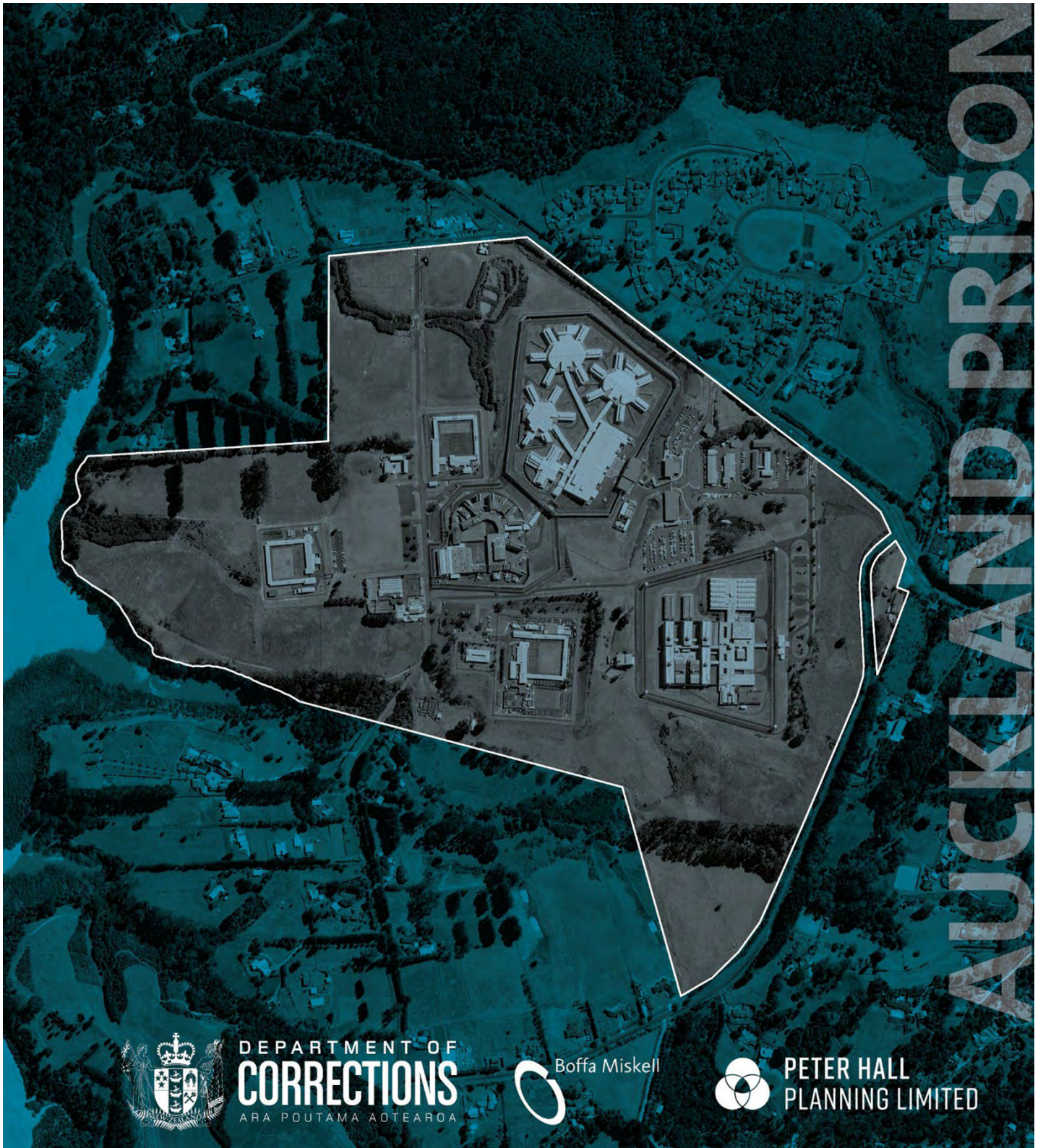


Auckland Prison Capacity Increase

Volume 2 – Appendix 2P
Landscape and Ecology Implementation and
Management Plan



DEPARTMENT OF
CORRECTIONS
ARA POUTAMA AOTEAROA



Boffa Miskell



PETER HALL
PLANNING LIMITED



Auckland Prison Capacity Increase

Landscape and Ecology Implementation and Management Plan (LEIMP)

Prepared for Department of Corrections - Ara Poutama Aotearoa

26 March 2026





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<p>Release and Reliance This report has been prepared by Boffa Miskell Limited on the instructions of our Client, in accordance with the agreed scope of work. If it is intended to support an application under the Fast-track Approvals Act 2024, it may be relied upon by the Expert Panel and relevant administering agencies for the purposes of assessing the application. While Boffa Miskell Limited has exercised due care in preparing this report, it does not accept liability for any use of the report beyond its intended purpose. Where information has been supplied by the Client or obtained from external sources, it has been assumed to be accurate unless otherwise stated.</p>				

CONTENTS

1.0	Introduction	3
1.1	Scope and Purpose	3
1.2	Objective of the LEIMP	3
1.3	Responsibilities	4
1.4	Review and re-certification	4
1.5	Landscape Mitigation and Ecological Enhancement	5
1.6	Ecological Offsetting, Compensation and Enhancement	6
1.7	Integration of the Landscape and Ecology Priorities	6
2.0	Proposed Planting	7
2.1	Existing Vegetation	8
2.2	Proposed Planting	8
2.3	Proposed Plant Species	8
2.4	Plant Supply	14
3.0	Implementation, Maintenance and Monitoring	14
3.1	Timeline and Staging	14
3.2	Site Preparation	16
3.3	Vegetation Maintenance	19
3.4	Monitoring	19
4.0	Stakeholder and cultural input	20
5.0	Reporting	20

Appendices

Appendix 1: Relevant Designation and Resource Consent Conditions

Appendix 2: Landscape Mitigation and Ecology Enhancement Plan
(LMEEP Figure 3: Revision D)

Appendix 3: Pest Animal Management Plan

Appendix 4: Landscape Mitigation and Ecology Enhancement Plan
(LMEEP Revision D) - Proposed Staging

Appendix 5: Landscape Mitigation and Ecological Enhancement
Detailed Plans and Schedule

Abbreviations

AEE - Assessment of Environmental Effects

Corrections – The Department of Corrections - Ara Poutama Aotearoa

EcMP – Ecological Management Plan

Landscape Assessment - Assessment of Landscape, Natural Character and Visual Effects

LEIMP - Landscape and Ecology Implementation and Management Plan (Condition DES45)

LMEEP - Landscape Mitigation and Ecology Enhancement Plan – Figure 3 (Revision D) (Condition DES44)

OPW - Outline Plan of Works

RC – Resource Consent

RMA – Resource Management Act 1991.

Substantive Application Report – Substantive Application Report prepared in accordance with the requirements of the relevant sections of the Fast-track Approvals Act 2024.

The Site – Refers to the amended Designation 3900 area. It encompasses approximately 80 hectares of Crown-owned land designated for prison purposes.

Unitary Plan – The Auckland Unitary Plan (Operative in Part).

1.0 Introduction

1.1 Scope and Purpose

Approximately 28 hectares of planting is proposed at the Auckland Prison site as part of a comprehensive landscape mitigation and ecological enhancement package associated with the Auckland Prison Capacity Increase proposal. This Landscape and Ecology Implementation and Management Plan (LEIMP) supports the implementation of:

- Landscape mitigation planting to mitigate the landscape and visual effects of new facilities at Auckland Prison (a requirement of designation condition DES44); and
- Ecology offsetting, compensation and enhancement planting for the loss of watercourses 1 and 2 and riparian vegetation (a requirement of resource consent conditions LUS03, LUS04, LUC14, LUC15)

Planting works include:

- Clearing and disposal of weeds, where required;
- Animal pest control, as needed and in accordance with the Pest Animal Management Plan;
- Site preparation for planting and fencing, including removal and disposal of existing fences;
- Supply, planting, and, where appropriate, fertilising of all plant material;
- Maintenance of the planted and revegetated areas.

1.2 Objective of the LEIMP

The objective of the LEIMP is to provide detailed information regarding planting and maintenance of planted areas, protection and enhancement of existing ecological features (including wetlands, watercourses, and areas of indigenous vegetation), and to ensure that proposed land use and planting activities are consistent with the objectives of the Landscape Mitigation and Ecology Enhancement Plan (LMEEP) (referred to in DES44 contained in **Appendix 1**).

This report addresses the information requirements for the LEIMP set out in Table 1 below.

Table 1 Information Requirements for LEIMP

LEIMP information requirement ¹	Relevant section of this LEIMP Report
(a) A planting schedule identifying species (botanical and common names), plant numbers, locations, spacings, grades at time of planting, and timing for planting implementation	Section 2.3 Proposed Plant Species
(b) Identification of existing vegetation to be retained and augmented where required;	Section 2.3.1 Landscape Mitigation Planting

¹ As set out in proposed designation condition DES45

LEIMP information requirement ¹	Relevant section of this LEIMP Report
(c) Details of timing, site preparation and planting methodology;	Section 3.1 Timeline and Staging Section 3.2 Site Preparation
(d) Planting for riparian enhancement of streams, existing wetlands and coastal margins;	Section 2.3.2
(e) Promotion of the use of eco-sourced native species;	Section 2.4
(f) Details of proposed fencing and pest animal and pest plant control measures;	Sections 3.2.2 and 3.2.4
(g) A plan for the ongoing maintenance and monitoring of planting, including success criteria and a process for replacement planting if required;	Sections 3.3 and 3.4
(h) Confirmation that low flammability planting species will be used within 20 metres of the external clear zone (as shown on the LMEEP).	Section 2.3.1
(i) An explanation of how cultural input and advice has been incorporated (including opportunity for tangata whenua to provide feedback on plant species and details); and	Section 4.0
(j) An explanation of how the LEIMP integrates with the Ecological Management Plan (including pest management measures).	Section 1.6 and 1.7

The LEIMP is supported by the following Appendices:

- Appendix 1** – Relevant Designation and Resource Consent Conditions
- Appendix 2** – Landscape Mitigation and Ecology Enhancement Plan (LMEEP Revision D)
- Appendix 3** – Pest Animal Management Plan
- Appendix 4** – Landscape Mitigation and Ecology Enhancement Plan (LMEEP Revision D) Proposed Staging
- Appendix 5** – Landscape Mitigation and Ecological Enhancement Detailed Plans and Schedule

1.3 Responsibilities

Corrections will oversee the implementation of this plan and ensure the intended outcomes for the Site are achieved. Planting and aftercare are expected to be carried out by contractors with proven experience and capacity to deliver high-quality, consistent work across the project.

1.4 Review and re-certification

This LEIMP is being provided with the Substantive Application and will be approved by the Expert Panel prior to implementation by Corrections.

This document may be updated, as required, to reflect any changes to the proposed planting and maintenance regime, and if required, any updates will be certified by Auckland Council in accordance with the process set out in the relevant designation and resource consent conditions.

1.5 Landscape Mitigation and Ecological Enhancement

1.5.1 Landscape Purpose

The landscape purpose of the LMEEP is to mitigate the visual effects of the development, particularly from the identified surrounding properties, and to integrate the new facilities into the existing rural lifestyle environment. The intent is to minimise effects on landscape character and visual amenity.

Key landscape and visual amenity considerations include:

- **Existing watercourse corridors**, which have natural, cultural and amenity values – particularly the Pāremoremo Stream which flows through the Pāremoremo Scenic Reserve and the Upper Waitematā Harbour estuary.
- **Elevated views** from properties along Pāremoremo Road, Leveloff Road, Attwood Road (east), Ridge Road (north and west), and Lloyd Road (southwest), which currently enjoy rural vistas of farmland, mature trees, and indigenous bush with distant hill backdrops.
- **Lower-level views** from adjacent rural lifestyle properties, including Merewhira Road, Sanders Road, and Pāremoremo Road, to the south, north and east respectively.
- **Views from nearby residential areas**, including Edward Jonkers Drive and Iona Avenue, where mitigation planting is proposed to soften and filter views toward development.
- **The overall landscape management of the Site**, including the establishment of framework planting that reinforces rural landscape character, integrates built elements into the wider landscape setting, and contributes to ecological enhancement across the Site.

1.5.2 Key Landscape Principles

Landscape mitigation and enhancement principles are guided by the Designation Conditions and are summarised as follows:

- Retain existing vegetation outside the designated Build Zones (Areas A and B) and the adjoining 10 m external clear zone wherever practicable (refer to Figure C Revision D). Indigenous vegetation areas are to be weeded and supplemented with additional enrichment planting as required.
- Remove all stock and associated fencing as planting and revegetation progresses. Use existing farm access tracks for planting access and ongoing maintenance.
- Establish fast-growing indigenous and exotic species to screen the perimeter fence, wall, and built form within Areas A and B from off-site locations.
- Retain and enhance existing ecological features (e.g. watercourses and wetlands) identified in the LMEEP (Figure C Revision D) through additional indigenous planting within and alongside these areas.

- Retain an area near the existing yards adjacent to Sanders Road for use as a service area for plant and machinery storage, and maintenance operations.
- Plant the balance of the Site with a mix of indigenous and exotic species to form a cohesive landscape framework that softens the appearance of built development and accommodates temporary or permanent stormwater treatment areas as required.
- For visual screen planting select tree species capable of achieving a minimum height of 8 metres within 10 years. Indigenous species may be used provided screening objectives are met.
- Blend or shape finished earthworks within Area C to integrate with the surrounding landform, as much as practicable.

1.6 Ecological Offsetting, Compensation and Enhancement

1.6.1 Ecological Purpose

While two watercourses will be reclaimed and piped (one permanent and one intermittent) they are not classified as significant for indigenous biodiversity under the Auckland Unitary Plan, though their modification will result in some loss of ecological function. The purpose of the ecological enhancement is to improve stream and wetland health by:

- Reducing sediment inputs, shading and improving water quality;
- Enhancing habitat for freshwater and wetland species;
- Increasing riparian shading to moderate stream temperatures and suppress algal growth; and
- Supporting the recovery of native aquatic fauna such as eels, native fish, and invertebrates.

1.6.2 Key Ecology Priorities

Ecological enhancement measures aim to meet the Designation Conditions through the following actions:

- Revegetate additional riparian margins of permanent waterbodies within the Designation Site. Riparian margins shall be at least 3 metres wide, up to 20 metres wide in some areas, with an average width of 10 metres on each side.
- Revegetate existing grazed wetlands with native plant species.
- Control of pest animals and pest plants in accordance condition DES45(f) and the Pest Animal Management Plan; and
- Use locally eco-sourced species in all planting in accordance with Condition DES45(e).

1.7 Integration of the Landscape and Ecology Priorities

The integrated landscape and ecological commitments are illustrated in the LMEEP (Figure C Revision D, **Appendix 2**). The key principles underpinning this integration are:

- Enhancing and restoring the Site's existing natural values;

- Providing an overview of proposed revegetation areas, including indicative planting locations and quantities;
- Aligning ecological and landscape plantings to achieve connectivity and a cohesive pattern of restoration;
- Implementing comprehensive pest (plant and animal) management prior to planting;
- Including a diverse selection of native species, with larger specimen trees interspersed among riparian plantings to enhance habitat diversity;
- Using non-native species where appropriate to strengthen visual screening and amenity outcomes;
- Establishing a long-term monitoring and maintenance programme to ensure restoration objectives are met;
- Developing a clear implementation plan detailing responsibilities for guidance, planting, and maintenance;
- Ensuring all plant material is locally eco-sourced from the Tamaki Ecological District where possible; and
- Defining a clear implementation timeline for all landscape and ecological planting works.

2.0 Proposed Planting

The LMEEP Revision D depicts the following existing vegetation areas to be removed, existing areas to be enriched, and proposed additional planting areas; giving a total of approximately 28 ha of permanent vegetation to be retained and managed within Area C:

Vegetation to be removed

- Existing watercourse works (1.29ha)

Landscape – Mitigation Planting

- Visual Screen Planting (7.58ha)
- Landscape framework planting (12.27ha)
- Existing vegetation and native planting to be retained and enriched where required (4.71ha)

Ecology – Enhancement Planting

- Watercourse compensation planting (1.6ha)
- Watercourse offset planting (1.05ha);
- Wetland compensation planting (0.28ha)

All planting layouts shall be confirmed on-site with the approval of Corrections or its nominated representative to ensure that the intended landscape, ecological and visual outcomes are achieved.

2.1 Existing Vegetation

2.1.1 Existing Trees and Vegetation to be Retained

Existing exotic vegetation blocks identified on the LMEEP Revision D² are to be managed to retain their function as screening and integration elements within the Designation Site. This includes existing exotic trees adjacent to watercourse 6 to provide visual screen planting and shading to the watercourse. These areas shall be retained until such a time as their removal is required to enable earthworks, watercourse works or other enabling works associated with any new facilities.

2.1.2 Existing Trees to be Removed

The LMEEP Revision D identifies the following vegetation removals:

- Vegetation associated with watercourse works;
- Trees located within Building Zone Areas A and B; and
- Trees and vegetation within the 10m external clear zone adjoining Area A.

In addition, other localised areas within Area C associated with infrastructure may require vegetation removal as required once design details are known in future.

2.2 Proposed Planting

Planting palettes have been developed to address the Site's cultural, ecology, visual and functional aspects as follows:

- **Cultural:** Reflect local vegetative species and incorporate appropriate indigenous species that express local identity and māturanga Māori values (medicinal species);
- **Physical:** Shape earthworks to stabilise land and reduce potential erosion, particularly along riparian margins, where erosion could cause siltation;
- **Water Quality:** Improve water quality by using plants to filter sediments, nitrates, and other potential runoff contaminants;
- **Ecology:** Restore and enhance ecological values by re-establishing native vegetation across riparian margins, wetland areas and degraded sites to improve habitat diversity; and
- **Visual Amenity:** Screen built elements of the facilities, enhance landscape character, and provide a visually cohesive and culturally sensitive landscape for mana whenua, residents, and visitors.

2.3 Proposed Plant Species

Outlined below is a list of species, grades at planting, spacings and numbers required, that are suitable for the various landscape and ecological planting areas. These will be refined during

² Appendix 2: Landscape, Ecological Enhancement and Mitigation Plan Revision C

detailed design and stakeholder consultation, during the preparation of site specific planting plans prior to letting a plant procurement and planting contract.

2.3.1 Landscape Mitigation Planting

Visual Screen Planting (7.59 hectares)

Visual screen planting will integrate proposed facilities within the surrounding landscape by providing effective visual mitigation. The planting will comprise a mix of native species, selected for their long-term ecological and aesthetic value, alongside a number of faster-growing exotic species that will provide early screening, shelter, and vegetative scale in relation to the new facilities. In addition, as required by Condition DES45(h) all planting within 20m of the external clear zone will contain low flammability species. These species are indicated in the tables below by an *³.

Table 2: Visual Screen Planting – Schedule

BOTANICAL NAME	COMMON NAME	GRADE (Litre/ Height)	CENTRES (m) C C	PLANT %	QUANTITY (Approx)
<i>Acacia melanoxylon</i>	Blackwood	2L or 25-50cmH	5	11	345
<i>Alnus jorullensis</i>	Evergreen Alder	10	5	7	221
<i>Corynocarpus laevigatus</i> *	Karaka / Kopi	10	5	11	345
<i>Eucalyptus globoidea</i>	White Stringybark	2L or 25cmH	5	3	95
<i>Knightia excelsa</i>	Rewarewa	10	5	6	189
<i>Podocarpus totara</i>	Tōtara	10	7	7	112
<i>Vitex lucens</i> *	Pūriri	10	7	7	112
<i>Coprosma robusta</i> *	Karamū	1	1.	8	2800
<i>Kunzea ericoides</i>	Kanuka	1	2	8	1574
<i>Phormium tenax</i> *	Harekeke	1	1.5	8	2800
<i>Pittosporum tenuifolium</i>	Kohuhu	1	1.5	8	2800
<i>Pseudopanax arboreus</i> *	Five Finger/ Whauwhaupaku	1	1.5	8	2800
<i>Pseudopanax lessonii</i> *	Houpara	1	1.5	8	2800

Landscape Framework Planting (12.27 hectares)

Landscape framework planting will use a mix of exotic and indigenous to enhance the Site's natural character and amenity. It will strengthen local ecological connections, add seasonal variety and habitat diversity, and help integrate future built elements into the surrounding rural landscape.

