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A Babbage Company

77-109 Kapiti Road and 1 Brett Ambler Way, Paraparaumu

Wetland Residual Effects Analysis Report



Consulting Biologists – Established 1972
P.O. Box 2027, Auckland 1140. New Zealand
www.Bioresearches.co.nz

77-109 Kapiti Road and 1 Brett Ambler Way, Paraparaumu
October 2026

DOCUMENT APPROVAL

Document title:	77-109 Kapiti Road and 1 Brett Ambler Way, Paraparaumu Wetland Residual Effects Analysis Report
Prepared for:	New Central Park
Version:	V5
Date:	21 October 2026
Document name:	66557 Kapiti Road Wetland Residual Effects Analysis 21Oct2026

Author:	Treffery Barnett M.Sc. (Hons), MEIANZ, CEnvP (Ecology) Technical Director of Freshwater Laura Dooley M.Sc (Hons), MEIANZ Senior Aquatic Ecologist
Reviewer:	Kate Feickert, B.Sc., PG.Dip., MEIANZ Senior Ecologist Treffery Barnett M.Sc. (Hons), MEIANZ, CEnvP (Ecology) Technical Director of Freshwater

REVISION HISTORY

Rev. No.	Date	Description	Reviewer(s)
1	15 August 2023	V1	KF
2	18 September 2023	V2	KF
3	12 December 2023	V3	KF
4	18 September 2026	V4	TJB
5	21 October 2026	V5	TJB

Reference: Bioresearches (2026). 77-109 Kapiti Road and 1 Brett Ambler Way, Paraparaumu. Report for New Central Park. pp 49

Cover Illustration: Overview of the site looking south-east

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1. INTRODUCTION

New Central Park Limited propose to develop approximately 36 ha of land located at 77-109 Kapiti Road and 1 Brett Ambler Road, Paraparaumu. The site is located in a generally urban setting; however, the site itself is largely undeveloped. It has been used for agricultural and horticultural purposes, and currently is primarily vegetated with pasture. The site is bordered by the Mackays to Peka Peka Expressway, the Wharemaukū Stream, residential housing, commercial properties and Council buildings (Figure 1).



Figure 1. General Site Layout.

The site is bisected by a a deep straight drain, which runs from the north to discharges into the Wharemaukū Stream in the south of site. Multiple smaller drains discharge into this watercourse. Nine natural inland wetlands, predominantly pastural wetlands, totalling 5.3 ha, were delineated on the site.

The ecological values of the site, specifically terrestrial habitats, avifauna, lizards, bats and freshwater habitats, have been assessed, and an assessment of the ecological effects of the proposed development with recommendations for mitigation and offset of signficant adverse effects of the proposal have been made in the Assessment of Ecological Effects (AEcE) report for the Project (Bioresearches, 2026a).

The ecological values of the site were assessed as negligible to low for terrestrial habitats; moderate for avifauna and lizards; and negligible for bats. The ecological values of the freshwater habitats ranged from moderate (Wharemaukū Stream, four of the wetlands, and lower Watercourse 1), to low (the remaining five wetlands), to negligible (the drains, including most of Watercourse 1).

The proposed works will involve completion of bulk earthworks across the entirety of the site; which will result in the permanent, complete loss of all existing wetland and terrestrial habitat within the site boundaries; and without appropriate management, potential injury or death to native fish, native birds and native lizards (habitat value for native bats was assessed as negligable); potential sedimentation of the receiving environment; potential loss of connectivity of aquatic systems through the site. Provided the recommendations in the AEcE (Bioresearches, 2026a) are followed, the potential for adverse effects to native fauna, potential for sedimentation, and potential for loss of freshwater connectivity will be mitigated to low or very low, but the loss of the natural inland wetlands was assessed as a significant residual adverse effect requiring environmental offset or compensation.

It is proposed that wetland habitat within the site is compensated with the creation of up to 5.44 ha of wetland habitat. The wetlands would merge into a riparian buffer, all of which would be planted with native, ecologically appropriate species which would in time grow to recreate naturally occurring habitats within the project area such as kahikatea-pukatea forest, mānuka fen and reedland habitats and wetland carr areas.

The magnitude of effect of the project activities was measured against the ecological value of the affected habitats and species, resulting in a very low to very high range of the overall level of effect. However, after the effects management hierarchy has been fully implemented on each of the relevant species or habitats as recommended (including compensation measures), the level of effect is mostly a net gain (Appendix 1), therefore further effects management measures are not required.

Report Purpose and Scope

Bioresearches have been involved in this development since the land was purchased by The Wellington Company in 2022. This has included undertaking detailed site assessments that culminated in the preparation of an Ecological Assessment to support the Kapiti Coast District Council (KCDC) and Greater Wellington Regional Council (GWRC) consent applications. As a result, there is already a well-established and robust understanding of the ecological values present across the site. A significant body of ecological reporting has therefore already been completed, which provides a strong foundation for the current assessment.

Bioresearches have also been actively involved in the development and refinement of the current proposal, ensuring that ecological constraints and opportunities have been appropriately integrated into the masterplan. While the existing technical work remains highly relevant, it has been updated and refined to reflect the revised proposal and to ensure that the assessment accurately addresses the ecological effects of the project as now proposed.

