

Appendix N Stormwater Management Memo

Memorandum

Subject: ARL Project – Operational Stormwater and Water Quality Memorandum

Reference No: 1101798

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1 Introduction

WM New Zealand (WMNZ) has engaged Tonkin & Taylor Ltd (T+T) to prepare technical memoranda for the proposed new solid waste management and disposal facility in the Wayby Valley, north of Auckland ('**ARL**' or '**Project**').

The Project will involve constructing, operating, closing and providing aftercare for a new 24 Mm³ landfill facility and associated infrastructure at Wayby Valley, Wellsford. Ngāti Manuhiri are Project partners and will work with WMNZ on the proposed management and mitigation measures. Once landfilling ceases, the land will be returned to Ngāti Manuhiri as tāngata whenua.

The new landfill will be a Class 1 landfill, as defined in the Technical Guidelines for Disposal to Land (WasteMINZ Technical Guidelines)¹, accepting municipal solid waste. This includes residential and commercial waste, construction and demolition waste, some industrial wastes that meet acceptance criteria, and contaminated soils. Following waste settlement, the landfill cap surface will have a maximum height of 205 m RL.

WMNZ landholdings in the Wayby Valley area comprise a total area of 1020 ha, with the landfill footprint being approximately 60 ha. The WMNZ landholdings have been divided into five general areas; the Eastern Block, the Western Block, the Southern Block, the Waiwhiu Tributary Block and the Waiteraire Tributary Block. The proposed works will involve the following:

- **Site access and operation:** Construction of site access roads, weighbridges, and a vehicle wheel wash.
- **Landfill development:** Major earthworks and the installation of environmental management systems, including a landfill lining system and collection networks for leachate, stormwater, and landfill gas (LFG).
- **Leachate and landfill gas management:** A dedicated leachate management system and a LFG treatment facility, including a LFG flare and a LFG waste-to-energy plant.
- **Support infrastructure:** Facilities for site staff, plant maintenance, and water supply.
- **Terrestrial, freshwater and wetland biodiversity measures:** This includes native revegetation, and a weed and animal pest management programme to offset or compensate for residual adverse effects on terrestrial, freshwater and wetland ecology.

This memorandum provides an outline of the initial findings of an operational stormwater and water quality assessment and has been prepared for inclusion in an application for Ministerial referral of the Project under the Fast-track Approvals Act 2024 ('**FTAA**'). Specifically, this memorandum responds to the requirements under section 3.4 of the Fast-track Approvals Referral Application

¹ Technical Guidelines for Disposal to Land, WasteMINZ, September 2023, Revision 3.1.

Form and section 13(4)(h) of the FTAA. A full description of the draft proposal is included in the accompanying information attached to the application form for the referral.

2 Summary of findings

The operation of the landfill has the potential to result in adverse stormwater runoff, water quality and sediment effects if not managed effectively.

The operational activities are therefore proposed to be managed through comprehensive stormwater and sediment management measures to minimise potential environmental impacts during the operation of the landfill.

The proposed system incorporates a combination of clean water diversion drains, silt fences, sediment ponds, and a polishing wetland to manage runoff. All contaminant sources (such as heavy metals from vehicle movements and hydrocarbons from workshops and wheel wash areas) and stormwater from the landfill will pass through sediment ponds before entering the wetland, ensuring removal of coarse and fine sediments and treatment for dissolved contaminants.

A comprehensive monitoring programme will also track water quality at upstream, downstream, and discharge points to verify the effectiveness of controls and detect potential leachate breakout.

This assessment concludes that key operational stormwater and water quality environmental effects, including those related to stormwater flooding, erosion, and sediment discharge, are expected to be **less than minor** provided best-practice management controls are effectively implemented. Sensitive downstream environments, particularly the Te Awa o Hōteu, adjacent wetlands, and the Kaipara Harbour will be protected through integrated stormwater detention, treatment, and long-term monitoring measures.

3 Assessment methodology

The methodology to inform the assessment has adopted a risk-based approach supported by:

- A baseline water quality assessment to understand the existing water quality within the receiving environment.
- An assessment of the potential activities, key contaminants and nature of the potential environmental risks.
- Identification of management methods and controls to avoid or minimise effects.

The purpose of this framework is to assist in the identification of areas of the site and activities which may have a high risk of adverse effects if not effectively managed. This assists in identifying the level of controls required, and increased confidence that the proposed controls will be effective.

A risk evaluation process was applied across different site areas—such as the Western, Southern, and Upper Waiteraire blocks—to identify where discharges posed the highest potential environmental risk. Without mitigation, most areas were rated as having a very high risk of sediment and stream erosion effects, a high risk of water quality effects, and low risk of flooding effects due to discharges from the landfill access road, and landfill. Incorporating the proposed best practice controls reduces these risk levels to very low to moderate.

4 Site and project context

A general description of the site and surrounding locality is included in the accompanying information as part of the referral application.