³ Low Flammability Plants – Fire Emergency NZ <https://www.checkitsalright.nz/reduce-your-risk/low-flammability-plants>

No planting will occur within the extent of the identified archaeological feature R10/831 as identified on the LMEEP. Shallow planting by hand only may occur within the 10 metre buffer area surrounding the archaeological site extent, in accordance with condition DES21.

Table 3: Landscape Framework Integration Planting - Schedule

BOTANICAL NAME	COMMON NAME	GRADE (L)	CENTRES (m) C C	PLANT %	QUANTITY (Approx)
<i>Acacia melanoxylon</i>	Blackwood	2L or 25-50cmH	5	13	669
<i>Alnus jorullensis</i>	Evergreen Alder	5	5	7	360
<i>Corynocarpus laevigatus</i> *	Karaka / Kopi	5	5	11	566
<i>Eucalyptus globoidea</i>	White Stringybark	2L or 25-50cmH	5	6	309
<i>Knightia excelsa</i>	Rewarewa	5	5	3	154
<i>Podocarpus totara</i>	Tōtara	5	7	8	210
<i>Populus nigra</i> *	Poplar	2m Pole	3	2	286
<i>Pseudopanax crassifolius</i> *	Horoeka / Lancewood	5	6	2	71
<i>Vitex lucens</i> *	Pūriri	5	7	3	78
<i>Carex secta</i> *	Purei	1	1	3	3857
<i>Coprosma robusta</i> *	Karamū	1	1.5	2	1144
<i>Cordyline australis</i> *	Tī kōuka/cabbage tree	1	1	3	3857
<i>Dacrycarpus dacrydioides</i>	Kahikatea	5	5	3	154
<i>Kunzea ericoides</i>	Kanuka	1	2	9	2893
<i>Leptospermum scoparium</i>	Mānuka	1	1	3	3857
<i>Melicytus ramiflorus</i>	Māhoe	1	2.5	3	617
<i>Myrsine australis</i> *	Matipou	1	1.5	3	1713
<i>Phormium tenax</i> *	Harekeke	1	1.5	2	1144
<i>Piper excelsum</i> *	Kawakawa	1	1.5	3	1713
<i>Pittosporum tenuifolium</i>	Kohuhu	1	1.5	3	1713
<i>Pseudopanax arboreus</i> *	Five Finger/ Whauwhaupaku	1	1.5	2	1144
<i>Pseudopanax lessonii</i> *	Houpara	1	1.5	3	1713
<i>Veronica stricta</i> var. <i>stricta</i>	Koromiko	1	1.2	3	2678

Existing Vegetation and native planting to be retained and enriched where required (4.72 hectares)

Identified areas of existing vegetation and native planting that will be retained as part of the landscape strategy. Where necessary, these areas will be enriched with additional native planting to improve species diversity, fill gaps, and strengthen ecological structure and resilience.

Table 4: Existing Indigenous Vegetation Enrichment – Schedule

BOTANICAL NAME	COMMON NAME	GRADE (L)	CENTRES (m) C C	PLANT %	QUANTITY (Approx)
<i>Beilschmiedia tawa</i>	Tawa	5	13	5	254
<i>Cordyline australis</i> *	Ti kōuka/cabbage tree	5	13	2	1588
<i>Corynocarpus laevigatus</i> *	Karaka / Kopi	5	13	5	254
<i>Knightia excelsa</i>	Rewarewa	5	13	5	254
<i>Podocarpus totara</i>	Tōtara	5	13	7	131
<i>Rhopalostylis sapida</i> *	Nikau Palm	5	3	3	164
<i>Vitex lucens</i> *	Pūriri	5	14	7	141
<i>Dacrycarpus dacrydioides</i>	Kahikatea	5	14	5	275
<i>Phormium tenax</i> *	Harekeke	1	4	1	1961

2.3.2 Ecology Offsetting, Compensation and Enhancement Planting

Watercourse compensation planting (1.6 hectares)

Identified riparian areas surrounding watercourses on the Auckland Prison Site will be planted with riparian vegetation that enhances the ecological values of the watercourses, including natives that protect water quality, stabilise banks, enhance biodiversity and improve ecosystem health.

Table 5: Watercourse Compensation Planting – Schedule

BOTANICAL NAME	COMMON NAME	GRADE (L)	CENTRES (m) C C	PLANT %	QUANTITY (Approx)
<i>Austroderia fulvida</i>	Toetoe	1	1	8	1385
<i>Blechnum novae-zelandiae</i>	Kiokio	1	1	6	1038
<i>Carex dissita</i>	Forest Sedge	0.5	1	8	1385
<i>Carex geminata</i> *	Rautahi	0.5	1	12	2077
<i>Carex virgata</i>	Pūkio	0.5	1	12	2077
<i>Carpodetus serratus</i> *	Putaputawētā	1	1	9	1557
<i>Cordyline australis</i> *	Ti kōuka/cabbage tree	5	1	5	865

BOTANICAL NAME	COMMON NAME	GRADE (L)	CENTRES (m) C C	PLANT %	QUANTITY (Approx)
<i>Corynocarpus laevigatus</i> *	Karaka	5	6	3	16
<i>Dacrycarpus dacrydioides</i>	Kahikatea	5	6	3	16
<i>Laurelia novae-zelandiae</i>	Pukatea	1	6	3	16
<i>Leptospermum scoparium</i>	Mānuka	1	1	7	1223
<i>Meliclytus ramiflorus</i>	Māhoe	1	2.5	3	84
<i>Phormium tenax</i> *	Harekeke	1	1	9	1572
<i>Syzygium maire</i>	Swamp Maire	1	6	3	16
<i>Veronica stricta</i> var. <i>stricta</i>	Koromiko	1	1.2	9	1096

Watercourse offset planting (1.05 hectares)

Riparian areas surrounding watercourse 6 on the Auckland Prison Site will be planted with native plants to stabilise adjoining banks, protect water quality, enhance biodiversity and improve ecosystem health thereby enhancing the ecological values of the watercourse. This area includes Wetland F, an existing natural inland wetland which will be planted with species consistent with those listed in Table 7: Wetland Compensation Planting – Schedule below. Wetland F area has increased from an indicative size of 379m² to an accurate mapped extent of 2,109m² based on mapping by Boffa Miskell Ecologists in March 2026 (and as mapped on the Ecology Map provided in **Volume 2, Appendix 2I** of the Substantive Application). The species mix within the watercourse offset planting areas provided below is suitable for the wet areas (including the accurate extent of Wetland F on the northern banks of Watercourse 6) and will be specified in detailed planting plans. As stated above the existing mature trees surrounding watercourse 6 will be retained to provide visual screening of the prison facilities and shading to the watercourse.

Table 6: Watercourse Offset Planting – Schedule

BOTANICAL NAME	COMMON NAME	GRADE (L)	CENTRES (m) C C	PLANT %	QUANTITY (Approx)
<i>Austroderia fulvida</i>	Toetoe	1	1	8	836
<i>Blechnum novae-zelandiae</i>	Kiokio	1	1	6	627
<i>Carex dissita</i>	Forest Sedge	0.5	1	8	836
<i>Carex geminata</i> *	Rautahi	0.5	1	12	1254
<i>Carex virgata</i>	Pūkio	0.5	1	12	1254
<i>Carpodetus serratus</i> *	Putaputawētā	1	1	9	940
<i>Cordyline australis</i> *	Ti kōuka/cabbage tree	1	1	5	522

BOTANICAL NAME	COMMON NAME	GRADE (L)	CENTRES (m) C C	PLANT %	QUANTITY (Approx)
<i>Corynocarpus laevigatus</i> *	Karaka	1	6	3	9
<i>Dacrycarpus dacrydioides</i>	Kahikatea	1	6	3	9
<i>Laurelia novae-zelandiae</i>	Pukatea	1	6	3	9
<i>Leptospermum scoparium</i>	Mānuka	1	1	7	733
<i>Meliccytus ramiflorus</i>	Māhoe	1	2.5	3	50
<i>Phormium tenax</i> *	Harekeke	1	1	9	943
<i>Syzygium maire</i>	Swamp Maire	1	6	3	9
<i>Veronica stricta</i> var. <i>stricta</i>	Koromiko	1	1.2	9	655

Wetland compensation planting (0.28 hectares)

Identified natural wetlands within the Auckland Prison Site will be planted with native species that seek to restore and enhance wetland ecosystems. These species seek to improve water quality, stabilise soils, support biodiversity, and increase resilience to flooding and climate change.

Table 7: Wetland Compensation Planting - Schedule

BOTANICAL NAME	COMMON NAME	GRADE (L)	CENTRES (m) C C	PLANT %	QUANTITY (Approx)
<i>Austroderia fulvida</i>	Toetoe	0.5	1	5	76
<i>Blechnum novae-zelandiae</i>	Kiokio	0.5	1	10	152
<i>Carex dissita</i>	Forest Sedge	0.5	1	14	212
<i>Carex geminata</i> *	Rautahi	0.5	1	14	212
<i>Carex virgata</i>	Pūkio	0.5	1	14	212
<i>Cordyline australis</i> *	Ti kōuka/cabbage tree	1	1	5	76
<i>Cyperus ustulatus</i>	Giant Umbrella Sedge	1	1	10	152
<i>Dacrycarpus dacrydioides</i>	Kahikatea	1	6	2	1
<i>Laurelia novae-zelandiae</i>	Pukatea	1	6	2	1
<i>Leptospermum scoparium</i>	Mānuka	1	1	6	92
<i>Phormium tenax</i> *	Harekeke	1	1	11	168
<i>Schefflera digitata</i> *	Patē	1	1	7	107

2.4 Plant Supply

The genetic source of all New Zealand native plant material shall be from the Auckland Ecological Region, preferably the Tāmaki Ecological District. No plant material is to be sourced from outside this area without prior approval of Corrections or its nominated representative.

Plant material refers to all plants required for the project, as shown on the plans and detailed in the plant schedules.

All plants shall be high-quality nursery stock, true to name and type, with well-shaped trunk or stem and head. Stock shall be well hardened to suit local site conditions and free from pests, diseases, and physical defects.

Root systems shall be healthy and fibrous, with roots just reaching the container edge. Plants showing root circling or poor structure should be rejected.

Plants shall also be free from damage such as knots, bark abrasions, wind, or frost injury, and should show evidence of correct pruning.

All plant material is to be made available for inspection by Corrections or its nominated representative, prior to planting.

Each plant, or bundle of plants, shall carry a legible label showing the approved botanical name, quantity, and any other required identified details. Plant sizes are to be specified by root trainer or litre container size.

Substitution

No plant species may be substituted without prior approval of Corrections or its nominated representative. If specified species are unavailable at the time of planting, substitute alternatives may be proposed and approved by a qualified landscape architect or ecologist.

3.0 Implementation, Maintenance and Monitoring

This section provides overarching guidance for planting implementation, staging and aftercare, including maintenance and monitoring, to help Corrections achieve timeline and effective outcomes.

3.1 Timeline and Staging

Planting work should generally be undertaken between April and September when weather conditions are mild, damp, and conducive to planting, and when the ground is workable. Operations should be suspended during periods of severe cold, waterlogging, drought, or persistent drying winds. Wetland planting can be undertaken throughout the year if soil is moist.

The recommended annual staging timeframes for implementing the LMEEP are shown in Table 6.

3.1.1 Proposed Timing

As outlined in Designation Condition DES44 the landscape and ecological planting shall be implemented in accordance with the following timeframes:

- (a) Visual screen planting (as identified on the LMEEP) shall be implemented within the first two planting seasons from [date the designation alteration is confirmed];
- (b) Watercourse offset planting, watercourse compensation planting and wetland compensation planting (as identified on the LMEEP) shall be implemented prior to the loss of any intermittent or permanent watercourse;
- (c) The balance of the planting (required under the LMEEP) shall be implemented progressively and shall be completed no later than ten years after [date the designation alteration is confirmed];
- (d) Existing planting within 3 metres of site boundaries at [date the designation alteration is confirmed] shall be maintained until such time as the new planting is completed.

Corrections is intending to implement the planting as outlined in the LMEEP within the first two planting seasons of the designation alteration being confirmed. The proposed staging as outlined in Table 8 below reflects this timeframe.

Table 8: General Staging LMEEP

Development Stage	Spring / Summer Season	Winter Season
Plant Supply	<ul style="list-style-type: none"> ● Obtain seed and propagate plants ● Purchase plants as required ● Grow on plants during summer 	<ul style="list-style-type: none"> ● Grow on and harden off plants and deliver to site nursery/holding area as required
Site Preparation	<ul style="list-style-type: none"> ● Review site wide boundary fences and upgrade where required. ● Assess site for weeds and control as required. ● Undertake soil samples ● Prepare planting zones. ● Undertake fencing upgrades and pest management 	<ul style="list-style-type: none"> ● Continue pest management
Planting	<ul style="list-style-type: none"> ● Commence proposed planting. ● Continue restoration planting and weed control. ● Plant specimen trees. 	<ul style="list-style-type: none"> ● Continue planting of wetland and riparian zones.
Weed and Pest Control	<ul style="list-style-type: none"> ● Control all weed infestations within planting zones. ● Continue pest management. 	<ul style="list-style-type: none"> ● Undertake weed surveys over entire site and control as necessary. Continue pest management as required.
Monitoring and Maintenance	<ul style="list-style-type: none"> ● Monitor and replace dead wetland, riparian, and specimen trees. ● Ongoing maintenance. 	<ul style="list-style-type: none"> ● Monitor and replace dead wetland, riparian, and specimen trees. Continue maintenance.
Project Completion	<ul style="list-style-type: none"> ● Monitoring and maintenance period completed. Assess need for further weed and pest control. 	<ul style="list-style-type: none"> ● Final monitoring and replacement of dead plants as required.

3.1.2 Staging

The proposed staging of the planting is provided in Appendix 4. The portion of Area C west of Sanders Road will be planted during the next available season following the designation alteration being confirmed (likely to be planting season of 2027) shown as “Stage 1 – Year 1” in the Staging Plan provided in Appendix 4. The portion of Area C east of Sanders Road will be planted during the following year (shown as “Stage 2 – Year 2”) (likely to be the planting season of 2028).

3.2 Site Preparation

3.2.1 Existing Vegetation to be Retained

Existing vegetation identified for retention in the LMEEP shall be protected during planting operations. Within the rootzone, all work shall be carried out by hand. Equipment shall be operated carefully to avoid damage to tree canopies or branches. Any inadvertent damage shall be pruned by an arborist, and fungicide applied as required.

Where weeds are to be removed and native plants are to be retained, retained plants and trees are to be marked clearly to ensure the correct plants are removed.

3.2.2 Fencing of Areas to be Retained

Areas of planting shall be continuously fenced with permanent stock-proof fencing without gates to prevent damage from stock incursion until such time as stock have been removed from the property.

The planting plan utilizes existing stock-proof fences and where necessary existing fences to be retained shall be made good to ensure that they are to a stock-proof quality from adjoining properties.

New fencing installed shall be 7-wire Timber Post and Batten Fencing to stock-proof standard.

Fencing shall be continuous, and gates shall not be installed to adjoining properties. Where required stiles shall be located at regular intervals within the Site to enable access for future planting and ongoing maintenance.

3.2.3 Soil Contamination and Preparation

This section outlines the requirements for assessing, remediating, and preparing soils to ensure they are suitable for planting. All areas intended for planting and revegetation shall be evaluated for contamination, compaction, and nutrient status.

Soils identified as containing residual contaminants or exhibiting unsuitable conditions shall be treated, removed, or amended as necessary to support healthy plant growth. Soil preparation should include appropriate cultivation, grading, and the incorporation of organic matter or fertilizers, providing a stable, well-drained, and fertile growing medium for all plantings.

Former market garden areas within Area C shall be tested prior to planting to confirm soil suitability. Testing shall include:

- Soil pH and fertility – to assess nutrient balance and acidity/alkalinity
- Soil compaction – to ensure adequate root penetration

- Residual chemical contaminants – such as pesticides or heavy metals from previous horticultural use.

Where testing identifies contamination or poor soil conditions, the soil shall be ameliorated or remediated. Amelioration may include soil replacement, ripping or decompaction, and the addition of organic matter or soil conditioners to ensure the soil can support healthy plant growth.

3.2.4 Plant Pest Control Measures

Weed management is critical for plant establishment and its ongoing success. Weeds found on the Auckland Prison Site are listed below refer Table 9

Table 9: Auckland Prison Weeds

BOTANICAL NAME	COMMON NAME	INCURSION LEVELS (severe = >61%, moderate= <31-60%, low <30)
<i>Acacia longifolia</i>	Black Wattle	Low
<i>Solanum mauritianum</i>	Woolly Nightshade	Low
<i>Rubus fruticosus</i>	Blackberry	Low
<i>Zantedeschia aethiopica</i>	Arum Lily	Low
<i>Ligustrum lucidum</i>	Tree privet	Low
<i>Ligustrum sinense</i>	Chinese privet	Low
<i>Ulex europaeus</i>	Gorse	Low

Preparation for Planting:

- Unwanted vegetation and weeds shall be sprayed or cut and paste with herbicide in advance.
- Grazing may assist in site preparation where appropriate.
- All herbicide application shall be conducted by certified personnel following NZS 8409:2001 and Auckland Council guidelines.

Specific Measures:

- Large exotic trees to be removed shall be felled, mulched, or disposed of appropriately.
- Only low-toxicity herbicides approved for use near waterways (e.g., glyphosate) shall be used near riparian areas.
- Vegetation >200mm shall be cleared or mown before herbicide application.
- Herbicide applications shall avoid drift to retained native vegetation, and MSDS sheets shall be provided prior to use.
- Equipment shall be calibrated to avoid under- or over-dosing, and containers shall not be left unattended.

Disposal of Weed Material

Weed material unsuitable for on-site mulch shall be safely and legally disposed of, with fees paid as required.

Pest Plant Control

Pest plant management will be undertaken to support the successful establishment of all mitigation planting. Pest plant control will occur for a period of five (5) years following the completion of planting. Control measures will focus on the identification and removal of pest plant species that may compete with or inhibit the growth of planted vegetation, with monitoring and follow-up control undertaken as required throughout the maintenance period to ensure the long-term success of the mitigation planting.

3.2.5 Animal Pest Control Measures

Animal pest management measures are outlined in a Pest Animal Management Plan⁴ for the Site which is attached to this plan as **Appendix 3**. The purpose of the plan is to provide the operational detail required to deliver effective, targeted pest animal management throughout the proposed mitigation and enhancement sites within the Auckland Prison Site.

Browsing herbivores (possums and rabbits) are the predominant mammalian pests to potentially impact on the mitigation planting sites during establishment.

Given the restraints on control methods for the Site (i.e. no shooting or toxin use), the most appropriate management technique will be to fumigate any rabbit burrows during daylight hours by qualified and experienced contractors, effectively eliminating rabbits underground where pets or humans cannot reach carcasses. Possum monitoring and control using traps is also proposed over the enhancement planting area.

Pest animal control is proposed from the first planting until 5 years after the final enhancement planting is completed (anticipated to be seven years total with the current staging plan).

3.2.6 Biosecurity Measures

Myrtle Rust and Kauri Dieback are biosecurity threats to native plants. Operators shall inspect and clean plant material and equipment before use. These checks may be monitored by the Department of Conservation (DOC) or Council staff.

Planting that includes any Myrtaceae species shall be sourced from plant producers certified under the Plant Pass scheme, including the Myrtle Rust specific module standard, to manage the risk of infection and spread of Myrtle Rust. All such plants delivered to the Site must be obtained from a certified supplier, and a copy of the plant delivery receipt confirming certification shall be provided to Council within five (5) working days of plant delivery or as part of reporting set out in Section 5.0.