The Assessment of Ecological Effects (Bioresearches, 2026a) is a culmination into of the following reports:

- Bioresearches (2023a) Memorandum: 77 Kapiti Road – Remediation. Memo to The Wellington Company. 19 November 2023. 1 pg.
- Bioresearches (2023b) Memorandum: Kapiti Development Proposed Wetland Hydrology. Memorandum to The Wellington Company. 14 December 2023 4pp.
- Bioresearches (2023b) 77-109 Kapiti Road, Paraparaumu Stream and Wetland Loss Offset Report December 2023. V3 dated 14 December 2023. 47 pp.

- Bioresearches (2024) Memorandum: 77 – 109 Kapiti Road, Paraparaumu S92 Response. Memorandum to The Wellington Company. 11 June 2024. 14 pp.
- Bioresearches (2025a) Memorandum: Bat Survey Dec 2024 – Jan 2025: 77 – 109 Kapiti Road, Paraparaumu. Memorandum to The Wellington Company. 15 April 2025. 6pp.
- Bioresearches (2025b) Memorandum: Lizard Survey April 2025: 77 – 109 Kapiti Road, Paraparaumu. Memorandum to The Wellington Company. 1 May 2025. 5pp.
- Bioresearches (2025c) 77-109 Kapiti Road, Paraparaumu Assessment of Ecological Effects. Report for The Wellington Company. Version 6 Dated 27 May 2025. 95pp.

This Wetland Residual Effects Analysis Report (REAR-WL) provides a summary of the approach, methodologies and analysis used to determine the wetland compensation requirements for the Kapiti Road development.

The purpose of this REAR-WL report is to determine the type and quantum of conservation actions (creation of new habitats) required to counterbalance residual losses, assessed as moderate or higher, of wetland extent and values expected from the Project. Those conservation actions are quantified and measured against losses and modelled, using the Biodiversity Compensation Model (BCM, Baber et al., 2025)), to ensure there is no net loss in wetland extent and values as a result of the project. This Residual Effects Assessment Report for Wetlands should be read in conjunction with the Assessment of Ecological Effect report (Bioresearches,2026a), which assessed the ecological effects in accordance with the Effects Management Hierarchy, and the Ecological Management Plan (Bioresearches, 2026b), both accompanying the substantive application.

The Greater Wellington Regional Council guidance document '*Managing adverse effects on indigenous biodiversity in the Wellington Region. A guide to implementing the effects management hierarchy in the Natural Resources Plan* (GWRC, 2022)' was used in the development of this report.

2. STATUTORY CONTEXT

This section summarises the legislation, policy, plans and strategies relevant to the protection, conservation and enhancement of nature conservation interests associated with the Kapiti Road Project Area. The ecological effects described in this report are assessed as they relate to the ecological values described in the Assessment of Ecological Effects (Bioresearches, 2026a) as well as how they relate to planning, policy and statutory framework as addressed in the sections below.

2.1.1 Fast-track Approvals Act 2024 (FTAA)

The purpose of the FTAA is to facilitate the delivery of infrastructure and development projects with significant regional or national benefits. The system is intended to be a 'one-stop-shop' for resource consents under the Resource Management Act 1991 (RMA) and includes approvals required (for the purposes of this Project) under the Wildlife Act 1953. The purpose of the FTAA must be given greater weight than other considerations including the RMA.

2.1.2 Resource Management Act 1991 (RMA)

The purpose of the RMA is to achieve sustainable management of natural resources. Important elements of this are the maintenance of indigenous biodiversity and the protection of significant indigenous vegetation and habitats. The RMA requires that any adverse effects of development be avoided, remedied, or mitigated (note the *effects management hierarchy* is defined in the NPS-FM 2020 and identified below).

2.1.3 National Policy Statement for Freshwater Management (NPS-FM, 2020)

The NPS-FM provides direction under the RMA to local authorities for managing activities that affect the health of freshwater ecosystems. It establishes protections for freshwater bodies, including natural inland wetlands, and includes provisions for monitoring and reporting on freshwater quality and quantity. The NPS-FM also addresses the impacts of land use activities on freshwater resources, ensuring that these are sustainably managed.

The effects management hierarchy is an approach to managing the adverse effects of an activity on wetlands that requires that (NPS-FM, 3.21):

a) adverse effects are avoided where practicable; then
b) where adverse effects cannot be avoided, they are minimised where practicable; then
c) where adverse effects cannot be minimised, they are remedied where practicable; then
d) where more than minor residual adverse effects cannot be avoided, minimised, or remedied, biodiversity offsetting is provided where possible; then
e) where biodiversity offsetting of more than minor residual adverse effects is not possible, biodiversity compensation is provided; then
f) if biodiversity compensation is not appropriate, the activity itself is avoided.

2.1.4 National Environmental Standards for Freshwater (NES-F, 2020)

The National Environmental Standards for Freshwater 2020 (NES-F) set requirements and regulations for carrying out certain activities that pose risks to freshwater and freshwater ecosystems. Loss of wetland extent is a Discretionary Activity under Subpart 45C of the NES-F ('Urban Development), provided that the urban development will contribute to a well-functioning urban environment; there no practicable

alternative to the location of the activity impacting wetlands, or alternative locations will result in a greater adverse effect; and the effects management hierarchy is applied.