The following elements of the site and project are key to the operational stormwater and Industrial and Trade Activity Assessment:

- The proposed landfill is located in the Wayby Valley, with discharges to a number of tributaries of Te Awa o Hōteio including:
- The Waitairare Stream which receives discharges from the Landfill Access Road.
- An unnamed tributary of the Waitairare Stream which receives discharges from the Landfill Access Road.
- An unnamed tributary of Te Awa o Hōteio which is the main receiving environment for discharges from the proposed landfill stormwater system.
- A number of wetlands which feed into Te Awa o Hōteio which receive discharges from the proposed clay borrow and main stockpile.
- The immediate downstream environments which comprise the tributaries to Te Awa o Hōteio are relatively stable with high ecological values (although a number of the streams were impacted by significant sedimentation following the 2023 Auckland Anniversary floods). Stream ecological valuation scores show that for the most part, streams within the WMNZ landholdings have high ecological function, driven primarily by high riparian shading, limited channel modification and high quality in stream habitat.
- The main channel of Te Awa o Hōteio adjacent to and immediately downstream of the site is identified as a Natural Stream Management Area (NSMA) and Significant Ecological Area (SEA) within the Auckland Unitary Plan – Operative in Part (AUP). The incised meanders of the Hōteio are identified as being an Outstanding Natural Feature (ONF). The Hōteio River mouth at the Kaipara Harbour is a marine SEA. In 2014 Auckland Council commissioned an Environment and Socio-economic Review of the Hōteio River Catchment². The Hōteio River has been identified as a priority for management by Local and Regional Councils due to the threat posed by river sedimentation to the snapper breeding ground in the Kaipara Harbour which has resulted in the establishment of the Kaipara Moana Remediation project.
- Te Awa o Hōteio flows into the Kaipara Harbour. Studies undertaken on behalf of regulators³ have identified the harbour as being sensitive to sedimentation effects due to the harbour providing a key snapper breeding ground with large sea grass beds present including close to the mouth of Te Awa o Hōteio.
- Baseline water quality monitoring within the immediate receiving environments has shown generally low sediment and contaminant concentrations during non-rainfall conditions which are reflective of receiving environments with limited urban sources of stormwater.

To manage effects and minimise stormwater contaminant discharges, the following approach to stormwater and water quality is proposed:

- Provision for stormwater management and treatment for the discharges from the site including:
 - Stormwater ponds and a wetland for the main landfill catchment to reduce sediment, minimise contaminants and provide peak flow mitigation. The system will include upstream ponds for sediment removal and peak flow mitigation for the 2-, 10- and 100-year storm events, followed by a wetland designed to treat and hold runoff up to the 95th percentile rain event.
 - Stormwater treatment (e.g. rain garden and filter strips) for the access and ancillary activities off SH1.
- The use of filter strips along the landfill access road to provide stormwater treatment.

² Auckland Council, Hōteio River Catchment: Environment and Socio-economic Review, Technical Report 2014/021, August 2014.

³ for example, the Auckland Council, Hōteio River Catchment: Environment and Socio-economic Review, Technical Report 2014/021, August 2014.

- The use of permanent Sediment Retention Ponds for any Clay Borrow and Stockpile areas.
- Proposed development of a number of management plans including:
 - An Industrial and Trade Activity Environmental Management Plan (ITAEMP) which sets out on-site management controls to avoid or minimise the discharge of contaminants from activities at the site (including activities such as refuelling and light maintenance).
 - A Stormwater Monitoring and Contingency Plan to monitor stormwater quality from the ponds and discharge points and establish contingency measures and procedures in the event of exceedance of trigger limits and consent limits.
 - A Leachate Management Plan to outline procedures for monitoring of leachate and provision of contingency measures.
- Maintain separation of leachate from stormwater, with any surface water that comes into contact with waste to be treated as leachate.
- A comprehensive monitoring programme including monitoring of site discharges, monitoring of the receiving environment, and monitoring within the site for indicators of leachate prior to discharge from the site.

5 Assessment of potential effects

Based on the proposal and the information available, an assessment of potential effects has been undertaken and summarised below.

The operation of the landfill and associated infrastructure including an access road and stockpiles have the potential to result in effects associated with discharges of contaminants and sediment, and effects due to changes in peak flows and hydrology.

The risk-based approach has identified that the potential risk of flooding effects associated with the proposal are very low to low. As discussed above, while there is existing flooding within the Hōteio Catchment there are no reported risks to people or property. Further, the contribution from the proposed development is low compared with the large overall catchments. All catchments have been identified as being prone to erosion and therefore provision for holding and releasing runoff has been included in the stormwater design. Therefore, any effects associated with flooding are considered to be **less than minor**.

In terms of water quality, potential contaminants from the Project vary across different site areas depending on activity type and management controls. The access road and stockpiles are considered low to moderate risk due to limited vehicle use and effective treatment measures such as vegetative filter strips and sediment ponds that remove copper, zinc, and suspended solids. The landfill presents a moderate risk if poorly managed; however, operational controls including regular cleaning, inspections, spill clean-up, and the use of a raingarden designed to Auckland Council standards will minimise contaminant discharges.

Runoff from the landfill will be treated through a multi-stage system of sediment ponds and wetlands capable of removing heavy metals, oils, and organic contaminants before discharge. Comprehensive monitoring at upstream, outlet, and downstream sites will detect water quality changes or leachate presence. The risk of leachate discharge at the ARL is assessed as low with containment, bunding, and monitoring systems in place.

Considering the use of best practice methods, on-going monitoring within the receiving environment the effects from stormwater and water quality discharges during operation should be able to be appropriately controlled such that effects are **no more than minor**.

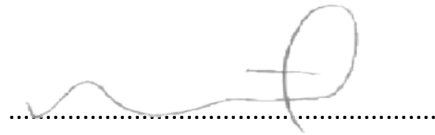
6 Applicability

This technical memorandum has been prepared for the exclusive use of our client WMNZ, with respect to the particular brief given to us, and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

We understand and agree that WMNZ will submit this technical memorandum to the Environmental Protection Authority in support of a referral application under the Fast-track Approvals Act 2024 for the works described herein, and that the Environmental Protection Authority will rely on this technical memorandum for the purpose of assessing that application.

Tonkin & Taylor Ltd

Lead Author:

A handwritten signature in black ink, appearing to read 'Rob Van de Munckhof', written over a dotted line.

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Authorised for Tonkin & Taylor Ltd by:

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Simonne Eldridge
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