Rainbow skinks are a threat to native lizards. Nurseries in skink-affected areas shall check pots and potting mix for eggs before plants are used in restoration projects. All equipment, plants, and materials brought to the Site shall also be inspected to prevent spreading rainbow skinks.

⁴ Pest Animal Management Plan prepared by Boffa Miskell dated 26 March 2026

3.2.7 Fertilisers

All plants shall be planted with controlled, slow-release fertiliser such as Grotabs, Nutricote or Osmocote Plus, with a N:P:K ratio of 6:15:3 (N:P:K).

Fertiliser shall be applied to the backfill of each tree, shrub or groundcover according to the manufacturer's specification.

No fertiliser shall be applied to Wetland plant species.

3.3 Vegetation Maintenance

Successful maintenance depends on good preparation, including weed removal, plant selection, stock quality, and mulching. Maintenance tasks and timing will be defined in contract specifications. Regular monitoring and prompt response to issues are essential to manage ecological, flood, or other mitigation requirements. Maintenance will be undertaken over 5 years from completion of each stage and is the responsibility of Corrections, with monitoring and reporting by a qualified ecologist and/or landscape architect. Maintenance tasks include:

- Regular checks for invasive or aggressive weeds and early control.
- Observation for pests, diseases, or waterlogging.
- Inspections after heavy rainfall, severe weather, or prolonged dry periods.
- Adjustments to planting around wetlands, stormwater areas, barriers, signage, and access routes to maintain setbacks and visibility.
- Replacement of dead plants.
- Weed control in all planting zones, prioritising species such as Blackberry, Woolly Nightshade, and Privet. All rubbish, stakes, planter bags and debris from planting operations shall be removed and any damage caused by planting and maintenance activities shall be promptly rectified.

3.4 Monitoring

Initial monitoring is to occur monthly over the summer/autumn months and two monthly during winter/spring for the first 2 years following planting. After that monitoring and maintenance will occur at least 4 times/annum - in spring, early summer and late summer for the following years. Planting is to achieve a 90% survival rate.

Independent monitoring of compensation and offset planting by a qualified ecologist will be undertaken to assess the success of restoration planting and whether additional management is necessary to improve planting success.

Independent monitoring of visual screen and framework planting by a qualified landscape architect will be undertaken to assess the success of landscape planting and whether additional management is necessary to improve planting success.

Monitoring of each season and stage means that additional planting or management actions can be implemented to ensure success. Replacement planting will be undertaken where any gaps occur. A minimum of 90% of the plants shall be well established and showing strong growth. Compliance with

this success rate will be reviewed and confirmed by the landscape architect and ecologist with respect to the different areas of planting.

4.0 Stakeholder and cultural input

The proposed planting and species selection will be refined following input from stakeholders, including Iwi during preparation of the detailed planting plans. This will be achieved through a series of workshops and include representatives from the following groups:

- Te Kawerau ā Maki
- Ngāti Whātua o Kaipara
- Ngāti Whātua (Te Rūnanga o Ngāti Whātua)
- Ngaati Whanaunga
- Local community groups with an interest in planting including Sustainable Pāremoremo, Upper Waitemata Ecological Network and Pest Free Coatesville.
- Community Liaison Group (if established).

No planting will occur within the extent of the identified archaeological feature R10/831 as identified on the LMEEP. Shallow planting by hand only may occur within the 10 metre buffer area surrounding the archaeological site extent, in accordance with condition DES21.

5.0 Reporting

A brief Completion / Monitoring Report for Corrections shall be prepared each year until the completion targets are met.

Completion / Monitoring Report content should include:

- Dates of visits;
- Photographs as appropriate;
- Condition of the vegetation;
- Number of plants replaced during the year;
- Condition of fencing;
- Stages of implementation completed
- Pest and weed status;
- Condition of plant health;
- Identification of any arising issues that require special monitoring;

- Any actions required.

The Completion / Monitoring Report shall be made available to Auckland Council and relevant Iwi (Te Kawerau ā Maki, Ngāti Whātua o Kaipara, Ngāti Whātua (Te Rūnanga o Ngāti Whātua), and Ngaati Whanaunga.

Appendix 1: Relevant Designation and Resource Consent Conditions

Relevant Designation Conditions

<p>DES43A</p>	<p>Ecological Management Plan (EcMP)</p> <p>The requiring authority shall undertake construction works, demolition and/or removal works in accordance with the Ecological Management Plan (EcMP) prepared by Boffa Miskell, dated 26 March 2026 or any subsequent updated management plan(s) prepared by a suitably qualified and experienced ecologist(s), and certified by Auckland Council in accordance with the process set out in conditions DES33 to DES37:</p> <p>The objective of the EcMP is to manage potential effects on ecological values during Construction Works, demolition and/or removal works for New Prison Facilities and includes the following:</p> <ul style="list-style-type: none"> (a) Management protocols for the avoidance of bird nesting season, or the methods to confirm there are no nesting threatened indigenous birds nesting within the tree lines. (b) Management and tree felling protocols for the detection and avoidance of bat usage at the time of tree felling. (c) Methods for the salvage and relocation of native fish from the length of any intermittent or permanent watercourse reclaimed as part of the project works.
<p>DES44</p>	<p>Landscape and Ecological Planting</p> <p>The requiring authority shall implement and maintain landscape and ecological planting in accordance with Figure C: Landscape Mitigation and Ecology Enhancement Plan (LMEEP). The objectives of the LMEEP are to:</p> <ul style="list-style-type: none"> (a) Soften the visual effects of built development through planting; (b) Enhance the natural character and ecological values of the Site; (c) Integrate the development with the surrounding landscape character; and (d) Provide visual screening and ecological enhancement within and around the Site. <p>The landscape and ecological planting shall be implemented in accordance with the following timeframes:</p> <ul style="list-style-type: none"> (a) Visual screen planting (as identified on the LMEEP) shall be implemented within the first two planting seasons from [date the designation alteration is confirmed] (b) Watercourse offset planting, Watercourse compensation planting and Wetland compensation planting (as identified on the LMEEP) shall be implemented prior to the loss of any intermittent or permanent watercourse. (c) The balance of the planting (required under the LMEEP) shall be implemented progressively and shall be completed no later than ten years after [date the designation alteration is confirmed].

	<p>(d) Existing planting within 3 metres of site boundaries at [date the designation alteration is confirmed] shall be maintained until such time as the new planting is completed.</p> <p>Except that:</p> <p>(e) Area C can include balance land activities as set out in Condition DES04. Within Area C, those areas used for cultural buildings, infrastructure and services, energy generation and storage facilities need not be planted provided that these activities do not compromise the objectives of the LMEEP.</p> <p>(f) Within planting areas:</p> <ul style="list-style-type: none"> (i) limited access tracks can be provided (except in the Watercourse offset planting, Watercourse compensation planting and Wetland compensation planting areas) (ii) stormwater management devices can be provided (and need not be planted). (iii) the visual screen planting over the carriageway of Iona Avenue access point can be removed and reinstated as necessary for construction traffic access. <p>In visual screen planting areas, these activities shall not compromise the purpose of the visual screen planting.</p> <p>(g) Existing planting may be removed to facilitate construction of operational access 1 (western access) where necessary.</p> <p>(h) Where planting is required to be removed for construction works or earthworks it shall be replanted upon the completion of the work.</p>
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<p>DES45</p>	<p>Landscape and Ecology Implementation and Management Plan (LEIMP)</p> <p>The requiring authority shall undertake planting and maintenance of planted areas in accordance with the Landscape and Ecology Implementation and Management Plan (LEIMP) prepared by Boffa Miskell, dated 26 March 2026 (or any subsequent updated LEIMP prepared by a suitably qualified and experienced landscape or ecology professional(s), and certified by Auckland Council in accordance with the process set out in conditions DES33 to DES37).</p> <p>The objective of the LEIMP is to provide detailed information regarding planting and maintenance of planted areas, protection and enhancement of existing ecological features (including wetlands, watercourses, and areas of indigenous vegetation), and to ensure that proposed land use and planting activities are consistent with the objectives of the LMEEP.</p> <p>The LEIMP includes the following:</p> <ul style="list-style-type: none"> (a) A planting schedule identifying species (botanical and common names), plant numbers, locations, spacings, grades at time of planting, and timing for planting implementation; (b) Identification of existing vegetation to be retained and augmented where required; (c) Details of timing, site preparation and planting methodology; (d) Planting for riparian enhancement of streams, wetlands and coastal margins; (e) Promotion of the use of eco-sourced native species; (f) Details of proposed fencing and pest animal and pest plant control measures;
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	<p>(g) A plan for the ongoing maintenance and monitoring of planting, including success criteria and a process for replacement planting if required;</p> <p>(h) Confirmation that low flammability planting species will be used within 20 metres of the external clear zone (as shown on the LMEEP).</p> <p>(i) An explanation of how cultural input and advice has been incorporated (including opportunity for tangata whenua to provide feedback on plant species and details); and</p> <p>(j) An explanation of how the LEIMP integrates with the EcMP (including pest management measures).</p>
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Relevant Resource Consent Conditions

<p>LUC14 / LUS03</p>	<p>Ecological offsetting and compensation planting (for loss of Watercourses 1 and 2 and riparian vegetation):</p> <p>The consent holder shall implement the following in accordance with the Landscape Mitigation and Ecology Enhancement Plan (LMEEP), prepared by Boffa Miskell, dated 11 March 2026, Rev D:</p> <ul style="list-style-type: none"> (a) plant the following areas: <ul style="list-style-type: none"> (i) Watercourse compensation planting (1.6 ha) (ii) Watercourse offset planting (1.05 ha) (iii) Wetland compensation planting (0.28 ha) (b) Make improvements to two perched culverts to provide fish passage at Watercourse 6. <p>The above planting shall be implemented and maintained (including pest and weed management and control) in accordance with the Landscape and Ecological Implementation and Management Plan (LEIMP) prepared by Boffa Miskell, dated 26 March 2026 (or any subsequent LEIMP prepared by a suitably qualified and experienced ecologist or landscape architect, and certified by Auckland Council).</p>
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<p>LUC15 / LUS04</p>	<p>All ecological offset and ecological compensation planting shall be completed prior to the loss of vegetation surrounding Watercourse 1 and 2. The replacement plants shall be eco-sourced.</p>
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<p>LUC16</p>	<p><u>Watercourse 6 Culvert</u></p> <p>Prior to completion of reclamation of the 124m length of Watercourse 1, the western culvert at watercourse 6 (abutting the land at 43 Merewhira Road and shown on the LMEEP) shall be upgraded and designed in accordance with Auckland Council Technical Publication 108: Guideline for stormwater runoff modelling in the Auckland Region, April 1999 and to ensure the following matters are addressed:</p> <ul style="list-style-type: none"> (a) the total length of the replacement culvert structure will not exceed 10m measured parallel to the direction of water flow (b) conveyance of stormwater during the 100 year ARI event without significantly increasing flood levels up stream or down stream of the structure
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	<p>b. the structure must not prevent the passage of fish upstream and downstream, except that temporary restrictions to fish passage may occur in to enable construction work to be carried out;</p> <p>c. the structure shall not cause more than minor bed erosion, scouring or undercutting immediately upstream or downstream.</p> <p>In addition, the outlet of the eastern culvert abutting Merewhira Road (shown on the LMEEP) shall be improved with rocks stacked at the outlet to form a shallow sloping structure and/or spat ropes to provide fish passage.</p> <p><u>Advice Note:</u></p> <p><i>Culvert improvements should be aligned with New Zealand Fish Passage Guidelines (NIWA 2024).</i></p>
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Appendix 2: Landscape Mitigation and Ecology Enhancement Plan (LMEEP Figure 3: Revision D)



- Landscape - Mitigation Planting**
- A 10m external clear zone adjacent to Area A (3.13ha)
 - Visual screen planting (7.58ha)
 - Landscape framework planting (12.27ha)
 - Existing vegetation to be retained and enriched where required (4.71ha)
 - Existing vegetation to be removed as part of watercourse works (1.29ha)
- Ecology - Enhancement Planting**
- Watercourse Compensation Planting (1.6ha)
 - Watercourse Offset Planting (1.05ha)
 - Wetland Compensation Planting (0.28ha)

Appendix 3: Pest Animal Management Plan

Pest Animal Management Plan

Auckland Prison Capacity Increase
Prepared for Department of Corrections – Ara Poutama Aotearoa

26 March 2026





Boffa Miskell is proudly a
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Document Quality Assurance

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<p>For any information regarding this report please contact: Adam Willetts Ecology/Biosecurity Senior Professional [REDACTED]</p>				
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Draft	28/01/2026	Adam Willetts Ecologist / Biosecurity Consultant / Senior Professional	Draft report issued to client	Ian Boothroyd, Ecologist / Partner
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<p>Approved for issue: Ian Boothroyd Ecology Partner 26 March 2026</p>				
<p>Release and Reliance This plan has been prepared by Boffa Miskell Limited on the instructions of our client, in accordance with the agreed scope of work. If it is intended to support an application under the Fast-track Approvals Act 2024, it may be relied upon by the Expert Panel and relevant administering agencies for the purposes of assessing the application. While Boffa Miskell Limited has exercised due care in preparing this plan, it does not accept liability for any use of the plan beyond its intended purpose. Where information has been supplied by the Client or obtained from external sources, it has been assumed to be accurate unless otherwise stated.</p>				

CONTENTS

1.0	Introduction	1
1.1	Background	1
1.2	Purpose, Objectives and Scope of the PAMP	1
1.3	Statement of Qualifications and Relevant Experience	2
2.0	Pest Animal Management Areas	2
2.1	Pest management project area (31.3ha)	2
2.2	Enhancement planting area (Area C)(28ha)	2
2.3	Lizard release site (1ha) and buffer area (2.5ha)	2
3.0	Target Pest Animal Species	5
4.0	Performance Standards for Pest Control	5
5.0	Staged Approach to Pest Management	5
5.1	Stage 1: Browsing pest animal management	6
5.2	Stage 2: Lizard predator management	6
5.3	Stage 3: Ongoing pest animal management	6
6.0	Pest Animal Monitoring	8
7.0	Pest Animal Control Methods	10
8.0	Schedule of staged pest animal monitoring and control	12
9.0	Operational Review and Reporting	14
10.0	New Technologies	14
11.0	References	15

Appendices

Appendix 1: Pest Animal Characteristics

Appendix 2: Pest Animal Targets and Thresholds

Appendix 3: Response to Exceedance of Thresholds (EOT)

Appendix 4: Pest Animal Monitoring

Appendix 5: Pest Animal Control

Appendix 6: Equipment Required (approximate)

Appendix 7: Other Information

Appendix 8: Qualifications and Relevant Experience

Figures

Figure 1: Auckland Prison pest management area	4
Figure 2: Staged pest management process flow chart.	7
Figure 3: Approximate pest monitoring locations.....	9
Figure 4: Approximate pest control locations and staging	11
Figure 5: Chew card with possum bite marks	20
Figure 6: Browning trail camera focusing on two orange bait stations	20
Figure 7: Browning Dark OPS Pro trail camera	22
Figure 8: Vanguard VTA/kill trap station	32
Figure 9: Illustration of burrow fumigation	36

Tables

Table 1: Control methods by target species	10
Table 2: Summary of staged pest animal management programme	12
Table 3: Pest animal characteristics and behaviour descriptions	17
Table 4: Summary of pest animal management targets and thresholds.....	18
Table 5: Pest monitoring protocols/guidelines.....	24
Table 6: Predator/Pest animal trapping guidelines/protocols.....	30
Table 7: DOC trap audit/checklist.....	31
Table 8: Suitable VTAs for the pest animal control programme:.....	34
Table 9: List of recommended toxin options by target pest animal.....	35
Table 10: List of equipment required for this PAMP (approximate):	37

1.0 Introduction

1.1 Background

The Department of Corrections – Ara Poutama Aotearoa (**Corrections**) are seeking to redevelop the existing Auckland Prison Site at 530 Pāremoremo, Auckland to enable an increase in prisoner capacity.

This Pest Animal Management Plan (**PAMP**) has been prepared, on behalf of Corrections, as part of their suite of approvals under the Fast Track Approvals Act 2024 (**FTAA**) for the proposed Auckland Prison Capacity Increase.

Planting of an area of 28 hectares is proposed at Auckland Prison in accordance with a proposed Landscape Mitigation and Ecological Mitigation and Enhancement Plan (**LMEEP**), with specific ecological compensation and offset planting to enhance the ecological values of the Site.

This PAMP outlines the proposed pest animal control measures within the landscape and ecological enhancement area and the proposed Lizard Release Site (**LRS**) at Auckland Prison. It is intended to support:

- the Landscape and Ecology Implementation and Management (**LEIMP**) which provides details of the 28 hectare planting area, and requires details on pest management to support effective implementation and maintenance of planting (required by designation condition DES45 and resource consent condition LUC14).
- the Lizard Management Plan (**LMP**) for the Auckland Prison Site (required by condition WAA08 of the Wildlife Approval).

This plan has been prepared to align with the details and timeframes provided in the Plan (**LEIMP**) and the Lizard Management Plan (**LMP**), prepared by Boffa Miskell.

1.2 Purpose, Objectives and Scope of the PAMP

The objectives of this Plan are twofold:

- To protect any lizards relocated to the LRS from predation (**if** any lizards are salvaged during survey), from six months prior to the pre-construction lizard survey, until three years after the final lizard transfer.
- To protect new plants from browsing pest animals during establishment of the enhancement planting area (28 hectares), from the initial planting installation until five years after planting is completed.

The purpose of this plan is to provide the operational detail required to deliver effective, targeted pest animal management at the Auckland Prison Site. This plan details the best practice pest monitoring and control methodologies, guidelines, schedules, equipment required to guide those delivering the pest management activities at Auckland Prison.

This PAMP includes an outline of:

- An outline of pest animal management measures (Section 2.0) and target pest animal species (Section 3.0)

- Performance standard for pest control (Section 4.0)
- Stages approach to pest management (Section 5.0)
- Pest animal monitoring, control methods and schedule (Sections 6.0, 7.0 and 8.0)
- Operational review and reporting (9.0)

The PAMP is supported by operational details provided in the supporting Appendices (Appendix 1 to 8 of this PAMP).

1.3 Statement of Qualifications and Relevant Experience

This plan has been prepared by Adam Willetts (Ecologist/Biosecurity consultant at Boffa Miskell) and reviewed by Ian Boothroyd (Partner and Ecologist at Boffa Miskell). Their qualifications and experience are provided in Appendix 8 along with confirmation that this plan has been prepared in accordance with the Environment Court's Code of Conduct for Expert Witnesses.

2.0 Pest Animal Management Areas

2.1 Pest management project area (31.3ha)

Pest animal management shall be applied and maintained, within Area C (outside of the redevelopment Areas A and B), as per the methodologies of this plan. The pest management area will focus on suppressing browsing pest animals and those pests that predate upon native lizards. Figure 1, Map 1 outlines the proposed pest management project area.

2.2 Enhancement planting area (Area C)(28ha)

Enhancement planting is proposed over approximately 28 hectares within the pest animal management project area, which is located within Area C. Pest animal management is proposed over this entire area to protect enhancement plantings from browsing pest animal threat and shall be maintained for five years after the initial enhancement planting.

2.3 Lizard release site (1ha) and buffer area (2.5ha)

To accommodate any lizards that are captured during the pre-construction lizard survey and salvage, this plan will utilise an on-site lizard release area (LRS) suitable for lizards within the Auckland Prison Site. The proposed LRS and buffer areas are situated near the southern boundary of the wider Prison Site and are approximately 1ha (LRS) and 2.5ha (buffer area) in size (Figures 1-3).

Mice, rat, hedgehog, mustelid and feral cat management shall be applied within the LRS and buffer areas and shall be initiated at least six months prior to the pre-construction lizard survey/salvage. Management activities shall be maintained ongoing for three years after the final lizard transfer (only if lizards are salvaged and released into the LRS).

If no lizards are released into the LRS, then pest animal management targeting the predators of lizards in the LRS and buffer area will cease after the completion of the lizard survey and salvage operation. However, browsing pest animal management will continue as described above (including within the LRS and buffer).