3. SUMMARY OF RESIDUAL ADVERSE EFFECTS ON FRESHWATER ECOLOGY

3.1 Overview of Proposed Works

The proposed works for the Project are shown in Figure 2. The Project comprises the comprehensive development of the site as an extension to the Paraparaumu town centre, including residential, large format retail, specialty retail, commercial and other associated activities, together with the construction of the internal road network, pedestrian and cycle connections, open space, landscaping, stormwater infrastructure and associated servicing.

Unlike the previous resource consent applications lodged with KCDC and GWRC, the substantive application seeks land use consent for the proposed development as a whole, including the residential and commercial activities and buildings, rather than solely for enabling earthworks and infrastructure works to facilitate future development. The Project will also involve bulk earthworks across the site to establish the proposed development platforms, road network, open spaces and associated infrastructure.

The Wharemaukū Stream will be retained in its existing alignment along the southern part of the site and enhanced through naturalisation and riparian planting. The Project also includes the creation and enhancement of wetland habitat, with the new wetland area providing secondary functions of flood storage and stormwater management area.

The proposed development, its potential ecological effects, and the measures proposed to avoid, minimise, remedy, are detailed in the AEcA. Measures to offset and compensate residual adverse effects are detailed within this report.

3.2 Overview of Ecological Effects

All aquatic habitats within the Site development area were assessed. These comprised the Wharemaukū Stream; a deep drain running approximately north to south through the site (Watercourse 1); several other minor drains (Drains 1 to 4) and nine natural inland wetlands, dominantly pastural wetlands (Figure 2).

The Project will result in the loss of natural inland wetland through direct reclamation, in which 5.33 ha of wetland area will be lost. All wetlands are limited to low growing plants (herbs, grasses and rushes) and have a high proportion of pasture grasses. All are palustrine wetlands dominated by low growing exotic pastoral species, grasses, occasional herbaceous wetland plants and rushes. Plot data collected within the site by Bioresearches, and previous assessments undertaken by Boffa Miskell and Owen Spearpoint (GWRC) indicate indigenous vegetation throughout the wetlands has an average cover of 20% across 18 vegetation plots. This is consistent with on-site observations in which the wetlands were predominantly vegetated by exotic species, in which the wetland ranged between low to moderate ecological value (Table 1).

Table 1. Extent and ecological value of wetlands identified within the Project Area.

Wetland	Wetland Classification	Ecological value	Size m²
Wetland 1	Exotic wetland	Low	510
Wetland 2	Exotic wetland	Moderate	5,233
Wetland 3	Exotic wetland	Moderate	6,714
Wetland 4	Exotic wetland	Moderate	13,407

Wetland 5	Exotic wetland	Moderate	8,279
Wetland 6	Exotic wetland	Low	742
Wetland 7	Exotic wetland	Low	13,716
Wetland 8	Exotic wetland	Low	3,170
Wetland 9	Exotic wetland	Low	1,600
Total Wetland loss			**53,371**

