower.
24. In terms of other contaminants, the waste placement and operations pose the greatest risk, where, if not effectively managed, the potential for contaminants from the waste to get into surface water exists.

### ***Erosion and sediment control***

25. The discharge of sediment from the site will be managed via:
  - (a) The construction of a sediment pond and polishing wetland to provide treatment of any sediment laden runoff.
  - (b) An erosion and sediment control plan which outlines the procedures for erosion protection measures and sediment control to be implemented at the site; and
  - (c) On-going monitoring to confirm the effectiveness of the controls and treatment system and provide a feedback mechanism.
26. The design of the proposed sediment pond wetland is described in the evidence of Mr Bryce. The sediment pond has been designed in accordance with the Hawke's

Bay Waterway Guidelines – Erosion and Sediment Control 2009, which is consistent with best practice for sediment control within the Hawke’s Bay Region.

27. I note that while the guidelines are focused on short term works and therefore the use of temporary ponds, I consider the approach to sizing of the pond included in the guidelines is appropriate for the design of the permanent ponds also. The biggest difference between the design of a temporary sediment pond compared to a permanent pond is around the physical design in terms of bank stability, outfall design and spill way design to ensure it is suitable for longer term performance, rather than sizing.
28. In addition to the sediment pond, an engineered wetland has also been designed to provide a polishing step to further reduce the potential sediment loads from the site as well as providing additional treatment for contaminants which I will discuss further below.
29. The engineered wetland has been designed in general accordance with the Hawke’s Bay Waterway Guidelines – Stormwater and has been sized based on the calculated Water Quality Volume without any allowance or consideration of the inclusion of the sediment pond. In practice, the upstream sediment pond will help in reducing the sediment loads and provide some buffering of peak flows improving the performance of the wetland.
30. Considering the use of both the sediment pond and wetland, the overall sediment removal efficiency of the treatment system would be expected to be well above those from earthworks projects just applying the default guidance in the Hawke’s Bay Erosion and Sediment Control guidelines.
31. The site currently operates under an Operations and Maintenance Manual (O+M Manual) which includes, at Section 20, procedures for stormwater and sediment control. The current plan is focused on the potential stormwater and sediment during operation, and will be updated to document the earthworks and sediment control procedures that will be required during the initial construction phase. This will set out the process for Hastings District Council and its contractors to follow.
32. The proposed updated procedures for stormwater and sediment control will include the development of a project specific ESCP for the earthworks associated with each area of work. In particular, project specific ESCPs will be required for the

construction of the wetland and sediment pond, the initial site works to create the base of the proposed landfill and the stockpile locations. While the overarching plan has not been developed, the key controls will include the following:

- (a) Erosion controls:
  - (i) Clean water diversions and / or pumping water around the works area
  - (ii) Use of stabilised accessways
  - (iii) Progressive stabilisation; and
  - (iv) Minimising open areas.
- (b) Sediment controls:
  - (i) Construction of a permanent Sediment Retention Pond (**SRPs**)
  - (ii) Decanting earth bunds; and
  - (iii) Silt fences and socks.

33. The proposed controls are consistent with HBRC guidance and in my opinion are appropriate for managing the potential sediment generation and discharge from the construction and operation of the proposed landfill.

***Operation of the landfill cell***

34. The overall approach to stormwater management as part of landfill cell operation is as follows:
- (a) Any surface water that comes into contact with waste is treated as leachate and is kept separate from clean surface water.
  - (b) Surface water from up-gradient of the landfill cell and development areas is diverted around the works areas to minimise potential for sediment generation.
  - (c) All surface water (excluding any water treated as leachate because it has come in contact with waste) is to pass through the stormwater treatment system.