A separate Auckland Prison Lizard Management Plan (Boffa Miskell 2025) has been prepared and clearly details the management of any lizards salvaged prior to construction.



3.0 Target Pest Animal Species

Nine introduced mammalian pest animal species have been identified as potential threats to indigenous biodiversity within the project area. Appendix 2 provides detailed characteristics of each pest animal to be managed under this plan, in accordance with the above objectives.

4.0 Performance Standards for Pest Control

Management targets in pest animal control relate to the “maximum allowable residual pest abundance” which allow native species to recover (Brown et al., 2015). That is, the management target for each species is the ideal goal that the control actions aim to achieve, and to meet the objective as set out above.

Pest animal targets, thresholds and response to exceedance of thresholds have been determined for this project and are detailed in Appendix 4.

5.0 Staged Approach to Pest Management

The pest animal control and monitoring programme will be split into clear stages to reflect the varied indigenous biodiversity protection requirements over time as part of effects management across the proposed redevelopment project (Figure 2). After initial knockdown of pest animals in each stage has been complete and the thresholds have been met, the intensity of management will reduce to a level that will aim to sustain the desired target pest indices. Appendices to this plan outline the specific operational details of the staged approach for pest animal monitoring and control, providing a clear summary of methods, activities and timings for pest management contractors to deliver the pest animal management programme.

Figure 2 below provides a flow chart of anticipated staging. Section 9 outlines a detailed table of staged activities, with a clear schedule of implementation and ongoing maintenance timing.

5.1 Stage 1: Browsing pest animal management

The initial pest management will focus on the protection of the enhancement planting area (Area C) from browsing pest animals, commencing at the implementation of the planting programme until five years after the final planting (approximately 7 years total based on current timing set out in the LEIMP). This programme will also include targeting browsing pest animals in relevant habitats of the LRS and the LRS buffer area.

5.2 Stage 2: Lizard predator management

The next stage of pest animal management will aim to protect any lizards released within the proposed LRS. The pest animal management programme within the LRS and buffer area shall be established at least six months prior to the commencement of the redevelopment construction. If any lizards are salvaged during the pre-construction lizard survey, then the LRS pest animal management shall continue ongoing until three years after the final lizard release. This will include the monitoring of lizard predators via chew card tracking and camera surveillance techniques.

The **ongoing** (post lizard release) maintenance of pest animal control targeting rats, mice, mustelids, hedgehogs and feral cats in the LRS and buffer area is **only required if lizards are released** into the LRS. If no lizards are salvaged and released, then the pest management within the LRS can cease. Browsing pest animal control in the LRS (possums, rabbits and hares) shall continue until five years after the final enhancement planting (the same approach applied to the wider enhancement planting area) (Area C).

5.3 Stage 3: Ongoing pest animal management

Once knockdowns (all areas) and the pre-construction lizard survey (LRS and LRS buffer area) are complete the pest animal management programme for each stage will shift into an ongoing pest animal management programme as outlined above.

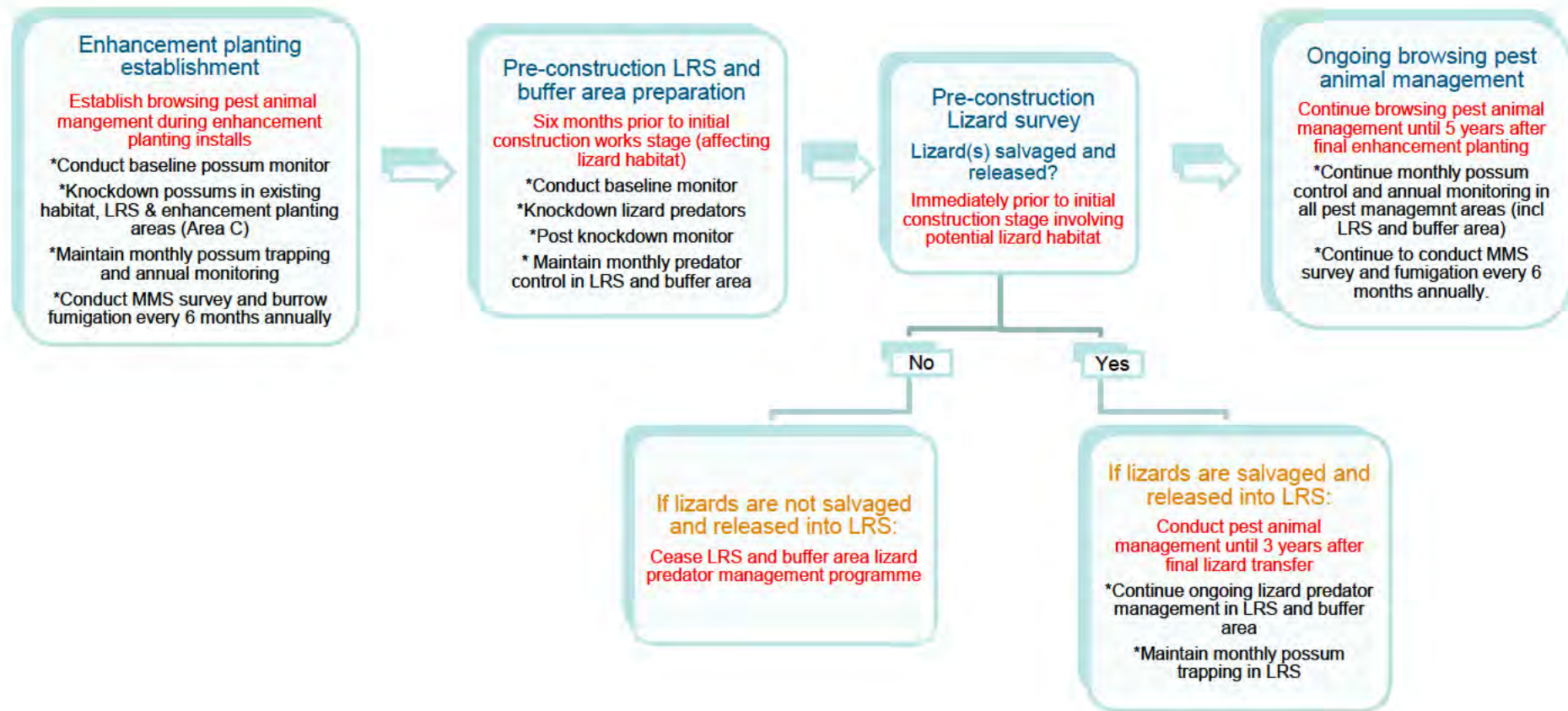


Figure 2: Staged pest management process flow chart.

6.0 Pest Animal Monitoring

Ongoing monitoring and adaptive responses are key to effective pest animal management, providing pest control managers with valuable data upon which to make timely, informed and more accurate decisions on the pest management programme. Monitoring residual pests and pest incursions is vital to ensuring the pest management programme is working effectively, the outcomes and objectives are being achieved, and any positive messaging can be shared with all stakeholders including the local community.

Within the pest management area (Area C), standardised monitoring techniques will be used to monitor pest presence and abundance against the intended targets, and to initiate further control if thresholds are exceeded (as stated in Section 4 and detailed in Appendices 3 and 4).



7.0 Pest Animal Control Methods

The combined and continuous use of high-quality pest animal trapping and VTA control is a very effective formula capable of suppressing pest species to low abundance across the landscape (Table 1). There are many factors that need to be considered to create an efficient trapping and VTA network, such as the behaviour of the target predator, efficacy of the trap or VTA, habitat and landscape types, and the pest control contractor's capacity and skills. Trapping/VTA operations need to be a dynamic process whereby pests are monitored regularly and efforts amended to reflect any changes to pest populations (adaptive management).

Pest animal control methods for this project will include an adaptive and integrated approach using approved single set kill traps, and the use of vertebrate toxin agents (VTAs).

Table 1: Control methods by target species

Target Species	Control Method/s	Area(s) of control
House mice	Vertebrate toxic agents/kill traps	LRS and LRS buffer
Possum	Kill traps	All management areas (including LRS and LRS buffer)
Ship rat	Vertebrate toxic agents/kill traps	LRS and LRS buffer
Norway rat	Vertebrate toxic agents/kill traps	LRS and LRS buffer
Mustelids	Kill traps	LRS and LRS buffer
Feral Cat	Live Cage Traps	LRS only
Hedgehog	Kill traps	LRS and LRS buffer
Rabbits and hares	Fumigation	Enhancement planting areas (Area C)

Appendix 5 provides a clear and detailed outline of pest animal control methodologies for this project, which will guide the delivery of the pest animal control operations.



Stage One: possum and rabbit pest management within enhancement planting areas and lizard release site

Stage Two: deployment of all devices in lizard release site and buffer area (6 months prior to lizard survey)

Stage Three: if lizards are released into the LRS - ongoing lizard predator management continues

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- SA3 possum trap (200m spacing)
- DOC200 double set mustelid trap (by catch - hedgehog and rat, 200m spacing)
- Rodent VTA bait station / rodent trap (25m spacing, 50m on buffer perimeter line)
- Feral Cat Live Cage Trap
- Proposed lizard release site
- Pest Management Area
- Release site buffer
- Lizard habitat planting
- Site boundary
- Existing fence lines
- Area A
- Area B
- Area C
- Area D

Figure 4

8.0 Schedule of staged pest animal monitoring and control

Table 2: Summary of staged pest animal management programme

Stage	Target pest	Site	Stage commencement timing	Frequency	Pest animal monitoring	Pest animal control	Equipment marking and data capture
Enhancement planting area installation (Area C) Objective: Reduce possum and rabbit browse threat.	Possum, rabbit and hares	All areas within pest animal management area (LRS, existing habitat and enhancement planting areas).	During implementation of enhancement planting.	One-off activities during start-up and knockdown of stage	Conduct 7-night chew card possum baseline monitor. Conduct initial MMS monitoring of rabbits and hares.	All possum traps (SA3) to be installed, lured and set throughout the entire pest management area. Conduct 28-day initial trapping knockdown of possums.	All devices must be marked on-site with plastic tag markers and the device code/number attached to the post, tree or device. All devices must be GPS location marked using the TrapNZ app. All trap catch and toxin uptake data must be recorded into TrapNZ at every check. Traps to be cleared of any caught animals, cleaned, re lured and reset
			Immediately after completion of knockdown.		Conduct 7-night chew card residual possum abundance monitor.	Conduct rabbit burrow fumigation based on MMS survey outcome.	
			After initial knockdown until pre-construction lizard survey.	Monthly	No monthly monitoring at this time.	Continue ongoing monthly possum control checks (remove caught animal, clean trap, re-lure and reset).	
				April and October	October; Conduct 7-night chew card monitor for possums in spring annually. Conduct biannual MMS monitoring of rabbits/hares.	Conduct biannual rabbit burrow fumigation (excluding LRS).	
LRS and LRS buffer installation Objective: Reduce rodent mustelid and feral cat threat to protect translocated lizards.	Rodents, mustelids, hedgehogs and feral cats	LRS and LRS buffer area.	At least six months prior to pre-construction lizard survey.	One-off activities during start-up and knockdown of stage	Conduct 7-night chew card rodent baseline monitor in release site (in conjunction with existing possum monitoring). Install and set camera traps focused on ezy lure/cage trap.	Install and conduct intensive VTA knockdown for 28-day period in release site. LRS = 25mx25m grid. LRS buffer area = 50mx50m grid (toxin only in VTA/kill trap stations at this stage). Install and conduct mustelid knockdown trapping and feral cat live cage trap pre-feed for 28-day period. Install VTA warning signs.	All devices must be marked on-site with plastic tag markers and the device code/number attached to the post, tree or device. All devices must be GPS location marked using the TrapNZ app. All trap catch and toxin uptake data must be recorded into TrapNZ at every check. Traps to be cleared of any caught animals, cleaned, re lured and reset
			Immediately after completion of knockdown.		Conduct 7-night chew card residual rodent and possum abundance monitor. Conduct camera trap check for mustelids and feral cats, and image analysis for all pests.	Install, lure and set D rat traps into all release site VTA/kill trap stations. Re-lure and set live cage traps to catch mode only if feral cat(s) are observed.	
			After initial knockdown until pre-construction lizard survey.	Monthly	Continue monthly camera trap checks/analysis for mustelids and feral cats.	Switch to ongoing monthly rat, mustelid and feral cat control checks (both VTA and D rat trap in stations). Continue monthly possum trapping checks. Check and maintain VTA signage as part of monthly visits to site.	
				April and October	Continue MMS monitoring of rabbit and hares in enhancement planting areas of LRS and LRS buffer area.	Conduct biannual rabbit burrow fumigation in enhancement section of LRS and buffer areas based on MMS results (if required).	

Stage	Target pest	Site	Stage commencement timing	Frequency	Pest animal monitoring	Pest animal control	Equipment marking and data capture
<p>Ongoing pest animal management.</p> <p>Objectives: Continue rodent, mustelid, hedgehog and feral cat control in LRS and LRS buffer (ONLY IF lizards are released).</p> <p>Continue possum suppression over entire pest management area.</p> <p>Continue Rabbit control & hare monitoring.</p>	Rat, possum, mustelid, feral cat, rabbits and hares	LRS and LRS buffer area (ONLY IF lizards are released into the LRS).	Immediately after the pre-construction lizard survey until 3 years after final lizard release (ONLY IF lizards are released into the LRS).	Monthly	Continue monthly camera trap checks/analysis for mustelids and feral cats.	Continue ongoing monthly rodent, possum, mustelid and feral cat control checks (no possum control in external buffer). Install, lure and set D-rat minimalist traps in VTA/kill trap stations.	
				April and October	<p>Late October; Conduct 7-night chew card monitor for possums and rodents in spring annually (4 weeks after rodent focused VTA pulse operation).</p> <p>Continue biannual MMS monitoring of rabbit and hares in enhancement planting section of buffer area.</p>	<p>Early October; Conduct annual spring VTA pulse/switch out.</p> <p>Continue biannual rabbit burrow fumigation (if required) in LRS buffer enhancement planting area.</p>	
	Possums, rabbits and hares	Enhancement planting areas existing habitat and LRS.	After pre-construction lizard survey until 5 years after final enhancement planting.	Monthly	Conduct 7-night chew card monitor for possums in spring annually (4 weeks after rodent focused VTA pulse operation).	Continue ongoing monthly possum control checks (remove caught animal, clean trap, re-lure and reset). Check and maintain VTA signage as part of monthly visits to site.	
				April and October	Conduct MMS monitoring of rabbits/hares.	Conduct biannual rabbit burrow fumigation.	

9.0 Operational Review and Reporting

This PAMP shall be reviewed and updated (if necessary) by Corrections or their project ecologist/biosecurity professional as required. Corrections or their representative shall monitor the outcomes of pest animal management programme against the planned objectives and targets.

The review and associated report(s) should be made available on request to key stakeholders of this project and relevant administering agencies (Department of Conservation and Auckland Council) on request.

If pest monitoring analysis reveals ongoing exceedance of thresholds (exceedance for more than two monitoring rounds), then additional improvements may be required to relevant pest control and monitoring activities. Advice on analysis and any subsequent changes shall be sought from suitably qualified biosecurity professionals.

10.0 New Technologies

Technological advancements are rapidly evolving within the pest/predator animal management space, with greater efficiency and control/monitoring capabilities over current options. AI is reducing the human labour requirement significantly and is now over taking human accuracy in species identification for monitoring and control.

It is recommended that this pest management programme consistently investigates and reviews new technologies that have been vigorously tested and proven successful and ethical in their application (i.e. meet NAWAC standards).

If budgets allow then this programme should look to adopt new technologies that will reduce costs, improve pest control/monitoring outcomes and increase the capability and accuracy of pest management going forward.

11.0 References

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Appendix 1: Pest Animal Characteristics

Table 3: Pest animal characteristics and behaviour descriptions

<p>Possoms (<i>Trichosurus vulpecula</i>)</p>	<p>Possoms are found in a diverse range of habitats, with highest densities in native podocarp-broadleaf forests. Possoms heavily browse on native vegetation and can eat bird eggs, chicks and invertebrates, negatively impacting the ecosystem. Home range size is strongly influenced by habitat. In native forests, typical home ranges are 1-2 ha, but ranges can be much larger in pine forest fragments (6-12 ha), and at dryland sites (22-60 ha). Home ranges of males are usually larger than those of females.</p>
<p>House mouse (<i>Mus musculus</i>).</p>	<p>Mice predate on some native species as well as competing for the foods they eat. They eat invertebrates, lizards, seeds, fruits, leaves, birds' eggs, fish eggs, chicks and insect larvae. Size: adult head and body 80 – 100mm in length; Tail 70 – 90mm. Weight: Male can weigh 25g, and the female 20g. Home ranges are smaller than those of rats and appear to be density and habitat dependent. In low density podocarp-broadleaf forest average home range area is around 0.6 ha.</p>
<p>Rats (<i>Rattus spp.</i>)</p>	<p>Both Ship rats (<i>Rattus rattus</i>) and Norway rats (<i>Rattus norvegicus</i>) feed on native vegetation, especially seeds in mast events, negatively impacting forest health. They are known predators of invertebrates, herpetofauna, and native bird eggs, chicks, fledglings, and adults. Home range size is inversely related to population density. At typical density of 2-9 rats/ha in podocarp-broadleaf forest, average ship rat home range size is 0.1-1.0 ha, while in low-density beech forest home ranges can be much larger at up to 11 ha. Norway rats occupy larger home ranges of approximately 0.8-21 ha in size.</p>
<p>Mustelids (<i>Mustela spp.</i>)</p>	<p>Stoats (<i>Mustela erminea</i>) are the most common and destructive mustelid in New Zealand. Stoats are found in all ecosystems, and breed once a year, however, they can produce up to ten young per litter, multiplying to uncontrollable levels quickly. Stoats seriously impact native avifauna, especially ground dwelling/feeding birds, such as kiwi and saddleback.</p> <p>Weasels (<i>Mustela nivalis</i>) can easily be displaced by stoats and because of this, are present in most New Zealand ecosystems, but not all, in low numbers. Even at low densities, weasels are known to impact native wildlife, including invertebrates herpetofauna, and birds. They produce two to three litters a season, with four to six young per litter.</p>
<p>Feral cats (<i>Felis catus</i>)</p>	<p>Feral cats are those living independently and not relying on people for survival. Feral cats are one of the most ferocious predators in NZ's ecosystem. They feed on rabbits, birds and bird eggs, rats, hares, bats, lizards, mice, wētā and other insects. In 2020, a feral cat caught in Canterbury had 17 skinks in its stomach.</p>
<p>Hedgehogs (<i>Erinaceus europaeus</i>)</p>	<p>Hedgehogs prey upon lizards, particularly in cooler periods when lizard activity slows. Hedgehogs also predate upon endemic birds' eggs and chicks, and invertebrates. Hedgehogs breed from spring (September) into autumn (May), have 4-7 young per litter, and can have up to two litters per year. Young hedgehogs become independent from their mothers at around 7 weeks old. Hedgehogs reach sexual maturity at around 253 days old.</p>
<p>Rabbits (<i>Oryctolagus cuniculus</i>) and Hares (<i>Lepus europaeus occidentalis</i>)</p>	<p>Rabbits breed rapidly and populations can recover quickly after being reduced by disease, control pressures or environmental changes. They eat a variety of plant matter including grasses, seedlings and crops. Rabbits can breed rapidly. Females may be pregnant for 70% of a year and can produce a total of 20 – 50 young each annually. Some wild rabbits may live up to seven years, but life spans are generally much shorter. Hares cause damage to new tree plantings and horticultural crops, amenity plantings and shelter belts by eating tree bark and young shoots.</p>

Appendix 2: Pest Animal Targets and Thresholds

The proposed management targets for mice, rats, possums, hedgehogs and mustelids, as well as the thresholds for initiating additional control measures, are based on the Chew Card Index (CCI), or camera trapping index (2000CH) for each target species. The target species are those that pose a threat to establishment of vegetation and/or to lizards released to the LRS.