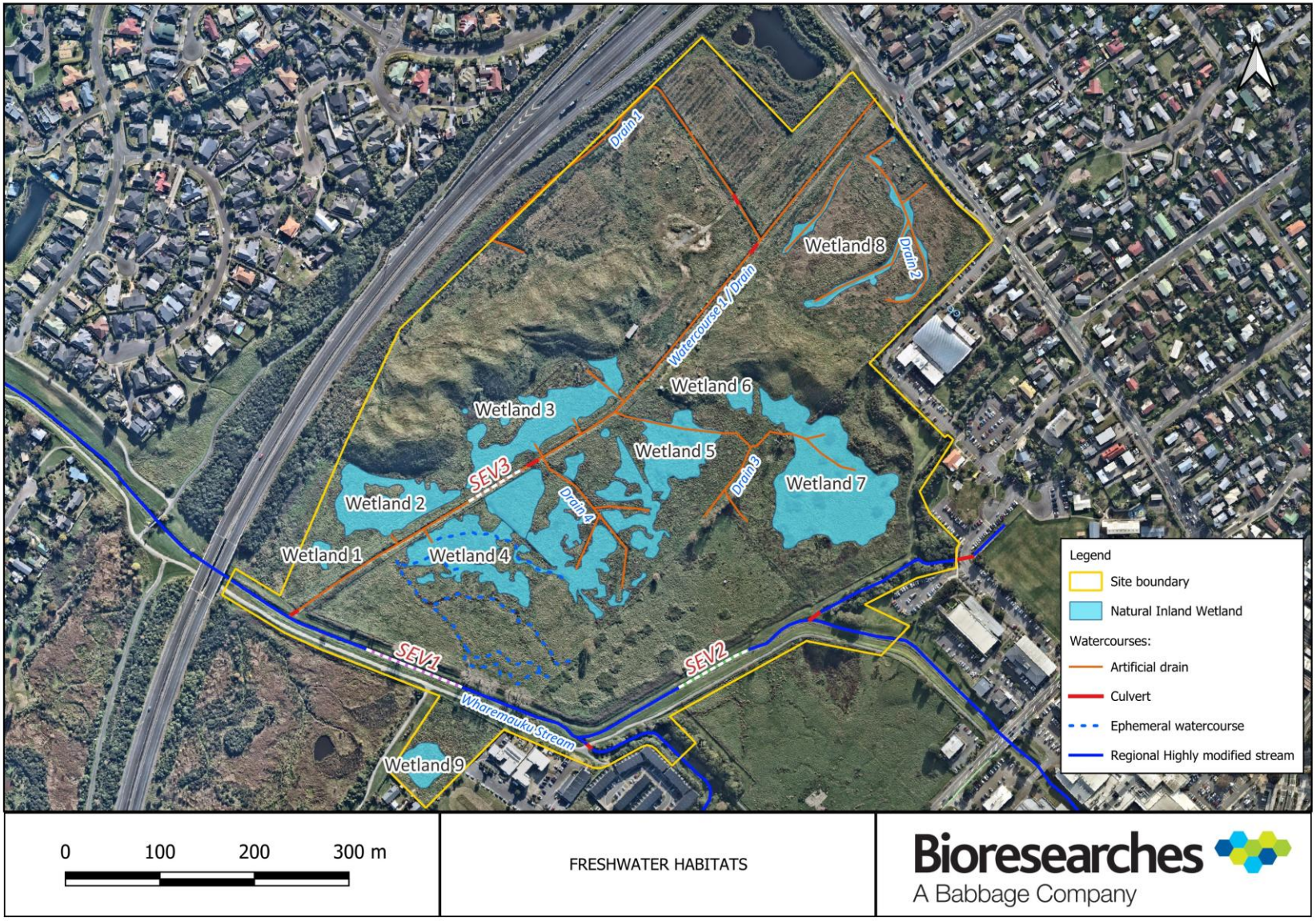


Figure 2. Freshwater ecological habitats within the proposed Kapiti Road development site.

3.3 Residual Adverse Effects

The proposed development will result in the loss of 5.33 ha of wetland extent. As further described in the urban design, engineering and economic assessments accompanying the substantive application, these adverse effects could not practicably be avoided or minimised while enabling the planned urban development of the site in accordance with its zoning and the Metropolitan Centre Zone Structure Plan. In particular, wetlands are fragmented and distributed extensively throughout the development area, such that their retention would materially constrain the proposed urban structure, connectivity and efficient use of the site. Residual adverse effects arising from direct impacts remain on wetlands within the Project Area range from Moderate to High (Table 2). Residual effects greater than 'Low': are considered to be significant and therefore require further actions to offset or compensate.

Table 2. Magnitude of effect and level of effect of the proposed works upon the wetlands with the Kapiti Development Site.

Wetland	Ecological value	Effect description	Magnitude of effect and justification	Level of effect
Wetland 1	Low	Total loss of 510 m² of wetland habitat.	**Very High** The construction of the project will result in the complete loss of all wetland habitat within its footprint. The likelihood of this effect occurring is definite and will have a direct (rather than indirect) impact on the wetland habitat. The loss of the wetland habitat will be permanent and irreversible.	Moderate
Wetland 2	Moderate	Total loss of 5,233 m² of wetland habitat.		High
Wetland 3	Moderate	Total loss of 6,714,m² of wetland habitat.		High
Wetland 4	Moderate	Total loss of 13,407 m² of wetland habitat.		High
Wetland 5	Moderate	Total loss of 8,279 m² of wetland habitat.		High
Wetland 6	Low	Total loss of 742 m² of wetland habitat.		Moderate
Wetland 7	Low	Total loss of 13,716 m² of wetland habitat.		High
Wetland 8	Low	Total loss of 3,170 m² of wetland habitat.		Moderate
Wetland 9	Low	Total loss of 1,600 m² of wetland habitat.		High

4. RESDIUAL EFFECTS MANAGEMENT STRATEGY

Offsetting and Compensation are recognised tools for counterbalancing residual adverse effects on ecological values in New Zealand and internationally. Within New Zealand, offset and compensation are defined under the National Policy Statement for Freshwater Management 2020 (NPS-FM) and are applied to more than minor residual adverse effects on a wetland or river after steps to avoid, minimise and remedy adverse effects are demonstrated to have been sequentially exhausted (Refer Section 2.1.3, and Appendix 6 and Appendix 7 of the NPS-FM, 2020)).

Offsetting or compensation is required to ensure that residual adverse effects on wetlands are adequately addressed to ensure no net loss in values and extent is achieved. Both offsets and compensation typically involve project-specific ecological restoration and enhancement activities. A key difference between offsets and compensation is that offsets must be demonstrated via a like-for-like quantitative loss/gain calculation (Baber et al. 2025). In contrast, compensation does not require this calculation, but indigenous biodiversity values lost must be addressed by positive effects that "outweigh" the adverse effects.

As required for the application of residual effects management, the ecological value of the impacted wetlands and the wetland areas proposed for restoration were assessed utilising the Ecological Impact Assessment (EcIA) Guidelines for use in New Zealand, published by the Environmental Institute of Australia and New Zealand (EIANZ) (Roper-Lindsay et al., 2018). Information gathered during site visits between 2023 and 2026 was utilised to inform the ecological value assessments.

For biodiversity values offsetting to a net gain standard was considered but ruled out as the proposed approach does not meet the narrow definition of an offset as set out in the NPS-FM and NPS-IB. Specifically, demonstrably verifying net gain outcomes for indigenous biodiversity would require the application of a quantitative disaggregated offset accounting model to demonstrate like-for-like replacement of *exotic* vegetation. In this sense, a like-for-like offset would require the re-establishment of 5.33 ha of exotic dominant, fragmented pastoral wetlands which lack appropriate habitats for aquatic fauna and avifauna.