- (d) Monitoring of stormwater entering the treatment system to indicate if the water has been affected by waste or leachate contaminants so that remedial action can be taken.
  - (e) Monitoring prior to release from the stormwater ponds to the receiving environment; and
  - (f) Implementation of both physical and procedural controls to minimise or avoid the generation and discharge of contaminants, including ensuring clean stormwater is kept separate from waste and treatment through the stormwater treatment systems.
35. The stormwater treatment system for the Project will comprise several devices as discussed above, including:
- (a) a permanent wet pond to provide removal of coarse and fine sediment; and
  - (b) an engineered stormwater wetland to provide a final stormwater quality polishing step including treatment for residual dissolved and organic compounds, if any, before final discharge to the receiving environment.
36. The operation of the landfill will include a number of activities which have the potential to discharge contaminants to the stormwater ponds if not effectively managed, although the majority of the activities with a higher risk such as refuelling of vehicles, tracking and washing of vehicles and the gas system and generation centre are part of the existing landfilling activities and not proposed to be changed.
37. The current management measures of these existing activities will be continued and will be reflected in the updated Operations and Maintenance Manual required by conditions 5 and 6 of the draft consent conditions.
38. The key potential for activities from the operation of the landfill to impact on the discharge from the Area B landfill are predominantly associated with spills during refuelling or the operation of the equipment (such as a broken hydraulic line).
39. In both cases, in the event this occurs during the placement of waste and compaction, any spills would be contained in the working area and runoff is treated as leachate.

40. In the event a spill occurred outside of the working area, the spill would be managed in accordance with the spill response procedures including containment at the spill location and removal of contaminated material. Ultimately, any significant spill would be contained within the sediment pond where it could be managed before any discharge to the receiving environment could occur.
41. The risks and controls associated with spills are the same as for the existing landfill, with the controls outlined in the current landfill management plan. These procedures have been effective with discussions with site staff confirming that no spills have occurred in the past which have resulted in discharges leaving the site.
42. The proposed controls will vary over the life of the landfill cell and may need to change depending on the required works at any point in time, the on-going monitoring results, and / or the effectiveness of the controls. I therefore consider the use of the O+M Plan is appropriate to manage the effects over the life of the landfill cell.
43. The O+M Plan can be adapted as required to either amend the controls to reflect operations over time, and can adapt to the monitoring results to ensure the controls are effective in ensuring effects from the site are minimised.
44. I consider the proposed operational controls and management procedures are appropriate to minimise the potential for contaminants to impact surface water and in my experience are consistent with current New Zealand best practice.

#### ***Leachate management***

45. The Landfill will be subject to a comprehensive leachate management system for the Project. The overall approach to leachate volume management is to keep leachate and stormwater separate. Any surface water that drains onto the open working face and associated areas including the tipping pad is treated as leachate and managed as such. No treatment or disposal of leachate via the stormwater ponds is proposed for the Project.
46. To minimise the generation of leachate, cut-off drains or diversion bunds around the working areas will be constructed (either permanent or short term) to divert clean stormwater away from the working areas and to take any sediment laden water to the stormwater pond system.

47. While the working face will be regularly moved, each move of the working face will result in changes in the surface water management including:
- (a) Cut-off drains constructed in either natural ground or within intermediate cover to divert all stormwater away from the landfill working face and area; and
  - (b) Bunds or similar constructed downslope from the working area to prevent runoff from the working area entering the surface water system.
48. As explained in the evidence of Mr Bryce, the leachate management system for the Project has been designed to prevent any leakage through the landfill liner or contamination of surface water. Mr Reynolds explains the measures that are in place to monitor any leakage to groundwater, in the unlikely event there is a defect in the landfill lining system.
49. In terms of surface water, in the unlikely event there is contamination of surface water with leachate, procedures and systems will also be implemented to monitor and identify potential leachate breakouts or contamination of surface water, including:
- (a) Daily inspections of the landfill surface to look out for any evidence of leachate breakouts such as brown stains on the surface and any malfunctioning or leaking associated with the leachate system.
  - (b) Continuous monitoring of conductivity at the inlet to the ponds as an indicator of the presence of leachate in surface water, including automated notification from site-operated telemetry system if pond inlet conductivity exceeds the trigger limits.
50. If a leachate breakout is identified, or leachate is identified in surface water, the landfill has contingency procedures in place, which will be included in the contingency section of the O+M Manual.
51. The contingency measures will include ensuring the leachate breakout is remedied to avoid on-going leaching, additional monitoring within both the stormwater treatment pond and wetland and the receiving environment to monitor for any potential adverse effects, preventing discharge of stormwater from the site, and potential treatment or removal of contaminated water.