We recommend the use of the CCI over Tracking Tunnel Index (TTI) as it provides a single measure for mice, rats, hedgehogs and possums. Additionally, CCI is more sensitive to the detection of mice at low densities than TTI.

Mice are only a target in the LRS and associated buffer, however conducting chew card monitoring for rodents in other sites of the pest management area (as part of the possum monitoring) will coincidentally provide data on mice absence/presence and abundance which may be valuable information into the protection of lizards on-site. We note that the camera trapping index is still in development by DOC, and as such targets and thresholds for mustelids and feral cats may need to be updated as new information becomes available.

The proposed management targets for each species, as well as the thresholds for initiating additional control measures (based on the monitoring results for each species), are provided in Table 4. If monitoring identifies that the targets are not met on any single monitor, this will trigger a requirement for further control via response to exceedance of thresholds (as per Appendix 3).

Table 4: Summary of pest animal management targets and thresholds

Pest Species	Management Target	Threshold	Monitoring frequency
Mice	<5% CCI (year-round)	≥10% CCI (year-round)	CCI – an initial CCI survey prior to and after each initial knockdown.
Rats	<5% CCI (year-round)	≥10% CCI (year-round)	
Possums	<5% CCI	≥10% CCI	A CCI survey to be completed within 4 weeks after each annual VTA pulse
Hedgehogs	<5% CCI	≥10% CCI	
Mustelids	5 detections per 2000 CH ¹	>10 detections per 2000 CH ¹	Initial survey prior to and after each initial knockdown & then monthly until lizard survey.
Feral Cats	Zero detections	Zero detections	
Rabbits and Hares	Modified McLean Scale (MMS) level 2 or below for 100% of survey lines	MMS level 3 on all survey lines	Every six months annually (two weeks post fumigation of burrows).

¹ These numbers are based on the draft DOC best-practice guidelines for targets and thresholds for mustelids using camera trap indices. The completion of the new DOC best practice guidelines is still in progress.

Appendix 3: Response to Exceedance of Thresholds (EOT)

The use of thresholds facilitates adaptive management and ensures that pest animal populations are continuously and effectively suppressed. If monitoring identifies that the thresholds for pest control targets have not been achieved, this will trigger a requirement for further control.

If the threshold is exceeded for mice, rats and hedgehogs:

- Up to two additional ground based toxic control operations targeting mice and rats (depending on monitoring results) will be repeated after monitoring, as per the methods outlined in this pest animal management plan (PAMP). The additional toxin round shall be conducted within two weeks of the threshold being exceeded.
- Trap checks and rebaiting of traps will need to increase to once every two weeks, if not already at this interval.
- A follow-up monitoring effort within four weeks after the completion of any additional toxic control operations needs to occur to determine whether the mice population has been successfully reduced to below the threshold. If the threshold falls below the management target, then additional monitoring will not be required.

If the threshold is exceeded for possums, mustelids and feral cats:

- Trap checks and rebaiting needs to immediately increase to every two weeks, if not already. Lures in traps suitable for mustelids should be switched to fresh rabbit if available, or salted rabbit if fresh rabbit is not available. Lures for possums should be switched to one of the alternative options as listed in Table 7. Multiple lures can be used in each trap if necessary (so long as they lures do not interfere with one another).
- A follow-up camera trap analysis monitor shall occur within four weeks after the second EOT trap check, to determine whether the mustelid and/or possum population has been successfully reduced to below the threshold.
- If, after two successive EOT rounds, increased trap checks and rebaiting do not return the desired mustelid or possum indices below the threshold, other methods will need to be investigated such as the use of remote reporting, self-luring, auto resetting Ai traps (these devices will be available to purchase or rent from 2026).

If the threshold is exceeded for rabbits and hares:

- Survey the entire enhancement planting area (Area C) for any missed burrows and repeat the fumigation of burrows throughout the grassland habitat(s) of the pest management area.
- A follow up MMS survey shall be conducted two weeks after any EOT fumigation to determine whether the subsequent fumigation operation has been successful in the reduction of rabbits and hares below the acceptable threshold.

Appendix 4: Pest Animal Monitoring

This section outlines the monitoring methods and protocols for monitoring mice, rats, possums, hedgehogs, mustelids, and feral cats using chew-cards and camera traps (Figures 5 and 6). Kill trap catch data can also be used alongside the other monitoring methods to support and guide pest management monitoring and decisions, but this data will not be used to provide formal pest indexing in this programme. Approximate locations of devices are shown in Figure 2, Map 2.



Figure 5: Chew card with possum bite marks



Figure 6: Browning trail camera focusing on two orange bait stations

Monitoring for mice, rats, possums and hedgehogs

Chew cards are a common, cost-effective, and sensitive detection and monitoring tool suitable for determining pest presence and to provide a coarse index of relative abundance of a range of pests, including rats, mice, hedgehogs and possums. Chew cards, rather than wax tags, have been found to be more effective at attracting possums and rodents, and are recommended by the Department of Conservation (DOC) in their National Biodiversity Monitoring and Reporting Framework (Forsyth et al., 2018).

Monitoring of pests will be split into stages, with initial knockdown monitoring in the establishment phases of the pest management programme and annual chew card monitoring thereafter (or as required if exceedance of thresholds occurs). The ongoing annual spring monitoring is to align with toxin pulses in the LRS and buffer (if lizards are released), seasonal pest abundance variations, and pre/post native bird breeding seasons.

Chew cards will be deployed for seven nights, then collected and analysed for pest animal identification, to calculate the CCI for each species and to ascertain ongoing effectiveness of the control programme on mice, rats, possums and hedgehogs. Pest control contractors for this project shall use the following protocol for chew card monitoring and management; [Possum Population Monitoring](#). Refer to Table 5 for methods, guidelines and frequency, and Section 9 for scheduling details

Enhancement planting establishment – possum monitoring only:

Chew cards will be deployed on all chew card lines over the entire pest management area (Area C, Map 2) prior to, and immediately after the initial knockdown of possums in order to determine the possum abundance baseline, and the residual success of the possum knockdown. All chew card lines over all of the pest management area (including the line within the LRS) will be utilised due to the fact that possums have a large roaming range, especially as new males move into territories and population abundance is reduced due to control. Therefore, possums living and roaming through areas adjacent to the planting enhancement areas also pose a threat to the new plants over the establishment stage and beyond and shall be controlled to protect the planting areas.

Pre-construction LRS and buffer area preparation – mice, rat and hedgehog monitoring:

Six months prior to the pre-construction lizard survey chew cards will be deployed on the LRS and buffer area monitoring line prior to, and immediately after the initial knockdown has been completed. This monitoring will determine mice, rat and hedgehog baseline abundance prior to, and the residual abundance after the rodent VTA knockdown.

Ongoing pest animal monitoring – possum monitoring, mice, rat and hedgehog (if lizards are released into the LRS):

Chew card monitoring for possums will be conducted over all five monitoring lines annually in spring each year until five years after the final enhancement planting. **If lizards are released into the LRS**, then these chew card monitoring surveys will be used to determine ongoing mice, rat and hedgehog abundance within the LRS also, until 3 years after the final lizard release.

Monitoring for mustelids and feral cats

Camera traps have become an increasingly used tool in the past five years (e.g. (Gillies & Brady, 2018; Glen et al., 2013, 2014). Cameras are much more effective for detecting the larger pest species (cats, ferrets and stoats) (Norbury et al., 2017), including in comparison to standard tracking tunnels (Department of Conservation, 2020; Smith & Weston, 2017; Dilks et al., 2020).²

Camera trap data will inform the pest management programme if mustelids and/or feral cats are present within the LRS and buffer area prior to and post any release of lizards. This information will guide any requirement for further control of these pest animals through the exceedance of thresholds and/or adaptive management measures.

Camera trap monitoring will be staged, with ongoing monitoring dependent upon lizard salvage and release into the LRS.

Pre-construction LRS and buffer area preparation stage:

Six months prior to the pre-construction lizard survey, three Browning Dark Ops Pro trail cameras will be installed and utilised within the LRS and buffer area to monitor the presence of mustelids and feral cats in this site prior to and after the 28-day trapping knockdown period. SD cards will be recovered, replaced and analysed at each check of the DOC200 and live cage traps in the LRS and buffer area during the knockdown period. Each camera will focus on an automated EzyLure lure dispenser. After knockdown and until the pre-construction lizard survey camera trap monitoring will switch to a monthly check frequency.

Ongoing mustelid/feral cat presence monitoring:

If lizards are released into the LRS the trail cameras shall continue monthly monitoring of mustelids and feral cats, coinciding with the monthly DOC200 and live cage trap checks within the LRS (if cats are observed) and the buffer area. SD cards will be recovered, replaced and analysed at each check of the DOC200 and live cage traps in the LRS. This monitoring shall continue on for three years after the final lizard release into the LRS.

The guideline for using camera traps can be found via the following link: [DOC Interim Trail Camera Guide v1.1.1.](#)

Refer to Table 5 for methods, guidelines and frequency, and Section 9 for scheduling details



Figure 7: Browning Dark OPS Pro trail camera

² Note: DOC's best practice guidelines for camera trapping (and potential indices from camera trap data for key target species) is currently under development. Camera trap methods and targets outlined in this document are based on the draft recommendations (Gillies, 2021) and should be updated based on the final guidelines as they become available

Monitoring for rabbits and hares

Browsing rabbits and hares:

Due to the potential damage to the enhancement planting over the establishment phase, and the ability to only utilise fumigation for rabbit control (Appendix 5), it is vital that monitoring of rabbits and hares is carried out as prescribed in this plan. Monitoring information gained will determine if rabbit control is effective, and whether or not further adaptive management measures for rabbits and hares will be required. Hares are not expected to be a significant pest threat to the plants but will still be monitored alongside rabbits to ensure the hare population does not increase to a higher threat level.

Monitoring for rabbits and hares shall be conducted twice annually after each fumigation round and for 5 years after the final enhancement planting (April and late October). Monitoring will require using the Modified McLean Rabbit Infestation Scale (MMS) survey technique, as outlined in Section 4 of [A5-Rabbit-guide-minor-revision-2020.pdf](#).

Monitoring for rabbits and hares will be conducted throughout the grassland habitat of the pest management area (Area C), including the LRS and buffer area. The monitoring programme proposes pest management personnel walking five 200m long transect lines and surveying for rabbit/hare sightings and faecal droppings every 50m. The Bionet A5 Pest Rabbit monitoring and control guide (link provided above) provides all the surveying methods and data analysis information required to carry out this monitoring. Gloves must be worn when handling faecal matter and binoculars will be used to aid sightings.

If the threshold for rabbit and hare populations is exceeded, then further fumigation efforts will be required as per Appendix 3. If continued fumigation does not reduce rabbit populations below the set threshold, then other control options may need to be assessed and adapted into an agreed variation of this plan at that time.

Appendix 5 provides further detail on rabbit and hare monitoring. Any observational pest sightings of rabbits and hares must also be recorded in the monitoring section of TrapNZ as per the data management guidelines in Appendix 6.

Table 5: Pest monitoring protocols/guidelines

Pest Species	Protocol/guideline	Distribution	Frequency
Mice, rats, Possums and Hedgehogs Figure 2, Map 2	Chew card index (CCI) Possum Population Monitoring Analyse chew cards and record in TrapNZ and spreadsheet	10 Chew cards per line, cards spaced 20 m apart along lines; 200 m between lines. Up to 6 lines in suitable habitat	Conduct chew card monitor prior to and within 2 weeks after 28-day initial knockdown of possums (enhancement planting area (Area C) & LRS) and mice, rats, hedgehogs (LRS/buffer only). Conduct chew card monitor annually in October. CCI – Seven-night monitor, pre lured cards.
Mustelids, and Feral Cats. Figure 2, Map 2	Trail Camera with Eyzylure or meat lure Predator Detect using Camera Guide	3 cameras in the LRS and buffer area (Map 2) Follow Interim DOC trail camera guide v1.1.1.	SD card from each camera shall be recovered, replaced and analysed at every initial knockdown check over the 28-day period. SD card from each camera shall be recovered, replaced and analysed during each ongoing monthly trap check round in the LRS and buffer area (only if lizards are released). Analyse data and record on TrapNZ
Rabbits and Hares Figure 2, Map 2	MMS surveys A5-Rabbit-guide-minor-revision-2020.pdf	6 transect lines with 5 observation points spaced every 50m along each line.	Twice per annum, every 6 months (April and October)

Appendix 5: Pest Animal Control

Initial pest animal knockdowns:

Background

The objective of the initial pest knockdown is to significantly reduce the abundance of possums over the entire pest management area, and the predators of native lizards in the LRS and the LRS buffer areas. The knockdown of target pests prior to habitat removal will also increase the likelihood of indigenous species breeding and recruitment success for the following season. All pest control devices shall be installed **at least two weeks prior** to first use to reduce the likelihood of neophobia (fear of new objects) matter in the target pest animals.

Initial trapping knockdowns

An initial kill trap knockdown shall be carried out within:

1. **The enhancement planting areas (Area C):** During the enhancement planting installation (Includes the possum traps in the LRS and the LRS buffer area).
 - **Possums:** An initial 28-day knockdown of possums using kill traps shall occur in the planting enhancement areas.
2. **The LRS and LRS buffer area:** At least **six months** prior to the pre-construction lizard survey and at the same time as the VTA initial knockdown.
 - **Possum trapping:** Already initiated at the enhancement planting install stage.
 - **Mustelid trapping:** The five mustelid kill traps (DOC200 double set) shall be installed, lured, set and checked/rebaited on the 28-day initial knockdown frequency.
 - **Feral Cat trapping (LRS only):**
 - **Pre feed period:**
 - Two feral cat live cage traps shall be installed, lured **but NOT set** (wire the trap door open) within the LRS (Map 3).
 - The live cage traps shall be in this pre-feed mode for at least 28 days.
 - Trail cameras shall be set and focused on the traps and be checked for feral cat activity on the same 28-day initial knockdown frequency.
 - **Live trapping period:**
 - After the 28-day initial pre feed period (or earlier if deemed necessary), **if any cats were observed** on trail camera footage, the live feral cat cage trap shall be re-lured with the same lure(s) and set to catch mode.
 - Under the Animal Welfare Act (1999), the live cage trap **MUST** be checked every day after being set (within 12 hours of sunrise).
 - Trapping will continue until the observed cat(s) is/are caught. If the cat(s) is/are not caught after 7 days, the lure shall be changed to another recommended lure (see table 5). If the cat(s) is/are still not caught after 14 days from the initial baiting, live cage trapping shall be shut down, lure removed, and a decision will be made by the project herpetologist whether or not to keep trapping or change control technique at that time.

- All cats caught in a live cage trap **MUST** first be fully assessed by an independent Veterinarian prior to any further actions. The safest and most transparent/independent cat identification assessment method is to take all captured cats to the nearest Veterinarian Centre as soon as practicable.

Upon finding a cat captured in a live cage trap:

- Wire the live cage closed with the cat inside the cage,
- Cover the cage with a clean cloth and keep in a cool place whilst transporting,
- Take the cat in the cage to the nearest Veterinarian Centre and have the Veterinarian specialist scan the cat for microchips,
- If the cat has a microchip and/or pet collar, the registered owner is to be contacted and informed they need to recover the unharmed cat from the Veterinarian Centre. The registered owner **MUST** be clearly informed that:
 - the cat has been caught in an area of ecological value and;
 - all cats pose a significant risk to native species and need to be managed by owners,
- If the cat has no microchip or pet collar to identify and contact a registered owner, then the Veterinarian Centre shall decide on the fate of the cat either by:
 - Contacting the SPCA, and/or the local council to manage the cat's future or;
 - Ethical euthanasia by the Veterinarian.

NOTE: No **rodent** trapping via the VTA/kill traps will take place during the initial knockdown stages, only VTA will be used for rodent knockdown. D minimalist traps will be added into the stations after knockdown at which point both the trap and VTA will be set/made available in the VTA/kill trap stations.

Initial VTA Knockdowns

An initial rodent knockdown using VTAs shall be carried out within:

1. **The LRS and LRS buffer area:** at least **six months** prior to the pre-construction lizard survey. This is to reduce the predation threat from mice and rats on lizards in this site.

All VTA/kill trap stations shall be initially loaded with the chosen VTA from Table 6, and the maximum allowable volume of toxin added to the station.

NOTE: No **rodent** trapping via the VTA/kill traps will take place during the initial knockdown stages, only VTA will be used for rodent knockdown. D minimalist traps will be added into the stations after knockdown at which point both the trap and VTA will be set/made available in the VTA/kill trap stations.

Frequency of VTA and kill trap checks during initial knockdowns

The VTA bait stations and possum/mustelid kill traps used for each initial knockdown stage shall be checked, poor condition bait/toxin/dead animal removed (if any) and catches/toxin take recorded in TrapNZ. Each device shall be topped up/re-baited at the following intervals after the install date:

- o Day 3, Day 7, Day 14 and Day 28

Table 2 provides a schedule of VTA and trapping activity requirements.

Ongoing pest animal control:

After the 28-day initial knockdown period has been completed and proven successful via monitoring for each stage/site, the pest animal control programme within that stage/site shall switch to an ongoing maintenance schedule with specific timeframes related to the target pest animal and the control area:

1. From completion of knockdown until the pre-construction lizard survey

- **Possums:**
 - Entire possum trap network will continue to be checked/serviced **monthly** over this period
- **Rabbits and hares:**
 - Continue biannual rabbit burrow fumigation
- **Rats, mustelids, hedgehogs and feral cats:**
 - All traps in the LRS and LRS buffer area will be checked **monthly**, including VTA top-up service during the same check.

2. Immediately after the pre-construction lizard survey, salvage and release is completed:

- **Possums:**
 - Continue check/service of all traps **monthly** for **5 years** after the final enhancement planting
- **Rabbits and hares:**
 - Continue biannual rabbit burrow fumigation for **5 years** after the final enhancement planting
- **Rodents, mustelids, hedgehogs and feral cats** (feral cats in LRS only):
 - If lizards are **not released** into the LRS – all lizard predator management within the LRS and LRS buffer area **will cease**.
 - If lizards **are released** into the LRS:
 - All traps and VTA stations in LRS and LRS buffer area will be checked/serviced **monthly** for **3 years** after the final lizard release.

Pest animal trapping:

The recommended pest/predator control trap types for the pest control programme are described throughout the following sections, including the required distribution, frequency of checks, lure required and other key considerations (Table 5). Links to current best practice guidelines are also included in the table and shall be used by all pest control managers and personnel to deliver all pest management activities.

Note: Rodent traps will only be added to and set within the VTA/trap stations once knockdown in the LRS and LRS buffer is complete.

Trap maintenance All traps need to be regularly checked, reset and re-baited when required, and always maintained to a high standard to ensure that:

1. Lures remain attractive to target pests and do not become depleted or rotten;
2. The trap is regularly tested to ensure it is mechanically sound including checking for worn pivots and weakened springs and that its set to the correct trigger weight;
3. Access to traps remains open i.e. the trap has not become overgrown, and if so, any obstructing vegetation is either sprayed or cut back;
4. Traps are secured to prevent disturbance and removal by larger pest animals/stock; and
5. Traps are clean and free of algal growth or other substances/debris that may make it unattractive to the target animal.

During routine trap checks, triggered traps should be cleared, reset, and rebaited with fresh bait. Untriggered traps should be set off, reset, and rebaited with fresh bait. Once per year in spring, all traps shall be audited, comprising a full clean (e.g. with a wire brush to remove mould, fur and other debris), calibrated and undergo a functioning test according to the checklist in Appendix 1.

Table 6: Predator/Pest animal trapping guidelines/protocols.