We considered that like-for-like replacement would generate inferior ecological outcomes to what would be achieved via the like-for-unlike exchange of the exotic vegetation for a diversity of indigenous vegetation types, which constitutes 'trade-up' compensation rather than 'like-for-like' offsetting.

A significant distinction in the proposed wetland compensation package is the creation of new wetland extent, which would be hydrologically feasible, planted with a diverse range of indigenous flora, and provide a much greater uplift in available ecological habitats within the site rather than the restoration and enhancement of existing degraded wetland extent. This strategy avoids the loss of both wetland extent and wetland values, as equivalent wetland extent will be made, achieving no net loss, and wetland values will be enhanced over what is currently present within the site, achieving a net gain in wetland values.

This Residual Effects Analysis Report addresses the residual effects of the proposed project's impacts on wetland extent and values situated throughout a modified ecological landscape. The proposed residual effects strategy intends to create 5.44 ha of new indigenous wetland extent on the same site in exchange for 5.33 ha of wetland loss.

5. OBJECTIVES AND OUTCOMES OF RESIDUAL EFFECTS MANAGEMENT

5.1 Ecological Opportunities

5.1.1 Historic Condition

The Site is located within the Foxton Ecological District (McEwen, 1987). The district contains the largest sand dune system in New Zealand, which largely defines the ecological district and its vegetation.

The site is situated upon two major soil types: the flat, lower lying areas are comprised of poorly drained, loamy peat over sand; whilst the raised dunes which bisect the site are comprised of well drained, loam over sand[1].

The predicted historic vegetation composition, indicates that the dune system would historically been vegetated with Tōtara, matai, broadleaved dune forest (WF6). Young versions of this forest type contain mosaics of kānuka, red māpou, korokia and akeake whilst older forests contain ngaio, tītoki, kōwhai, tōtara, mataī, rewarewa, maire species, māhoe, lancewood and kaikōmako (Singers & Rogers, 2014). Lower-lying portions of the site would have been vegetated with kahikatea, pukatea forest (WF8). These forests are generally dominated by kahikatea, with pukatea, swamp maire, rimu, tawa, kiekie and supplejack also present (Singers & Rogers, 2014). Fens likely formed in the wetter areas with lower nutrient inputs, which would have been vegetated with mānuka associations (Boffa Miskell, 2022); grading into wetland carr[2] type habitats including tī kōuka, toe toe, flax and cabbage trees, particularly in wetter areas or near open water (Ravine, 1992).

5.1.2 Current Day

In the present-day, the site is mostly vegetated with weedy pasture, with localised areas of scrubby vegetation present in aerial imagery across much of the site, particularly in the southern half. Multiple drains are present, feeding into the central watercourse drain which flows in a south-western direction through the site. The central watercourse pre-dates aerial imagery, however review of its alignment and morphology on aerial images in 1942 show it is a straightened and deepened drainage channel, wholly artificial with man-made cuts to the dune faces in this location. The dwelling on the property has been removed, however a shed and the accessways to the site from Kapiti Road remain.

Ephemeral wetlands are considered a Naturally Uncommon (Williams *et al*., 2007) and Critically Endangered ecosystem (Holdaway *et al*., 2012), and may have been historically present within the dune systems on site prior to intensive modification prior to the earliest available imagery. No identifiable ephemeral wetlands are present within the site after 1942 to current day.

5.1.3 Opportunities for Restoration and Enhancement

Due to the extent of work proposed through the site, opportunities for enhancement and restoration on natural inland wetlands within the site boundary are unable to be undertaken. Investigations into the ecological gains which may be achieved following enhancement and restoration outcomes for those

[1] Soil information from S-Map online; https://smap.landcareresearch.co.nz/maps-and-tools/app/
[2] 'carr' is a term used to describe wetlands which contain woody vegetation, and most often occur as a mid-successional stage between a herbaceous-dominated wetland and wetland forest.

wetlands, in the event they were not being lost, is considered to be low to moderate. Enhancement actions would include fencing to prevent stock access with a vegetated buffer and potentially indigenous re-vegetation through planting and natural succession replanted. However, the wetlands would still lack connectivity to other contiguous habitats, their hydrology is mostly intermittent, and would be permanently affected unless the outflowing drains were blocked.

Once steps to avoid, minimise, and remedy adverse effects have been sequentially exhausted, offset, or sequentially, compensation are used to address more than minor or significant residual adverse effects. These offset/compensation actions are preferably located on the same site as the loss, and opportunities for enhancement and restoration of wetlands outside of this site, and outside of the applicants landholdings have not been investigated. Offset and compensation which are undertaken offsite and/or outside of the applicants landholding may not procure long-term ecological gains and protections, as potential changes in land use, landowner agreements and long-term management of the restoration wetland will be outside of the applicant's control.

As such, in accordance with the effects management hierarchy, the preferable option for the management of residual effects for the loss of 5.33 ha of wetland extent is for the creation and construction of new wetland extent, greater than that which is being lost, within the site.

