

Appendix T Terrestrial Ecology Memo

Memorandum

Subject: ARL Project - Terrestrial Ecology
Memorandum

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1 Introduction

Alliance Ecology has been engaged by WM New Zealand ("**WMNZ**") to provide a technical memorandum outlining the terrestrial and wetland ecology effects associated with a proposal for a 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 in relation to terrestrial and wetland ecology 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

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

requirements under section 3.4 of the Fast-track Approvals Referral Application 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 WMNZ landholdings are dominated by exotic pine forest, exotic wattle forest and grazed pasture, and include wetlands and native-dominated forest and shrublands. These areas support a range of indigenous flora and fauna, including species that are protected under the Wildlife Act 1953 and/or classified as nationally Threatened or At Risk.

The proposal has potential to adversely affect terrestrial and wetland ecological values through habitat loss, fragmentation, and degradation, and through direct and indirect impacts on fauna during vegetation clearance and earthworks.

Many potential adverse effects on terrestrial and wetland ecological values will be avoided through optioneering and selection of design, including the avoidance of direct adverse effects on areas identified as ecologically significant² in the Auckland Unitary Plan ("**AUP**").

However, the Project will nevertheless result in permanent loss of various habitat types including areas of pine forest (forest floor habitat), pasture, exotic wattle forest, regenerating and mature indigenous forest, and indigenous and exotic wetlands. The loss of these habitats will also affect several associated threatened or at risk species including plants, long-tailed bats, birds, lizards, Hochstetter's frog and invertebrates.

Potential adverse effects associated with the loss of vegetation and habitat types and associated species can be avoided, minimised or remedied through the development and implementation of an Ecological Mitigation Plan. Measures include vegetation or habitat clearance protocols and salvaging and relocation of at risk fauna, including several invertebrate and lizard species and pepeketua/Hochstetter's frog.

Any residual adverse effects after avoidance and on-site mitigation/minimisation will be addressed through a comprehensive package of offsetting and compensation measures. These measures include habitat restoration through native revegetation; and habitat enhancement through livestock exclusion, mammalian pest eradication or control, wasp control, invasive weed control and provision of habitat refugia (e.g. artificial roost boxes, logs or rocks).

A proposed mammalian pest management (eradication and control) programme is expected to result in substantive long-term benefits beyond the term of consent to key biodiversity values including indigenous vegetation, long-tailed bats, birds, lizards, and frogs.

A 35 year biodiversity outcome monitoring programme is proposed to verify that predicted outcomes are achieved and to inform adaptive management, contingency measures, or both where required.

With the proposed suite of effects management measures in place, the adverse ecological effects associated with the Project can be appropriately managed, and it is considered that there will be at least No Net Loss but more likely Net Positive outcomes for the majority of impacted biodiversity values including for terrestrial and wetland biodiversity.

² Significant Ecological Areas (SEAs), Wetland Management Areas (WMAs) or Natural Stream Management Areas (NSMAs)

3 Assessment methodology

Desktop studies to inform this memorandum included a review of all relevant literature and databases, including previous published and unpublished ecological surveys and reports, to identify and describe the terrestrial ecological features of the Project area.

Field work between 2017 - 2022 has also been undertaken to inform the assessment of ecological effects, with additional surveys completed between November 2023/2024 as part of a proposed biodiversity baseline monitoring programme. This has included habitat assessments and mapping, and fauna and vegetation surveys.

Modelling has also been undertaken to inform this assessment. This has included:

- Biodiversity Offset Accounting Modelling
- Biodiversity Compensation Modelling.

4 Site and project context

4.1 General

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 terrestrial ecological assessment:

- Habitat clearance and disturbance and associated impacts on flora and fauna habitat and populations through the construction and operation of the landfill footprint and ancillary activities
- Proposed measures to avoid, minimise, remedy, offset or compensate for effects. This will include ecological restoration and habitat enhancement (native revegetation and animal and weed pest management) on WMNZ landholdings and mammalian pest control on nearby Department of Conservation ("DOC") reserve: Sunnybrook Scenic Reserve to address residual effects that cannot be avoided, minimised or remedied.
- Part of the landfill footprint is in pine plantation forest. Harvesting of this forest is to be undertaken separately by the forestry operator and does not form part of this application.

4.2 Ecological values of the existing environment

The WMNZ landholdings are dominated by exotic pine forest, exotic wattle forest and grazed pasture, but also include wetlands and native-dominated forest and shrublands. Several of these habitats are identified in the AUP as Significant Ecological Areas ("SEAs"), Wetland Management Areas ("WMAs") or Natural Stream Management Areas ("NSMAs").

These mapped ecological features (SEAs, WMAs and NSMAs), and a number of other forest and wetland areas, provide habitat for native fauna, including bats, birds, lizards, frogs and invertebrates. Many of these species are legally protected under the Wildlife Act 1953 and / or are classified as nationally 'Threatened' or 'At Risk' under the New Zealand Threat Classification System ("NZTCS").