Target Species	Control device and guidelines	Distribution	Frequency	Lure options (Switch out lures based on seasonality food sources).	Other considerations
Possum.	*SA3 possum trap Predator Free 2050 – A practical guide to trapping sa3-possum-trap	Traps spaced at least 200m apart in suitable habitat throughout the management area	Initial knockdown – Trap checks on day 3, 7, 14 and 28. Ongoing control - Trap check monthly to remove any catches and rebait/reset. Each monthly visit – If not sprung, open and close kill bar several times to keep trigger and springs in good working order.	Primary lure = Smooth in a tube or Possum Dough (Cinnamon or Aniseed) Additional lure options: Half an apple smeared with peanut butter Rub possum 'blaze' on tree/post above and below the trap (Blaze = 50% white flour, 30% icing sugar, 20% cinnamon).	A wooden post or tree trunk will be required to attach the trap to. Place trap in areas well hidden from children, public and any roads.
Stoat, weasel, rat, hedgehog. <i>Note: Ongoing control after pre-construction lizard survey only If lizards are released into LRS)</i>	DOC200 double-set Predator Free 2050 – A practical guide to trapping DOC Skillable video	Traps spaced on a grid within the LRS and LRS buffer area	Record catches and any sprung & empty traps.	Primary lure = Poa uku long life lure (mustelid) and/or Salted Rabbit Additional lure options: Fresh rabbit pieces Hen eggs (preferably uncleaned) during winter months (May – August incl) Connovation Eggsellent Auto dispensing lures ALD (egg mayo) or Ezylure	Calibration service traps every 6 months Can add automated lure dispenser to roof of trap. Has potential to also capture hedgehogs, Norway rats and Ship rats. Place trap in areas well hidden from children, public and any roads.
Mice <i>Note: Ongoing control after pre-construction lizard survey only If lizards are released into LRS)</i>	D-Rat trap (Minimalist) I & M Toolbox - Animal pests - DOC snap trap guide v1.3	Within the LRS on 25mx25m grid Within the LRS buffer area on 50mx50m spacing	No D rat trapping during initial knockdown. Ongoing control - Traps checked monthly (LRS & buffer) to remove any catches and rebait/reset. Each visit – If not sprung, set off trap and reset to keep trap in good working order Record catches and sprung & empty traps	Primary lure = White chocolate buttons Additional lure options: Peanut Butter PCR Rat and Possum lure Connovation Erayz Connovation Eggsellent	Set D-Rat traps to 'Mice' mode Place trap in areas well hidden from children, public and any roads. Place VTA/kill trap station under cover to reduce sunlight heating up the station and spoiling bait/toxins.
Feral cat <i>Note: Ongoing control after pre-construction lizard survey only If lizards are released into LRS)</i>	Live cage trap Feral Cat monitoring and control guidelines	Two live cage traps at either end of the LRS.	Pre-feed period (trap lured but not set), checked days 3, 7, 14 & 28. Trapping period: If a cat is observed during the pre-feed period, live cage trapping for feral cats shall be implemented in the LRS, and the trap MUST be checked every day within 12 hours of daylight	Primary lure = Fish meat (fresh) Additional lure options: Fresh chicken pieces Fresh rabbit pieces Connovation Lure it Salmon	Trail camera to focus on the trap and images to be checked at same 28-day frequency over pre feed/knockdown period. Ongoing monthly service/check if/when cat(s) are observed on camera traps.

See **Figure 3, Map 3** for approximate device locations.

*NOTE: SA3 traps have been chosen over other multi-kill option traps (e.g. SA2 or AT220) due to the specific possum target capability of these traps. This is to avoid potential kills of non-feral cats via multi-kill traps.

DOC trap audit/checklist:

Table 7: DOC trap audit/checklist

	Performance Standard	Evidence
1.	Trap is set correctly	<ul style="list-style-type: none"> a) Correct bait for the current month is positioned in the holder. b) Trigger plate is angled approximately horizontal and as close to the baffle as possible. c) All trap plates move freely when the trap is set (springs are tensioned in a set position) d) The trap box is marked correctly with the trap number.
2.	Trap is secured correctly	<ul style="list-style-type: none"> a) Trap is secure in within the tunnel and correctly positioned. b) All mesh is securely fixed to the trap box with no gaps other than the opening aperture which shall measure no greater than fifty millimetres square. c) Internal baffle is in line with the trigger plate d) Tunnel lid is secured firmly
3.	Trap functions correctly	<ul style="list-style-type: none"> a) The trap can be sprung by gently lowering a 100 g weight onto the distal end (end furthest from the hinge) of the trigger plate. b) When it sets off the moving parts do not touch any part of the tunnel or baffles c) Double set traps do not spring off 'sympathetically' i.e. when one trap is sprung by a dummy capture (e.g. rolled newspaper ~40 mm diameter) the other trap remains set. d) All moving parts on non-stainless-steel traps are lubricated with builder's pencil or graphite powder so that they move freely without binding when the trap is actuated.
4.	Trap is sited correctly	<ul style="list-style-type: none"> a) The trap box is positioned in such a way that it is unlikely to be damaged. b) The trap box is seated firmly on the ground so that it is stable and does not move in any direction when moderately firm pressure is applied to it (palms placed flat on top of the box at opposite ends). c) Tunnel has been pegged to the ground if specified.
5.	Trap is cleaned correctly	<ul style="list-style-type: none"> a) The entire trap is substantially free of animal matter (fur, tissue and bone) from previous captures. b) Any uneaten bait and captures have been discarded at least 5m from traps and away from waterways. c) Both ends of the tunnel are clear of vegetation to 300mm. d) Tunnel is in good condition. e) Both ends of the tunnel are clear of vegetation to 300mm. f) Tunnel is in good condition.

Pest animal vertebrate toxin agent (VTA) control:

Only rodents will be targeted with VTAs, and only within the LRS and LRS buffer areas in this pest animal management programme.

Best practice vertebrate pest animal control in New Zealand recommends using vertebrate toxin agents (VTAs) to compliment trapping regimes. For this project specific VTAs should be used to target rodents contained in lockable bait stations, specifically the 'Vanguard' VTA/kill trap stations (Figure 8).



Figure 8: Vanguard VTA/kill trap station

A VTA/kill trap station network targeting rodents will be installed and maintained on a grid within the LRS and LRS buffer areas, which will supplement the mustelid/rat trap network (DOC200s/D rat minimalist).

1. Six months prior to the pre-construction lizard survey

- **Within the LRS:**
 - VTA/kill trap stations will be spaced on an intensive 25mx25m grid to target mice as well as rats which threaten lizards.
- **Within the LRS buffer area:**
 - VTA/kill trap stations will be spaced 25m apart around the outside of the LRS and 50m on the buffer area perimeter to suppress rats (and some mice) which threaten lizards in the LRS through reinvasion.
- **Within both the LRS and LRS buffer area**
 - An initial 28-Day knockdown shall be implemented initially
 - After successful knockdown all VTA/kill trap stations will have a D-Rat minimalist trap to each station and set.
 - The VTA/kill trap stations must be checked/topped up **monthly** until the pre-construction lizard survey is complete.

2. After the pre-construction lizard survey

- **Within the LRS and LRS buffer area**
 - **If lizards are released** into the LRS then the VTA programme will continue to be checked and serviced/topped up **monthly** until **three years** after the final release of any lizards into the site,
 - The ongoing VTA programme will include the annual spring VTA pulse/switch out.
 - **If lizards are not released** during lizard survey and salvage the rodent VTA programme within the LRS and LRS buffer area will **cease**.

3. Annual spring VTA switch out/pulse

As detailed above, if lizards are released into the LRS then the VTA programme shall continue on with monthly servicing and top-up checks. The ongoing control aims to provide continuous intensive protection to lizards to support survival and breeding recruitment outcomes.

However, pest animal control operations utilising VTA as a continuous control method need to switch out/pulse an alternative VTA regularly to reduce the likelihood of potential toxin shyness in the target animals (rodents). If this is not implemented there is a high chance rodents will become 'shy' to the toxin being continuously used and avoid consuming the toxin baits and/or consuming a non-lethal dosage which will lead to aversion to that toxin.

To remove any potentially toxin shy rodents it is recommended that an alternative VTA is 'pulsed' through the entire bait station network **once per annum** in spring:

- All VTA/kill trap stations shall have all previous VTA removed and disposed of as per manufacturer label. Each station shall be loaded with one of the recommended VTA types and volume from the "pulse" column within Table 7.
- The stations will then be checked, poor condition bait removed (if any) and topped up (as per Table 7) after week 2 and week 6 and then be left for a further 6 weeks (total 12 weeks from initial VTA loading).
- Once the pulse operation has been completed the 'pulse' VTA will be replaced with an alternative 1st generation anticoagulant VTA and continue back on the monthly VTA service/check regime until the following spring.
- All pulse VTA to be removed and disposed of as per manufacturer label.
- The VTA chosen **must be different** to the VTA used prior to the pulse operation
- A post VTA pulse chew card monitoring survey on the monitoring line within the LRS and LRS buffer area must be conducted within four weeks of completion of the VTA pulse operation.

The D-rat minimalist traps within the VTA/kill trap bait station shall not be lured and set during a pulse operation.

Important note: If there is reasonable toxin wastage over a prolonged period then the VTA programme can be reviewed further by a suitably qualified biosecurity expert and amounts/frequency of checks reduced (in certain areas) if deemed viable. There should never be VTA availability below the required amount for a lethal dosage for rodents, as this can cause permanent aversion to that particular VTA by rodents. Buffer areas and boundary stations connected to rodent habitat should continue to be maintained with higher VTA quantities as the risk of invasion and the associated uptake of the VTA is far higher at these sites.

Table 8: Suitable VTAs for the pest animal control programme:

1st generation, non-secondary poison risk VTA options.		1 st & 2 nd generation, low secondary poison risk VTA option
D Block extreme (Diphacinone 0.05g/kg)	Pindone Pellets (Pindone 0.05g/kg)	Double Tap (Diphacinone 0.05g/kg and Cholecalciferol 0.60g/kg)
D block extreme is a slow acting first-generation anti-coagulant that is used for rodent control. Rodents will consume the toxin at the base station as the blocks are pinned into the station and too large for rats to carry away and cache.	Pindone pellets are a slow acting first-generation anti-coagulant that is used for rodent control. Rats will remove Pindone pellets from bait stations and cache for later consumption. Consequently, mice will consume the pellets at the bait station leaving a powdery residue in the base of the bait station.	Double Tap is an acute acting toxin (due to the second-generation toxin cholecalciferol) and must therefore only be used in pulsed operations (not made continuously available for more than 12 weeks). Double Tap has very low risk of secondary poisoning.
D block extreme does not need to be pre-fed (but toxin stations should be installed and allowed to 'weather in' for at least two weeks prior to the first loading to reduce rodent neophobia)	Pindone pellets do not need to be pre-fed (but toxin stations should be installed and allowed to 'weather in' for at least two weeks prior to the first loading to reduce rodent neophobia)	Double Tap pulse operations must be pre-fed (Double Tap prefeed) for two weeks prior to Double Tap toxin install.
D block extreme can be used continuously to suppress rodent populations effectively all year round	Pindone can be used continuously to suppress rodent populations effectively all year round.	All Double Tap toxin must be removed after 12 weeks from install.

Note: Other first generation VTAs (DITRAC and Ratabate) are potential alternative options if monitoring proves the above VTA's are not providing successful results. New VTA options are currently being developed (e.g. Norbormide rat specific VTA) and should be considered when/if proven effective for pest control within New Zealand.

Table 9: List of recommended toxin options by target pest animal

Toxin options and guidelines	Target species	Description	Quantity of Toxin required (Per station).			Timing
			Pre-feed	If using for Knockdown or Pulse operations	If using for ongoing continuous use	
1 st gen VTA option 1: Pindone Pellets (0.05g/kg Pindone) Pindone Pellets Possums & Rats	Rodents	1st Generation anticoagulant. Low risk of secondary poisoning to dogs. Low risk to non-targets and native wildlife. Antidote - Vitamin K. Very effective on rats, less effective on mice.	Pre feed not required	All VTA/kill trap stations Initial load 250g per station. Top ups on 28-day cycle (knockdown) or at week 2 and 6 (pulse): 200g per station, per top up check	All VTA/kill trap stations: 125g per monthly top up (in clear, tied plastic freezer bag).	If used for: Initial Knockdown – at the beginning of each knockdown stage (as per Section 6.4.2) Pulse operations – In spring <ul style="list-style-type: none"> Load initial amount of VTA in all stations, top up after week 2 and week 6, leave out for a further 6 weeks (12 weeks from initial VTA load) then remove Continuous top ups – monthly from knockdown until lizard survey.
1 st gen VTA option 2: D Block extreme (0.05g/kg Diphacinone) D Block extreme best practice D-Block Extreme SDS	Rodents	1st Generation anticoagulant Low risk of secondary poisoning Antidote is Vitamin K. No CSL required. Minimal risk to native birds and non-target species. Very effective on rats and mice.	Pre feed not required	All VTA/kill trap stations Initial load: 336g per station (12x28 g blocks). Top ups on 28-day cycle (knockdown) or at week 2 and 6 (pulse): 224g per station, per top up check (8x28g blocks)	All VTA/kill trap stations: 118g (6x28g blocks) per station per monthly top up (in clear, tied plastic freezer bag).	If used for: Initial Knockdown – at the beginning of each knockdown stage (as per Section 6.4.2) Pulse operations – In spring <ul style="list-style-type: none"> Load initial amount of VTA in all stations, top up after week 2 and week 6, leave out for a further 6 weeks (12 weeks from initial VTA load) then remove Continuous top ups – monthly from knockdown until lizard survey. Monthly for 3 years after final lizard release (Only if lizards are released)
1 st and 2 nd Gen option: Double Tap (DT) (0.05g/kg Diphacinone & 0.60g/kg Cholecalciferol) Double Tap Guide Double Tap SDS	Rodents	1st Generation anticoagulant diphacinone and cholecalciferol (a non-anticoagulant toxin). Low secondary poisoning risk to non-targets.	All VTA/kill trap stations 336g of nontoxic pre-feed per station (24x12gm pellets).	All VTA/kill trap stations Initial load - Knockdown or Pulse 336g per station, per service check (12x28 g blocks). Top ups on 28-day cycle (knockdown) or at week 2 and 6 (pulse): 224g per station, per pulse (8x28g blocks)	DO NOT use continuously due to containing an acute 2 nd gen VTA (Cholecalciferol). Only to be used for pulse operations.	If used for: Initial Knockdown – at the beginning of each knockdown stage (as per Section 6.4.2) Pulse operations – In spring <ol style="list-style-type: none"> Prefeed – weekly for 2 weeks (initial load plus x1 top-up after 7 days). Remove all pre feed before adding in Double Tap VTA. Toxin top ups (Pulse top-ups only - not a continuous load option): Toxin – Double Tap VTA in all stations, top up after week 2 and week 6, leave out for a further 6 weeks (12 weeks from initial VTA load) then remove.
Magfume or Magtoxin Pellets 660g/kg magnesium phosphide/pellet	Rabbits	Magtoxin Rabbit Pellets provide a potent solution for controlling rabbit populations effectively. Each pellet contains 660g/kg magnesium phosphide, which releases 330g/kg of phosphine gas and is a powerful fumigant that targets rabbit burrows directly, ensuring thorough control.	n/a	For small burrows, use 1-2 tablets. For larger burrows, use 2-4 tablets. Seal all entrances to ensure the gas remains inside.	n/a	Every six months (April and late October) annually for 7 years after initial planting enhancement installation. Highly toxic substance - ensure SDS/label instructions for Health and Safety precautions are followed

NOTE: If any of the post VTA initial knockdown or pulse operation monitoring results:

- Are above the threshold for rats– conduct another full VTA pulse until rodent abundance is below the target threshold.
- Are below the threshold target for rats, then return to ongoing continuous VTA quarterly top ups (using a different VTA option from the list)

Rabbit and hare control:

Rabbits and hares are known to populate the proposed pest management and ecology enhancement areas surrounding Auckland Prison, and on neighbouring properties.

Rabbits (*Oryctolagus cuniculus*) and Hares (*Lepus europaeus occidentalis*) eat a variety of plant matter including grasses seedlings of trees and crops and cause damage to new tree plantings and horticultural crops, amenity plantings and shelter belts by eating tree bark and young shoots. These pests are therefore a significant threat to the successful establishment of the enhancement planting programme, which forms part of the effects mitigation for Auckland Prisons' proposed capacity increase.

Over time, enhancement planting of the grazed farmland surrounding the Auckland Prison will effectively remove the food resource habitat utilised by rabbits and hares (as well as pukeko). After 3-5 years from installation the plants will be well established with high foliage, shading out and removing the grass habitat and therefore indirectly creating an effective rabbit, hare and pukeko control mechanism.

However, due to the 3–5-year plant establishment time lag, during which time enhancement plants are still susceptible to browsing pressure, we recommend that rabbit and hare control is conducted from the initial enhancement planting until five years after the final enhancement planting.

Standard practice rabbit and hare control utilises a combination of spotlight or thermal hunting (with firearms), fumigation of burrows or ground based vertebrate toxin operations using open bait stations or hand broadcasting.

Due to the peri-urban environment in which the Auckland Prison is located, the hunting and vertebrate toxin control options listed above are not feasible. The only safe viable option remaining is to fumigate any rabbit burrows during daylight hours by qualified and experienced contractors, effectively eliminating rabbits underground where pets or humans cannot reach carcasses (Figure 9).

A suitable fumigant shall be used (e.g. Magfume) by an experienced and certified contractor **every six months** until such time as the enhancement plants in area C are established enough that the grassland habitat is removed and no longer able to support rabbit and hare populations (expected to be five years after the final enhancement planting. Table 8 of this plan, and Section 3.3 of the Bionet A5 Pest Rabbit monitoring and control guide, details rabbit burrow fumigation methods and standards that must be followed.



Figure 9: Illustration of burrow fumigation

Appendix 6: Equipment Required (approximate)

Table 10: List of equipment required for this PAMP (approximate):

Item	Initial # required	Annual # required (year 2 onwards)
D Rat minimalist traps	49	
Browning Dark Ops Pro Cameras	3	
SD cards	5 (2 spare)	
Camera batteries (AA size, rechargeable)	18	
Ezylure auto lure dispensers	3	
Ezylure dispenser batteries (AA size, rechargeable)	12	
Pre-lured chew cards	200	50
Auto lure syringes	6	4
VTA/kill trap bait stations	49	
Double Tap Pre feed (spring pulse option only)	55kg/pulse	55kg/pulse
Double Tap Toxin (spring pulse option only)	65kg/pulse	60kg/pulse
Pindone (if using for spring pulse/switch out)	50kg/pulse	50kg/pulse
Pindone (if using monthly)	12kg/month	12kg/month
D Block Extreme (if using for spring pulse/switch out)	65kg/pulse	65kg/pulse
D Block Extreme (if using monthly)	10kg/month	10kg/month
Magtoxin/Magfume	300g (3 100g packs)	As required
SA3 traps	21	
Flagging Tape	2 Rolls	
Mustelid traps (2 per trap box)	10	
Mustelid trap boxes (double set)	5	
Live feral cat cage trap	2	
VTA warning signs	At each point of entry.	
Additional Lures	As required	As required

Note:

- Toxin requirements will be subject to which VTAs will be used in any given year.
- If pest targets are exceeded, then further control/monitoring will be required, and more equipment will be required at that time.
- Replacements of some capex items will be required overtime.

Appendix 7: Other Information

Signage:

It is a legal requirement when applying VTAs in New Zealand to erect approved VTA warning signage at all known main entrances to the property on which toxin operations are being conducted. Signs shall be clear and visible at all times and should be checked regularly by the pest controller conducting VTA operations, especially after damaging weather events.

At a minimum the sign shall outline the toxin name and concentration, a photo of the toxin bait and/or bait station, the date period the VTA will be in bait stations and any caution period after bait removal (if applicable). VTA warning signs shall also provide the contact number of the pest controller or project manager, as well as any non-target groups (pets, humans etc) that should be supervised and take caution in and around the operational area.