52. Ultimately, any surface water with leachate contamination will be held in the ponds for treatment or management. No discharge would occur from the ponds until monitoring demonstrates that the water quality is suitable for discharge.

***Surface water monitoring***

53. As outlined earlier in my evidence, on-going monitoring of the surface water discharges from the landfill cell will be undertaken.
54. A monitoring programme will be established for the Project. The purpose of the monitoring programme is:
- (a) to enable comparison with the baseline monitoring data to enable changes in water quality to be assessed once the landfill is operating.
  - (b) to inform the development of the landfill operation monitoring regime; and
  - (c) to monitor discharges into and from the treatment systems on-site including to identify the potential for the presence of leachate.
55. The monitoring programme is outlined in Condition 58 of the consent and includes:
- (a) Baseline receiving environment monitoring to enable on-going assessment of the impact on the receiving environment from on-going discharges both upstream and downstream of the proposed discharge location.
  - (b) Construction phase monitoring including receiving environment monitoring and monitoring of the discharges from the site.
  - (c) Operational phase monitoring including receiving environment monitoring and monitoring of the discharges from the site; and
  - (d) Annual receiving environment monitoring including both sediment quality and macroinvertebrates to monitor for long term trends.
56. The parameters for the surface water monitoring programme have been selected based on the following criteria
- (a) relevance to the initial construction phase and on-going earthworks principally sediment (including TSS and turbidity).
  - (b) priority stormwater contaminants (including heavy metals); and

(c) indicators for leachate breakthrough or contamination.

57. Overall, I consider the proposed monitoring programme is appropriate to monitor the effectiveness of controls for the proposed landfill cell and to confirm that the proposed measures are effective in managing the potential discharge of sediment and contaminants to the environment.

#### **HBRC SECTION 42A REPORT**

58. I have reviewed the HBRC Section 42A report dated 26 August 2021. I note this concludes that the actual and potential effects associated with the proposal are minor and any adverse effects can be avoided or further mitigated through the recommended conditions of consent.

59. I agree with the conclusions reached within the S42A report.

60. I have also reviewed the proposed conditions attached to the S42A report. I generally support the proposed conditions but wish to comment on a minor point.

61. Condition 58 sets out the proposed baseline monitoring programme to characterise water quality within the Upokohino Stream to set trigger levels. Condition 58 requires a minimum of six samples to be collected. Condition 59 then outlines the basis for setting trigger levels and requires at least ten samples to be collected. I consider 10 samples is more appropriate and propose amending condition 58 to reflect this.

#### **HDC SECTION 42A REPORT**

62. I have reviewed the HDC Section 42A report dated 26 August 2021. I note this concludes that the adverse effects associated with the proposal can be sufficiently mitigated through the recommended conditions of consent.

63. I agree with the conclusions reached within the S42A report.

#### **CONCLUSION**

64. Overall, I consider:

(a) The proposed controls are consistent with HBRC guidance and in my opinion are appropriate for managing the potential sediment generation and discharge from the construction and operation of the proposed landfill.

- (b) That that proposed management controls and procedures for the landfilling operations on site are appropriate to avoid or minimise the potential discharge of contaminants (including from leachate) to the stormwater system and subsequently to the receiving environment; and
- (c) That the proposed monitoring programme and consent conditions are appropriate to monitor the effectiveness of the controls and confirm that the proposed measures are effective in managing the potential discharge of sediment and contaminants to the environment.

**Rob Van de Munckhof**  
**2 September 2021**