This new wetland will be located within the applicants landholdings, and ensures protection and control of restoration actions are able to be enforced. The wetland area identified within the site as the proposed offset/compensation site for the loss of wetlands, is located in the wetted areas in the south part of the site, adjacent to the proposed location of enhanced Wharemaukū Stream (refer to the concept plan, Figure 3). The wetland offset/compensation area will be located in the generally flat, low lying land adjacent to the restored Wharemaukū Steam and will form part of the river floodplain, and part of the low-lying seepage areas. It will contain of a mosaic of channel habitat, shallow water, frequently wetted areas, infrequently wet areas, and areas that only receive water in heavy rain events.

The creation and construction of new wetland extent within the site will ensure no net loss of wetland *extent* and *values* within the site, and local area.

6. PROPOSED COMPENSATION ACTIVITIES

6.1 Greater Wellington Guidance

The national policy direction provides protection to freshwater bodies with the effects managed by applying the effects management hierarchy, which has been included in the GWRC NRP. GWRC provides guidance on the assessment required under the effects management hierarchy including guidance on biodiversity mitigation and biodiversity offsetting (GWRC, 2022); and the National Policy Statement for Freshwater Management (NPS-FM) provides principles for aquatic compensation (Ministry for the Environment, 2022; Appendix 2).

6.2 Proposed Compensation

The development site offers significant opportunities for restoration, enhancement, and reinstatement of aquatic habitats, in terms of degree of uplift and with no loss of extent or area. The key feature of the compensation package is the creation and establishment of 5.44 ha of new wetland extent, created on the southern portion of the site. This biodiversity wetland will hydrologically be supported through flows from the re-aligned Watercourse 1, and from the eastern portion of the site from a forebay where the water source will consist of diffused overland flows from the Wharemaukū Stream and a low-flow pipe, discharging from the forebay into the wetland. The restoration site is currently mostly pasture with some degraded wetland habitat (predominantly wetted pasture) and drains, however at the time of wetland construction, the area will be earth worked with no remaining wetland extent present.

The restoration site will be designed to achieve a net biodiversity gain, both in extent and habitat quality. The 5.44 ha wetland will be earth worked, where necessary, to create areas of varying depths, and planted with a range of wetland vegetation in varying zones, providing for:

1. Obligate (OBL) wetland plants – wet most of the time, with connectivity to the stream, and inundation frequent.
2. Facultative wetland (FACW) vegetation – damp most of the time, inundation common in high rainfall events, usual storm events. Some areas would be associated with the stream (marshes), and some would be separate forming in shallow depressions (swamps).
3. Facultative vegetation (FAC) wetland – damp periodically, inundation from the stream only occasionally in a year or two, and then usually only short term. Flood zone rather than usually storm flow zone. Plus, additional zones associated with lower points in the landform, and providing a transition zone between Zone 2 vegetation and terrestrial vegetation.

The wetlands to be lost consist of intermittently saturated soils, occasionally with isolated areas of open water and pooling (Figure 3). The compensation wetland will contain longer saturation periods, with a diverse range of indigenous flora and habitat types throughout. Creation of such habitats is expected to recreate a naturally representative ecosystem which would far more closely reflect what would have been present on site prior to removal of the original indigenous vegetation of the area, than the habitats which are currently present.