[B2-Vertebrate-Toxic-Agents-Guidelines-2018-04-LR.pdf](#)

[Double Tap warning-sign-36.pdf](#)

[Diphacinone warning-sign-17.pdf](#)

[Pindone warning-sign-27.pdf](#)

Health and safety:

All contractors associated with supplying services to the delivery of the pest management programme shall be experienced, professional operators with the relevant skills to conduct the required pest management operations. Contractors shall hold a current Health and Safety pre-qualification from an independent certifier. All pest management contractors' delivering any of the operational activities of this plan shall also:

- Adhere to the applicable rules and regulations of the Health and Safety at Work Act 2015.
- Produce and regularly maintain a site-specific safety plan
- Conduct and record regular pre-work health and safety meetings (e.g. toolbox talks), carry out site inspections and record/report any hazards or incidents.
- Hold the relevant skills, experience and any relevant qualifications to deliver pest control and monitoring, including the handling of VTAs and use of pest kill traps.
- Record and maintain toxin type, quantity and disposal records in an appropriate spreadsheet.

Data management:

Maintaining accurate records of both pest control and pest monitoring are crucial to evaluate the success of predator control at each site. Spatial and temporal trends in pest populations and catch rates can be identified in the analysis of this data, which can then inform future pest management decisions.

Therefore, TrapNZ is the recommended data collection and analysis platform, as it is widely used across New Zealand, user friendly, and is able to record spatial distribution of traps and catches, as well as toxin uptake.

The pest management contractor shall enter all trap catch, toxin and monitoring data into Trap.NZ. A project will be set up for this purpose within Trap.NZ and training provided to the pest management contractor (if required). Boffa Miskell staff and/or the pest management contractor (if desired) will analyse the operational data, utilising the results to make informed management decisions as well as reporting maps and documents. All persons undertaking pest animal management need to record all operational data on the selected system. Each person/group that needs to access the system, will need an account and be instructed on how to enter the required information correctly.

For each trap check, all data needs to be accurate and complete, as per the minimum information to be recorded below:

- Date of trap servicing & time taken to complete trap/bait station servicing;
- Name of the trap servicer;
- Device location, unique identifier, model type and model name;
- Lure type and whether the lure was refreshed;
- Whether the trap has been triggered (trap status) including “sprung and empty” events;
- Trap catch (species); and if possible/relevant: sex and age of individual, number of individuals, or record trap catch as zero if nothing is caught;
- Bait type and quantity deployed (for bait stations);
- General comments (e.g. if trap needs fixing or replacing, if bait is gone).

Appendix 8: Qualifications and Relevant Experience

Dr Ian Boothroyd: Statement of Qualifications & Experience

I am a Partner: Ecologist at Boffa Miskell Limited. Boffa Miskell is a multi-disciplinary environmental consultancy specialising in planning, urban design, landscape design, ecology, biosecurity and engagement. I have been employed at Boffa Miskell since June 2014.

I hold the qualifications of BSc (Hons) Manchester University 1977), MSc Applied Hydrobiology (University of Wales, 1980) and DPhil (Waikato University, 1988). I am an appointed Fellow of both the Royal Society of Biology (FRSB) and the Environment Institute of Australia and New Zealand (FEIANZ), a life member of the New Zealand Freshwater Sciences Society, and a member of the Resource Management Law Association. I am a Certified Environmental Practitioner (CEnvP, Ecology).

I have 40 years of professional experience in the field of resource management, including roles as Manager Environmental Monitoring and Compliance (Hawke's Bay Regional Council), Research Director (NIWA), Senior Lecturer (University of Auckland, and as a consultant environmental practitioner for 25 years. I am also an experienced independent environmental commissioner and appointed as a Freshwater Commissioner by the New Zealand government. My experience includes environmental assessment and management and decision-making in the New Zealand environment, and I am familiar with environmental protocols, criteria and performance standards. I have led multidisciplinary teams for large and often complex projects.

My experience extends to large land management and subdivision projects, designations, renewable energy, roading, mining, quarrying, water treatment, biodiversity management and offsets, multi-criteria assessments through to investigations and assessments, consent conditions, fast track applications and presentation of expert evidence at hearings, Environment Court and Boards of Inquiry.

I confirm that, in my capacity as reviewer of this report, I have read and abide by the Environment Court of New Zealand's Code of Conduct for Expert Witnesses Practice Note 2023.

Ian Boothroyd, January 2026

Adam Willetts: Statement of Qualifications and Experience

I am a Senior Professional Biosecurity Consultant at Boffa Miskell Limited. Boffa Miskell is a multi-disciplinary environmental consultancy specialising in planning, urban design, landscape design, ecology and biosecurity and engagement.

I have 24+ years' experience in the private sector, local government and central government with roles in biodiversity management, ecological restoration and project management throughout New Zealand. Recent experience includes design and project management of multiple Predator Free New Zealand 2050 eradication plans/projects, biosecurity and ecology plan development for RMA and Fast Track Approval applications as well as research and development of new tools and technology for biosecurity and ecological restoration. I hold the qualifications of a Bachelor of Parks, Recreation and Tourism Management, with a postgraduate in commerce.

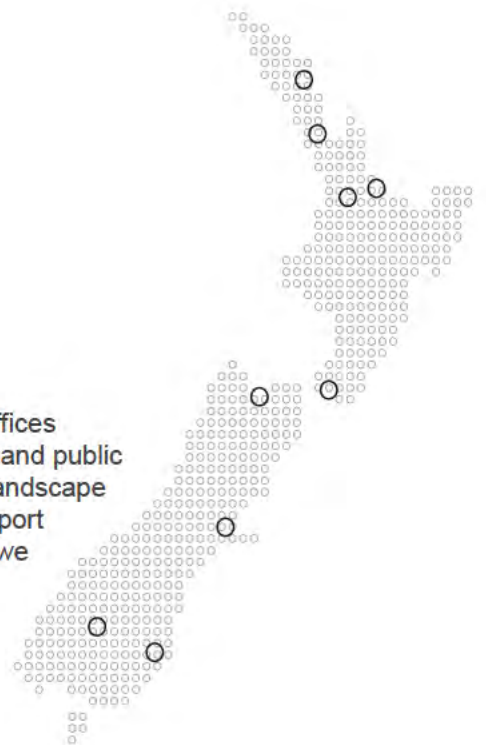
I am a Certified Environmental Practitioner (General) as well as a full member of the New Zealand Biosecurity Institute (NZBI) and the Environmental Institute of Australia and New Zealand (EIANZ).

I can confirm that I have read and abide by the Environment Court of New Zealand's Code of Conduct for Expert Witnesses Practice Note 2023.

Adam Willetts, March 2026

Together. Shaping Better Places.

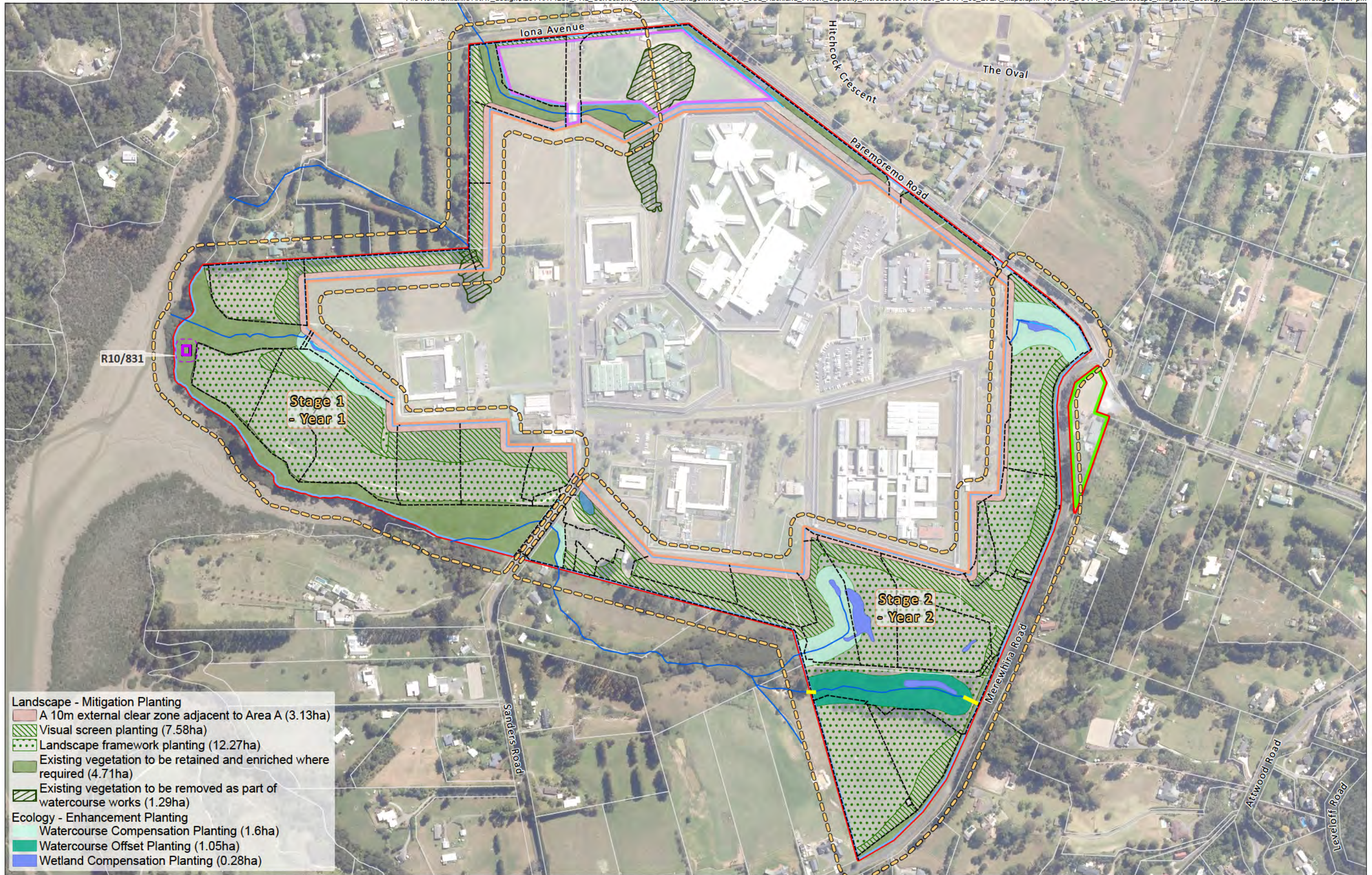
Boffa Miskell is a leading New Zealand environmental consultancy with nine offices throughout Aotearoa. We work with a wide range of local, international private and public sector clients in the areas of planning, urban design, landscape architecture, landscape planning, ecology, biosecurity, Te Hihiri (cultural advisory), engagement, transport advisory, climate change, graphics, and mapping. Over the past five decades we have built a reputation for creativity, professionalism, innovation, and excellence by understanding each project's interconnections with the wider environmental, social, cultural, and economic context.



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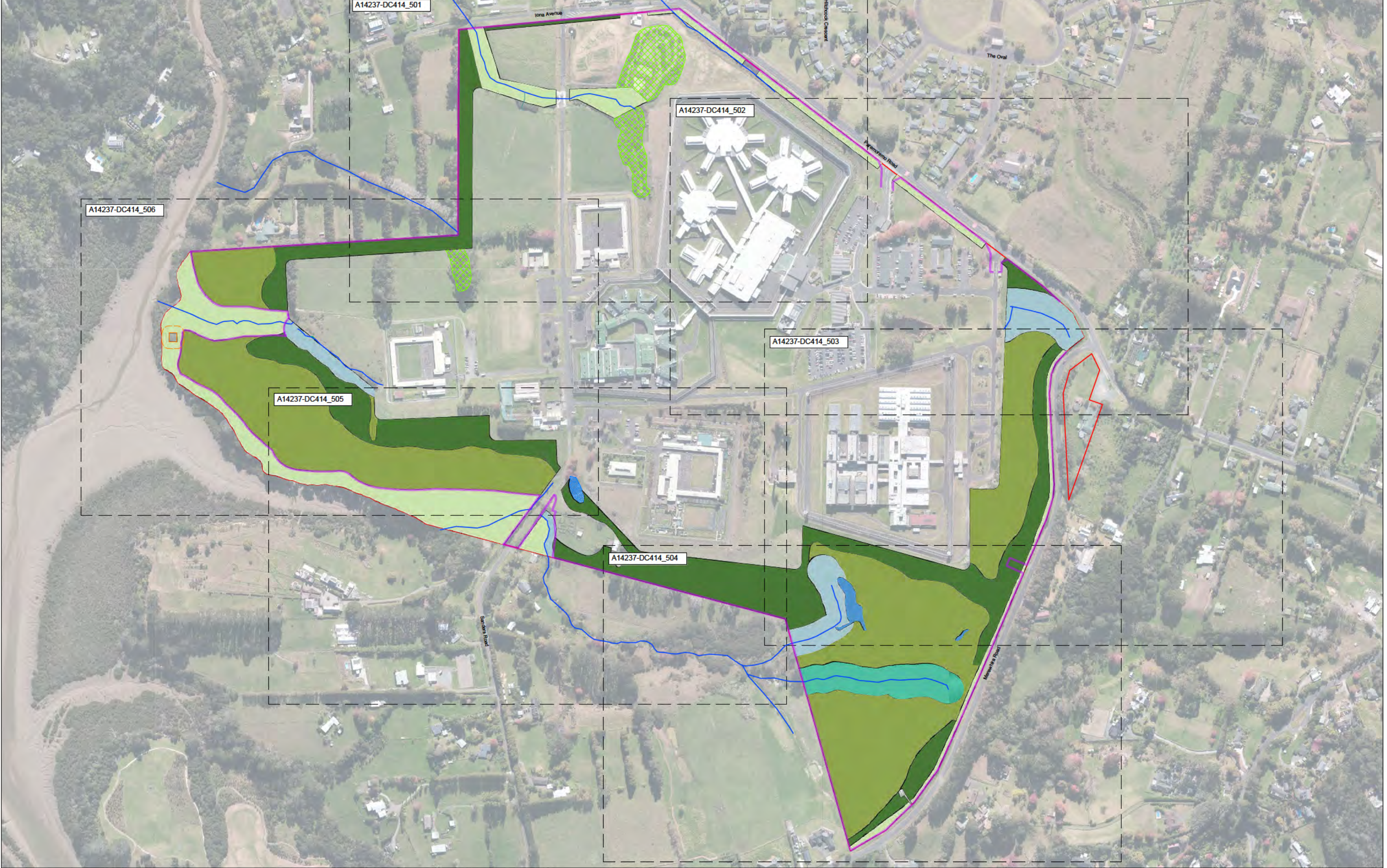
Appendix 4: Landscape Mitigation and Ecology Enhancement Plan (LMEEP Revision D) - Proposed Staging



- Landscape - Mitigation Planting**
- A 10m external clear zone adjacent to Area A (3.13ha)
 - Visual screen planting (7.58ha)
 - Landscape framework planting (12.27ha)
 - Existing vegetation to be retained and enriched where required (4.71ha)
 - Existing vegetation to be removed as part of watercourse works (1.29ha)
- Ecology - Enhancement Planting**
- Watercourse Compensation Planting (1.6ha)
 - Watercourse Offset Planting (1.05ha)
 - Wetland Compensation Planting (0.28ha)

Appendix 5: Landscape Mitigation and Ecological Enhancement Detailed Plans and Schedule

This graphic has been prepared by Boffa Miskell Limited on the specific instructions of our Client. It is solely for our Client's use in accordance with the agreed scope of work. Any use or reliance by a third party is at that party's own risk. Where information has been supplied by the Client or obtained from other external sources, it has been assumed that it is accurate. No liability or responsibility is accepted by Boffa Miskell Limited for any errors or omissions to the extent that they arise from inaccurate information provided by the Client or any external source.



KEY	
	VISUAL SCREEN PLANTING
	LANDSCAPE FRAMEWORK/ INTEGRATION PLANTING
	EXTG INDIGENOUS WITH ENRICHMENT PLANTING
	WATERCOURSE COMPENSATION PLANTING
	WATERCOURSE OFFSET PLANTING
	WETLAND COMPENSATION PLANTING
	NATURAL INLAND WETLANDS
	EXISTING HYDROLOGICAL FEATURES
	EXISTING VEGETATION TO BE REMOVED AS PART OF WATERCOURSE WORKS
	AMENDED DESIGNATION 3900
	WATERCOURSES
	ARCHAEOLOGICAL FEATURE (10m BUFFER)
	EXISTING FENCES TO BE RETAINED & UPGRADED AS REQUIRED
	ARCHAEOLOGICAL FEATURE

REV	DATE	DESCRIPTION
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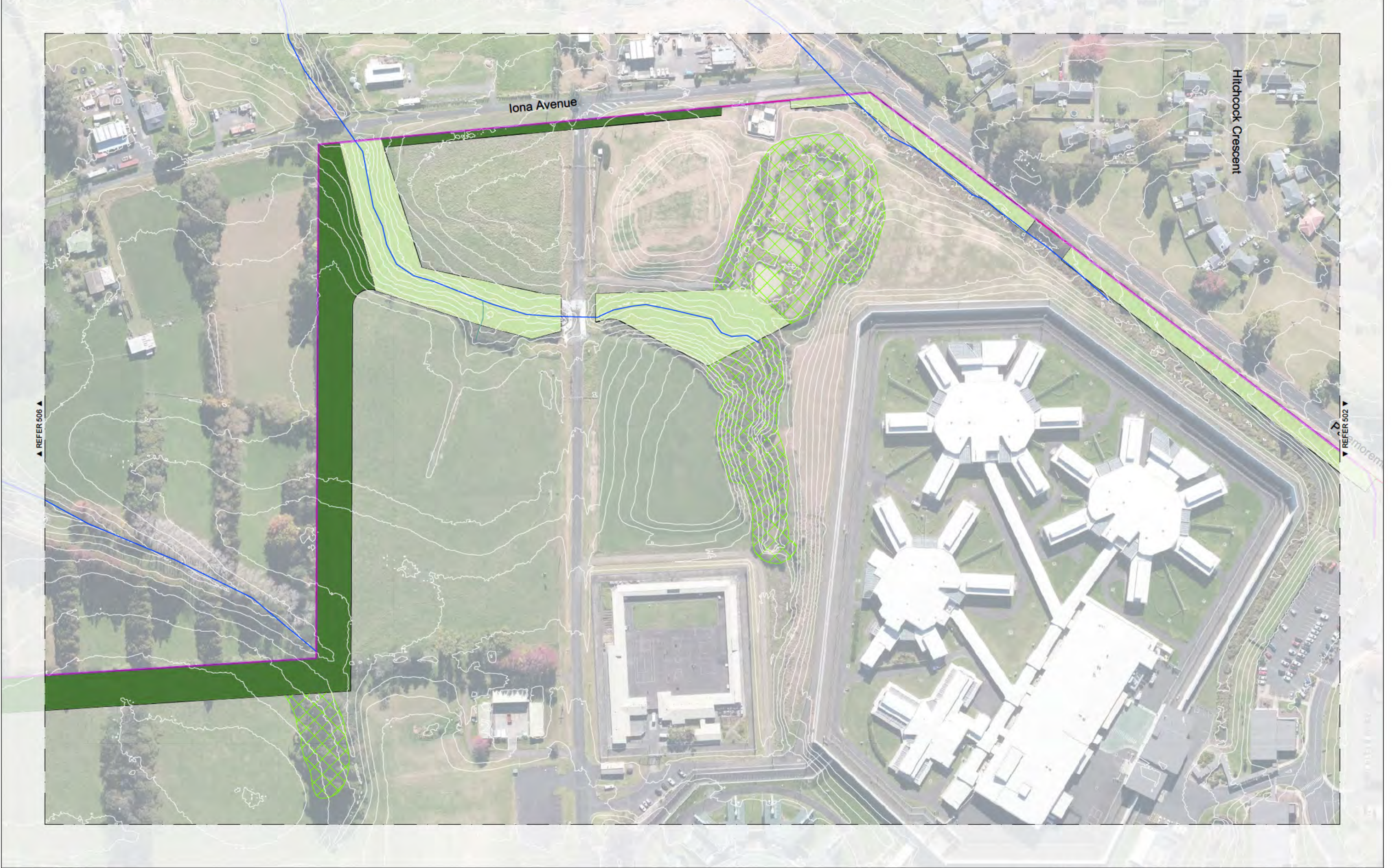
Appendix 5
 Landscape Integration & Ecological Enhancement Detailed Plans Overview