Specifically, the Project Area is likely or known to contain potential habitat for:

- Nationally or regionally threatened or At Risk plants, including the Threatened (nationally vulnerable) swamp maire, and the regionally threatened kawaka and kaikomako
- Long-tailed bat (Threatened, nationally critical)
- Wetland birds including pūweto / spotless crane and mātātā / North Island fernbird (both nationally At Risk), and the matuku/Australasian bittern (nationally Threatened)

- Forest bird species present in low numbers or visiting occasionally, including koekoeā / long-tailed cuckoo (Threatened, nationally vulnerable), North Island kākā (nationally At Risk), miromiro/North Island tomtit (regionally uncommon), and pōpokotea/whitehead. The grassland species pihoihi/pipit (nationally At Risk) may also be present.
- Up to five species of native lizard, including the nationally and regionally At Risk copper skink, elegant gecko and forest gecko; the Pacific gecko (regionally declining) and potentially the ornate skink (nationally and regionally At Risk)
- Hochstetter's frog (At Risk, declining)
- The Rhytid snail and potentially kauri snail (At Risk).

5 Assessment of potential effects

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

5.1 Potential ecological effects of the project

In general, terrestrial and wetland habitat loss associated with the Project construction and operational activities has the potential to create a range of adverse effects on ecological values centred on habitat loss, fragmentation and degradation, and associated harm to native flora and fauna.

5.2 Measures to reduce the severity of effects

Many potential adverse effects on terrestrial and wetland ecology can be avoided through careful optioneering and selection of design including by avoiding direct adverse effects on land identified as SEAs, WMAs or NSMAs in the AUP.

Following expected avoidance measures, the Project is expected to result in the direct loss of mostly pine forest floor habitat³, followed by pasture and wattle forest. There is also expected to be the loss of some native vegetation and impacts to wetlands and streams on certain parts of the WMNZ landholdings.:

Measures to further avoid or minimise adverse effects are proposed to be implemented through an Ecological Mitigation Plans, that includes the salvaging and relocation of At Risk invertebrates and lizards and pepeketua/Hochstetter's frog as well as all native lizard species present.

5.3 Level of effects assessment

Following the mitigation measures detailed above, the level of effect on the following habitats and species would be expected to remain Moderate or higher:

- A high level of residual adverse for:
 - Pepeketua / Hochstetter's frog;
 - Pekapeka / long-tailed bats;
 - Pūweto / spotless crane habitat;
 - Mātātā / North island fernbird habitat; and
 - Copper skink.
- A moderate level of adverse effect for:
 - Matuku / Australasian bittern (habitat loss only);

³ effects associated with the loss of trees was excluded from this assessment as it forms part of Matariki forest operations

- Koekoeā / Long-tailed cuckoo habitat (habitat loss only);
- Swamp maire; and
- Several lizard (elegant gecko, forest gecko, Pacific gecko and ornate skink) and invertebrate species (Rhytid snail and potentially kauri snail).

The levels of residual effects associated with a range of other biodiversity values present or likely present within the Project footprint have been assessed as very low or low after measures to avoid, remedy or mitigate adverse effects have been addressed.

5.4 Measures to address residual effects (offsetting and compensation)

A range of mitigation, offsetting, enhancement and protection measures are proposed to address residual terrestrial and wetland effects. These include:

- Indigenous revegetation intended to buffer high-value wetlands and reconnect riparian and wetland habitats with existing forest fragments. This is expected to be supported by habitat enhancement measures such as stock exclusion, weed and mammalian pest control, log deployment and artificial bat roosts.
- Animal pest control across terrestrial and wetland habitats, which may include pest-proof sanctuary in key ecological habitat.
- Native terrestrial forest and wetland habitats (existing and revegetated) on WMNZ landholdings are proposed to be permanently protected through covenants.

These measures are proposed to be implemented through an Ecological Residual Effects Management Plan, with a Biodiversity Outcome Monitoring and Adaptive Management Plan (BOMAMP) providing monitoring against predetermined trigger points and biodiversity outcome targets and adaptive management responses in the event targets are not met.

5.5 Anticipated ecological outcomes

Baseline biodiversity monitoring undertaken in 2023/24 has further informed the assessment of anticipated ecological outcomes, providing robust information on ecological values within impacted areas and proposed compensation sites.

On the basis of these results, it is considered that the proposed pest management and overall compensation package are likely to achieve "No Net Loss" outcomes for Hochstetter's frog and Net Gain or Net Positive outcomes for the other key biodiversity values affected by the Project.

6 Conclusions

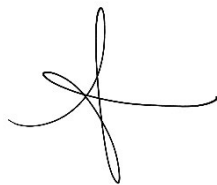
In summary, the potential adverse ecological effects of the Project can be adequately addressed through a suite of effects management measures which will occur at the next stage of the process (should the application be referred).

7 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.

Memorandum prepared by:



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