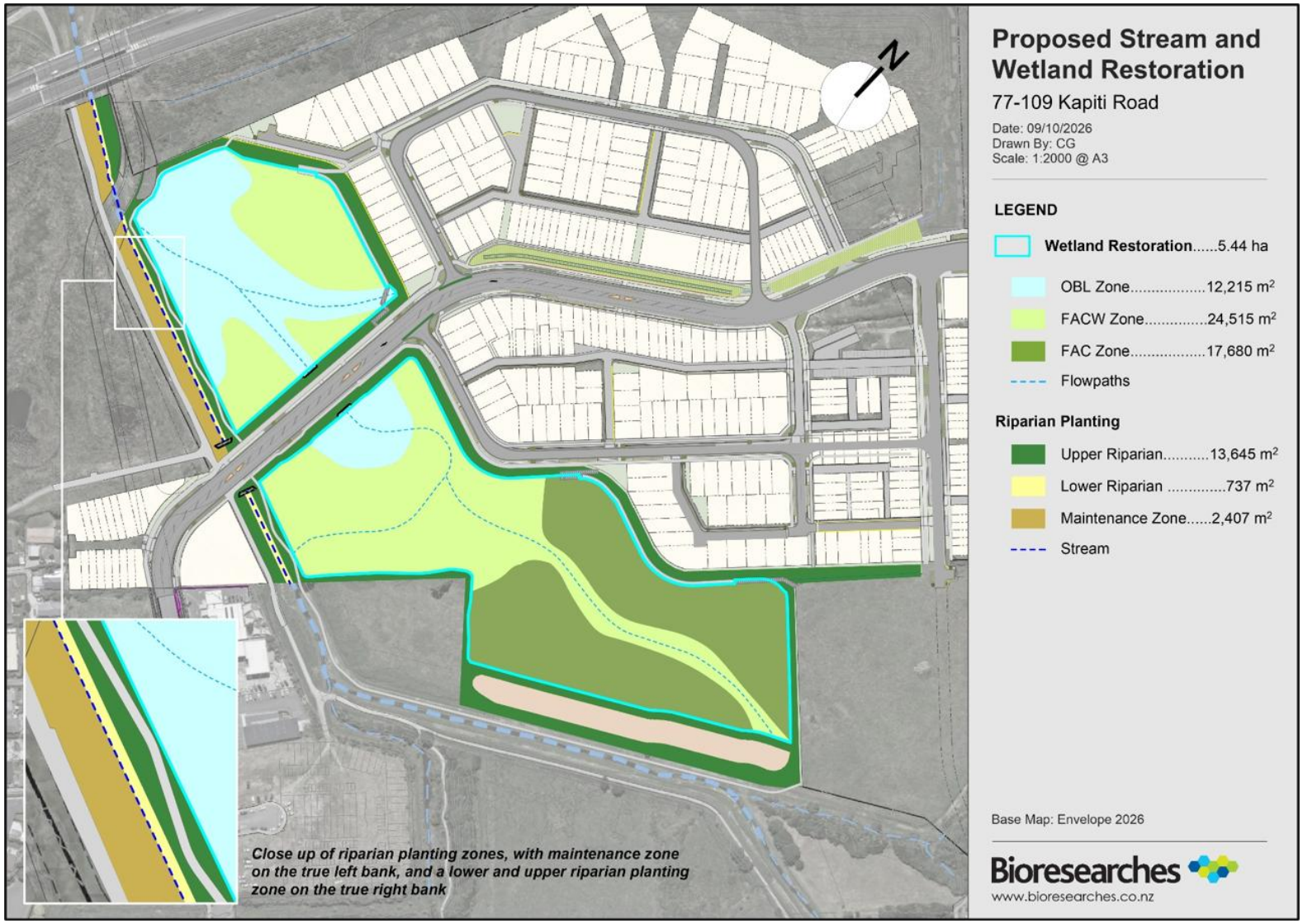


Figure 3. Concept plan for wetland compensation site connected and surrounding habitats.

As described in Bioresearches (2026a), the lower-lying portions of the site, prior to anthropogenic vegetation clearance, would have been vegetated with kahikatea, pukatea forest (WF8). These forests are generally dominated by kahikatea, with pukatea, swamp maire, rimu, tawa, kiekie and supplejack also present (Singers & Rogers, 2014). Fens were likely present in the wetter areas with lower nutrient inputs, which would have been vegetated with mānuka associations (Boffa Miskell, 2022); grading into wetland carr[3] type habitats including tī kōuka, toe toe, flax and cabbage trees, particularly in wetter areas or near open water (Ravine, 1992).

The proposed compensation for the impact wetlands would form a large mosaic wetland. The wetland would have a new surface, so no initial weed removal will be required, with peat substrate salvaged throughout the site proposed to be transferred to the compensation wetland. A minimum of 500mm depth of peat is proposed throughout the wetland, with occasional deeper areas. The Proposed planting will consist of a variety of native wetland plants followed by enrichment planting. This will provide a high species diversity, high dominance of indigenous wetland plants, provide tiers in the wetland, and provide several different habitat types in the wetland area. The size, shape and site of the compensation wetland would have a high area to perimeter ratio. The severity of edge effects, such as pest plant infestation, drying winds, temperature fluctuations and runoff, will therefore be reduced. The exposure to land-use pressures once enhanced would be very low.

The Wharemaukū Stream will be retained in its existing alignment along the southern part of the site and enhanced through naturalisation and riparian planting. The Project also includes the creation and enhancement of wetland habitat, together with associated flood storage and stormwater management areas within the western and southern parts of the site.

Linking the Wharemaukū Stream during rainfall events, the re-aligned Watercourse 1 and the wetland throughout the low-lying area restoration area (Figure 3) will ensure that the hydrology of the wetland is sustained and the transition between constantly wetted areas, usually wetted areas, occasionally wetted areas and rarely wetted areas is changing with the seasons and weather events as is currently occurring on the site (Figure 3).

The restored wetland areas will initially be planted with the herbaceous wetland species (grasses, rushes, sedges) achieving a very similar form and function to the current herbaceous wetlands within eighteen months of establishment. The additional species and woody species will require several seasons to establish, but the time lag from the current wetland herbaceous tiers (with large areas dominated by summer annual species that die off in late autumn) to the created wetland herbaceous tiers will be minimal. The planting of the wetland compensation areas with native wetland vegetation and linking these areas to the Wharemaukū Stream will increase the connectivity of the aquatic ecosystems in the area and will result in a significant positive effect on ecological functioning of both the stream and wetland and biodiversity well above the actual and potential values of the sites.

With good design, appropriate planting plans and maintenance and pest control the restoration site has the potential to rapidly show a net gain in ecological values, show additionality and have the potential to

[3] 'carr' is a term used to describe wetlans which contain woody vegetation, and most often occur as a mid-successional stage between a herbaceous-dominated wetland and wetland forest.

link larger ecosystems and or create extensive riparian corridors. It is understood that the wetland area will be vested with KCDC with further protections like covenants, able to legally protect the aquatic habitats, restoration and enhancement areas in perpetuity.

Biodiversity gains at the compensation site are anticipated high (Table 3), the quantum of compensation has been calculated based upon the requirement to achieve no net loss and a net gain in wetland area and values. The total area of degraded exotic wetland loss is calculated as 5.33 ha. The total area of wetland creation (with high biodiversity gains) is calculated as 5.44 ha.