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	LANDSCAPE FRAMEWORK/ INTEGRATION PLANTING
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	WATERCOURSE COMPENSATION PLANTING
	WATERCOURSE OFFSET PLANTING
	WETLAND COMPENSATION PLANTING
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	ARCHAEOLOGICAL FEATURE (10m BUFFER)
	EXISTING FENCES TO BE RETAINED & UPGRADED AS REQUIRED
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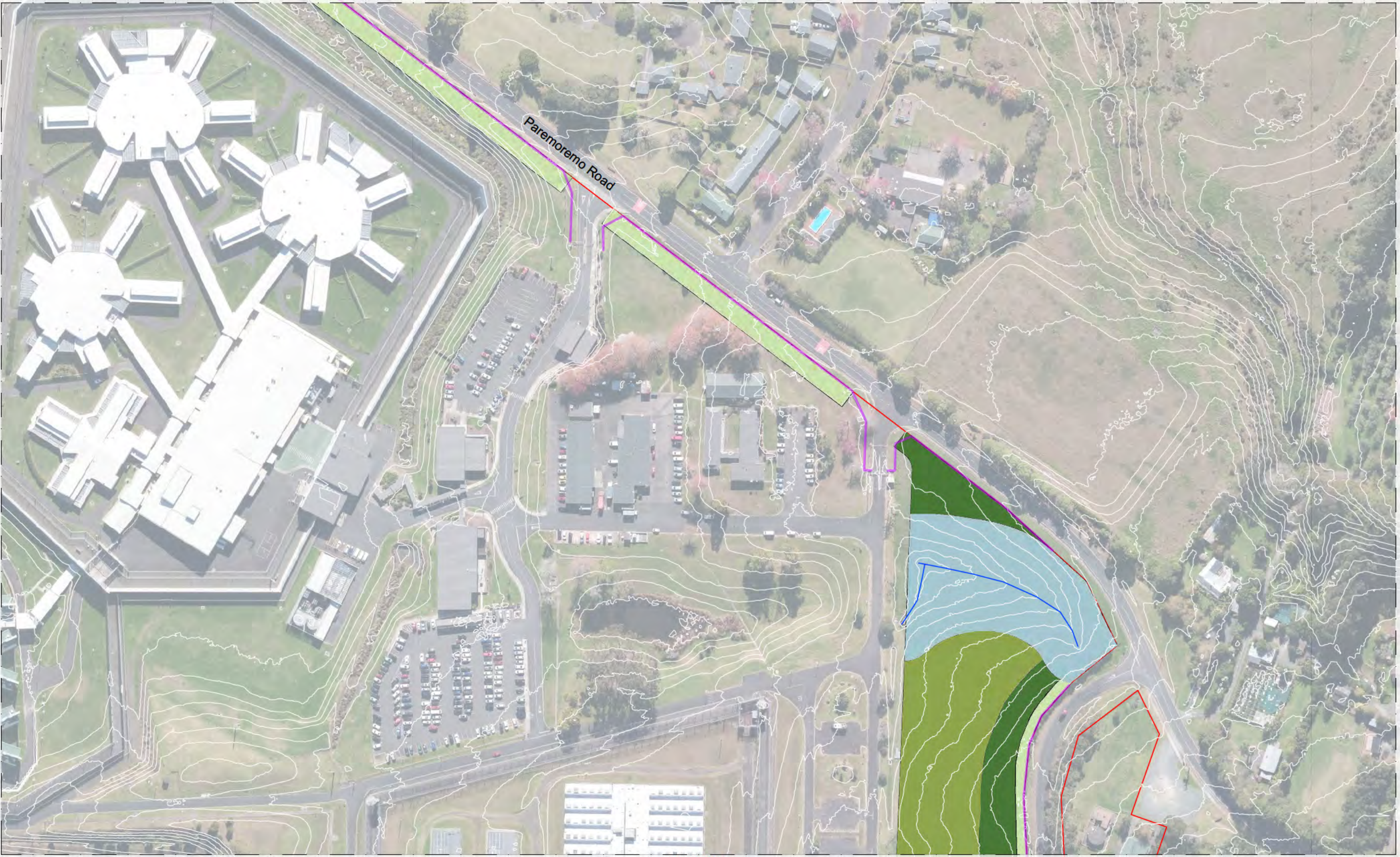
Appendix 5
Landscape Integration & Ecological Enhancement Detailed Plans Sheet 1 / 6

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	LANDSCAPE FRAMEWORK/ INTEGRATION PLANTING
	EXTG INDIGENOUS WITH ENRICHMENT PLANTING
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	ARCHAEOLOGICAL FEATURE (10m BUFFER)
	EXISTING FENCES TO BE RETAINED & UPGRADED AS REQUIRED
	ARCHAEOLOGICAL FEATURE

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**AUCKLAND PRISON
CAPACITY INCREASE**

Appendix 5
Landscape Integration & Ecological
Enhancement Detailed Plans Sheet 2 / 6

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	WATERCOURSE COMPENSATION PLANTING
	WETLAND COMPENSATION PLANTING
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	AMENDED DESIGNATION 3900
	EXISTING FENCES TO BE RETAINED & UPGRADED AS REQUIRED
	ARCHAEOLOGICAL FEATURE (10m BUFFER)
	ARCHAEOLOGICAL FEATURE
	WATERCOURSES

REV	DATE	DESCRIPTION
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**AUCKLAND PRISON
CAPACITY INCREASE**

Appendix 5
Landscape Integration & Ecological
Enhancement Detailed Plans Sheet 3 / 6

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	LANDSCAPE FRAMEWORK/ INTEGRATION PLANTING
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	WATERCOURSE OFFSET PLANTING
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	EXISTING HYDROLOGICAL FEATURES
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	ARCHAEOLOGICAL FEATURE (10m BUFFER)
	EXISTING FENCES TO BE RETAINED & UPGRADED AS REQUIRED
	WATERCOURSES
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Append 5
 Landscape Integration & Ecological
 Enhancement Detailed Plans Sheet 4 / 6

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	LANDSCAPE FRAMEWORK/ INTEGRATION PLANTING
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	ARCHAEOLOGICAL FEATURE
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**AUCKLAND PRISON
CAPACITY INCREASE**

Appendix 5
Landscape Integration & Ecological
Enhancement Detailed Plans Sheet 5 / 6

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	LANDSCAPE FRAMEWORK/ INTEGRATION PLANTING
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CAPACITY INC EASE**

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E n h a n c e m e n t D e t a i l e d P l a n s S h e e t 6 / 6

A14237-DC414_5 6 (A)

PLANT SCHEDULE

SYMBOL	CODE	BOTANICAL NAME	COMMON NAME	CONT	SPACING	QTY
SHRUB AREAS						
		VISUAL SCREEN PLANTING				75,874 m²
Aca.mel		Acacia melanoxylon	Blackwood	20L	11% @ 5 m	345
Aln.jor		Alnus jollensis	Evergreen Alder	20L	7% @ 5 m	221
Cor.lae		Corynocarpus laevigatus *	Karaka / Kopi	20L	11% @ 5 m	345
Euc.glo		Eucalyptus globoides	White Stringybark	20L	3% @ 5 m	95
Knj.exc		Knightia excelsa	Rewarewa	20L	6% @ 5 m	189
Pod.tot		Podocarpus totara	Tōtara	20L	7% @ 7 m	112
Vit.luc		Vitex lucens *	Pūriri	20L	7% @ 7 m	112
Cop.rob		Coprosma robusta *	Karamū	1L	8% @ 1.5 m	2,800
Kun.eri		Kunzea ericoides	Kanuka	1L	8% @ 2 m	1,574
Ph.ten		Phormium tenax *	Harekeke	1L	8% @ 1.5 m	2,800
Pit.ten		Pittosporum tenuifolium	Kohuhu	1L	8% @ 1.5 m	2,800
Pse.arb		Pseudopanax arboreus *	Five Finger/ Whauwhaupaku	1L	8% @ 1.5 m	2,800
Pse.les		Pseudopanax lessonii *	Houpara	1L	8% @ 1.5 m	2,800
		LANDSCAPE FRAMEWORK / INTEGRATION PLANTING				123,760 m²
Aca.mel		Acacia melanoxylon	Blackwood	20L	13% @ 5 m	669
Aln.jor		Alnus jollensis	Evergreen Alder	20L	7% @ 5 m	360
Cor.lae		Corynocarpus laevigatus *	Karaka / Kopi	20L	11% @ 5 m	566
Euc.glo		Eucalyptus globoides	White Stringybark	20L	6% @ 5 m	309
Knj.exc		Knightia excelsa	Rewarewa	20L	3% @ 5 m	154
Pod.tot		Podocarpus totara	Tōtara	20L	8% @ 7 m	210
Pop.nig		Populus nigra *	Poplar	2.0 m Pole	2% @ 3 m	286
Pse.cra		Pseudopanax crassifolius *	Horoeka / Lancewood	20L	2% @ 6 m	71
Vit.luc		Vitex lucens *	Pūriri	20L	3% @ 7 m	78
Ca.sec		Carex secta *	Puriri	1L	3% @ 1 m	3,857
Cop.rob		Coprosma robusta *	Karamū	1L	2% @ 1.5 m	1,144
Cor.au2		Cordyline australis *	Ti Kōuka/cabbage tree	1L	3% @ 1 m	3,857
Dac.dar		Dacrydium dacrydioides	Kahikatea	20L	3% @ 5 m	154
Kun.eri		Kunzea ericoides	Kanuka	1L	9% @ 2 m	2,893
Lep.sco		Leptospermum scoparium	Mānuka	1L	3% @ 1 m	3,857
Mel.ram		Melicactus ramiflorus	Māhoe	1L	3% @ 2.5 m	617
Myr.mat		Myrsine australis *	Māipou	1L	3% @ 1.5 m	1,713
Ph.ten		Phormium tenax *	Harekeke	1L	2% @ 1.5 m	1,144
Pip.exc		Piper excelsum *	Kawakawa	1L	3% @ 1.5 m	1,713
Pit.ten		Pittosporum tenuifolium	Kohuhu	1L	3% @ 1.5 m	1,713
Pse.arb		Pseudopanax arboreus *	Five Finger/ Whauwhaupaku	1L	2% @ 1.5 m	1,144
Pse.les		Pseudopanax lessonii *	Houpara	1L	3% @ 1.5 m	1,713
Ver.str		Veronica stricta var. stricta	Koromiko	1L	3% @ 1.2 m	2,678
		EXISTING INDIGENOUS VEGETATION - ENRICHMENT 25%				47,024 m²
Bei.taw		Beilschmiedia tawa	Tawa	20L	13% @ 5 m	254
Cor.aur		Cordyline australis *	Ti Kōuka / Cabbage Tree	20L	13% @ 2 m	1,588
Cor.lae		Corynocarpus laevigatus *	Karaka / Kopi	20L	13% @ 5 m	254
Knj.exc		Knightia excelsa	Rewarewa	20L	13% @ 5 m	254
Pod.tot		Podocarpus totara	Tōtara	20L	13% @ 7 m	131
Rho.sap		Rhopalostylis sapida *	Nikau Palm	20L	3% @ 3 m	164
Vit.luc		Vitex lucens *	Pūriri	20L	14% @ 7 m	141
Dac.dar		Dacrydium dacrydioides	Kahikatea	20L	14% @ 5 m	275
Ph.ten		Phormium tenax *	Harekeke	1L	4% @ 1 m	1,961

NOTE: Species marked with an asterisk (*) are identified as low flammability

PLANT SCHEDULE

SYMBOL	CODE	BOTANICAL NAME	COMMON NAME	CONT	SPACING	QTY
SHRUB AREAS						
		WATERCOURSE COMPENSATION PLANTING				16,653 m²
Aus.flv		Austrodenia fulvida	Toetoe	1L	8% @ 1 m	1,385
Ble.lev		Blechnum novae-zelandiae	Kiokio	1L	6% @ 1 m	1,038
Car.dis		Carex dissita	Forest Sedge	1L	8% @ 1 m	1,385
Car.ger		Carex geminata *	Rautahi	1L	12% @ 1 m	2,077
Car.vir		Carex virgata	Pūkiō	1L	12% @ 1 m	2,077
Car.ser		Carpodetus serratus *	Putaputawētā	1L	9% @ 1 m	1,557
Cor.au2		Cordyline australis *	Ti Kōuka/cabbage tree	1L	5% @ 1 m	865
Cor.la2		Corynocarpus laevigatus *	Karaka	1L	3% @ 6 m	16
Dac.da2		Dacrydium dacrydioides	Kahikatea	1L	3% @ 6 m	16
Lau.no2		Laurelia novae-zelandiae	Pukatea	1L	3% @ 6 m	16
Lep.sco		Leptospermum scoparium	Mānuka	1L	7% @ 1 m	1,223
Mel.ram		Melicactus ramiflorus	Māhoe	1L	3% @ 2.5 m	84
Ph.ten		Phormium tenax *	Harekeke	1L	9% @ 1 m	1,572
Syz.mai		Syzygium maire	Swamp Maire	1L	3% @ 6 m	16
Ver.str		Veronica stricta var. stricta	Koromiko	1L	9% @ 1.2 m	1,096
		WATERCOURSE OFFSET PLANTING				10,051 m²
Aus.flv		Austrodenia fulvida	Toetoe	1L	8% @ 1 m	836
Ble.lev		Blechnum novae-zelandiae	Kiokio	1L	6% @ 1 m	627
Car.dis		Carex dissita	Forest Sedge	1L	8% @ 1 m	836
Car.ger		Carex geminata *	Rautahi	1L	12% @ 1 m	1,254
Car.vir		Carex virgata	Pūkiō	1L	12% @ 1 m	1,254
Car.ser		Carpodetus serratus *	Putaputawētā	1L	9% @ 1 m	940
Cor.au2		Cordyline australis *	Ti Kōuka/cabbage tree	1L	5% @ 1 m	522
Cor.la2		Corynocarpus laevigatus *	Karaka	1L	3% @ 6 m	9
Dac.da2		Dacrydium dacrydioides	Kahikatea	1L	3% @ 6 m	9
Lau.no2		Laurelia novae-zelandiae	Pukatea	1L	3% @ 6 m	9
Lep.sco		Leptospermum scoparium	Mānuka	1L	7% @ 1 m	733
Mel.ram		Melicactus ramiflorus	Māhoe	1L	3% @ 2.5 m	50
Ph.ten		Phormium tenax *	Harekeke	1L	9% @ 1 m	943
Syz.mai		Syzygium maire	Swamp Maire	1L	3% @ 6 m	9
Ver.str		Veronica stricta var. stricta	Koromiko	1L	9% @ 1.2 m	655
		WETLAND COMPENSATION PLANTING				1,459 m²
Aus.flv		Austrodenia fulvida	Toetoe	1L	5% @ 1 m	76
Ble.lev		Blechnum novae-zelandiae	Kiokio	1L	10% @ 1 m	152
Car.dis		Carex dissita	Forest Sedge	1L	14% @ 1 m	212
Car.ger		Carex geminata *	Rautahi	1L	14% @ 1 m	212
Car.vir		Carex virgata	Pūkiō	1L	14% @ 1 m	212
Cor.au2		Cordyline australis *	Ti Kōuka/cabbage tree	1L	5% @ 1 m	76
Cyp.ust		Cyperus ustulatus	Giant Umbrella Sedge	1L	10% @ 1 m	152
Dac.da2		Dacrydium dacrydioides	Kahikatea	1L	2% @ 6 m	1
Lau.no2		Laurelia novae-zelandiae	Pukatea	1L	2% @ 6 m	1
Lep.sco		Leptospermum scoparium	Mānuka	1L	6% @ 1 m	92
Ph.ten		Phormium tenax *	Harekeke	1L	11% @ 1 m	168
Sch.dig		Schefflera digitata *	Patē	1L	7% @ 1 m	107

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A p e d 5
Landscape & Ecological
Enhancement Detailed Plans Schedules

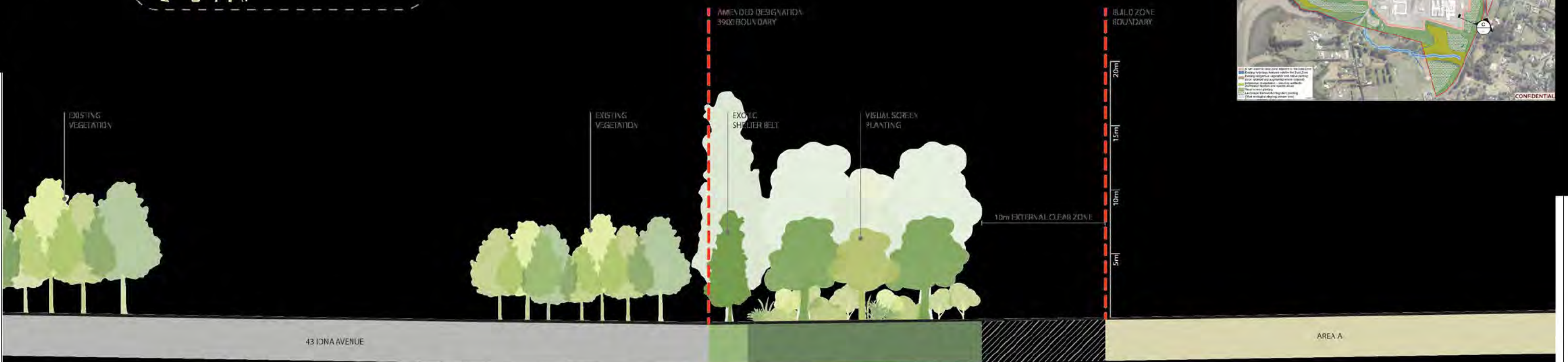
DESIGNATION ALTERATION

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A14237-DC414_510(A)

SECTION A

1:150 @ A1 | 1:300 @ A3



SECTION B

1:150 @ A1 | 1:300 @ A3



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Appendix 5
 Landscape Integration & Ecological
 Enhancement Detailed Plans Sections 1/2

DRG NO. A14237-DC414_5 0 (A)

SECTION C

1:150 @ A1 | 1:300 @ A3



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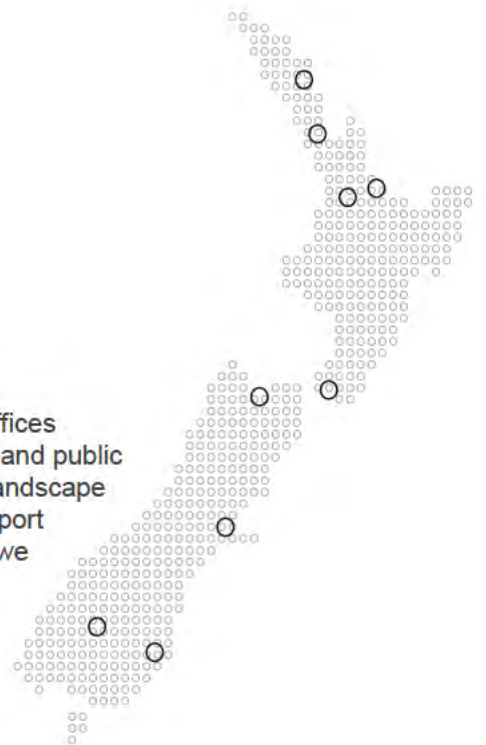
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Appendix 5
Landscape Integration & Ecological
Enhancement Detailed Plans Sections 2/2

DRAWING NO. EV ON
A14237-DC414_5 1(A)

Together. Shaping Better Places.

Boffa Miskell is a leading New Zealand environmental consultancy with nine offices throughout Aotearoa. We work with a wide range of local, international private and public sector clients in the areas of planning, urban design, landscape architecture, landscape planning, ecology, biosecurity, Te Hihiri (cultural advisory), engagement, transport advisory, climate change, graphics, and mapping. Over the past five decades we have built a reputation for creativity, professionalism, innovation, and excellence by understanding each project's interconnections with the wider environmental, social, cultural, and economic context.



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