Table 3. Anticipated Ecological Values Assessment of the Wetland Enhancement at the Proposed Compensation Site after Eight Years

Attribute	Assessment Criteria or Measurement unit	Impact Wetlands Wetland 1 - 8	Enhanced Offset Wetland	Uplift in Ecological Value (EIANZ Guidelines)
WETLAND SIZE				
Size	m²	5.33 ha	5.44 ha	Very High
Area to perimeter ratio	Ratio of the area to the length of perimeter not contiguous with a native/natural habitat	2.9:1 to 21.7:1 (Median 7.2:1) – Low and indicative of a high level of edge effects.	33:1 and 36:1– High, indicative of a low level of edge effects.[4]	Very High
VEGETATION CHARACTERISTICS				
Wetland vegetation type	Singers *et al.* (2017) and Singers and Rogers (2014)	Exotic wetland (EW)	Cabbage tree, toe toe carr and kahikatea, pukatea forest (WF8).	High
Vegetation - Native species richness	% of native species (refer Appendix 3)	0-52% (Median 7%)	90%	Very high
Vegetation - Dominant	Percentage of dominant plant cover that is exotic	100%	10%	Very High
Structural tiers & richness	Number of vegetative tiers	1	3	Very high
HYDROLOGY				
Hydrology	Desktop & Site surveys	Intermittent	Permanent & Intermittent	Low
Number of hydrological units present	Count undertaken during site assessment	Of the nine wetlands, although all are intermittent, 5 are only occasionally saturated and, 4 are more commonly saturated, with occasional areas of open water.	4 Permanently saturated, intermittently saturated, open water, and rarely saturated	Moderate
FAUNA				
Potential for native aquatic fauna	Desktop & Site surveys	Low – complete and partial fish barriers	Low – whilst potential habitat will be moderate to high, the wetland will contain a lower degree of connectivity to the wider catchment	Low
Potential for birds and other fauna		Common native bird species only, such as pūkeko. Limited likelihood of other threatened birds accessing the wetland due to limited connectivity to other suitable habitats. Bats have not been detected within the area.	Large well buffered wetland habitat has high potential to be used by native bird species such as pūkeko, shags and spoonbill, and also some potential for other less common wetland birds such as pāteke and fernbird have potential to utilise existing connectivity to disperse into the wetland.	Very high

Attribute	Assessment Criteria or Measurement unit	Impact Wetlands Wetland 1 - 8	Enhanced Offset Wetland	Uplift in Ecological Value (EIANZ Guidelines)
SUMMARY				
Summary of potential for enhancement	Site assessment	Low. Fencing, buffer planting and restoration planting could be undertaken, but the wetlands would still lack connectivity to other contiguous habitats, and be limited by downstream fish passage barriers and a lack of incentive to restore and maintain fragmented swampy areas. Area currently dominated by, and surrounded by exotic pastural species and would require constant management. Ecological value even if restored would be unlikely to exceed 'Moderate'.	High The site will be cleared of all vegetation, which will remove the exotic weeds and pest plants, then the wetland will receive peat salvaged throughout the site and be planted with vegetation with different affinities to wetlands, creating varied wetland habitats, different structural tiers, and with variable hydrology, resulting in a mosaic of wetland forms. The wetland will be bounded by the Wharemaukū Stream and Wharemaukū riparian plantings to the south and west, and the wetland habitats will be buffered by and transition to indigenous terrestrial vegetation towards the development areas. The stream and wetland enhancement area will form a 5.44 ha of complex indigenous habitats.	High
EIANZ attributes to be considered when assigning ecological value or importance to a site or area of vegetation / habitat / community for the wetland enhancement site at 10 years.				
Representativeness / naturalness	Large scale natural wetland dominated by indigenous vegetation, with kahikatea			High
Rarity / distinctiveness	Large indigenous wetlands are now rare both regionally and nationally			Very High
Diversity and Pattern	Diverse range of indigenous vegetation in a variety of structural tiers			High
Ecological Context	Large size and links riparian habitats over a 600m long area.			High
Potential Ecological Value				**VERY HIGH**

7. BIODIVERSITY COMPENSATION MODEL APPLICATION

7.1 Biodiversity Compensation Model

This REAR-WL utilises the principles and methodology of the Biodiversity Compensation Model (BCM), including the associated Excel Calculator tool (Baber *et al*., 2021b) to assist in quantifying the extent of wetland restoration activities required to achieve no-net loss.

The BCM is a simpler model than the Biodiversity Offsetting Accounting Models (BOAM) and does not include the disaggregation of biodiversity components found within BOAM. The BCM can offer advantages in functionality, with the use of multiple types of compensation actions across multiple sites being handled more easily. A BCM was used, to validate proposed compensation actions to verify that the proposed compensation actions also provide sufficient biodiversity gains within the BCM model.

The BCM input parameters are detailed in Table 4. A 'screenshot' of the completed BCM model with the input and outputs is provided in Figure 4. This shows that the BCM predicts that the proposed restorative actions would achieve a compensation score 28.5% higher than the impact score (Note: 10% is considered to provide a net gain outcome). As such, the proposed compensation is over the minimum targets for predicting net positive outcomes.

This indicates a 'net positive' outcome for wetland biodiversity values, with the ecological benefits of the proposed compensation actions exceeding the Project's residual impacts. Importantly, the proposed measures will also achieve no net loss of wetland extent and ecological values. Collectively, these outcomes demonstrate that the proposed compensation actions are more than sufficient to address the ecological effects associated with the proposed wetland loss.

Table 4. BCM model inputs and justification

Input descriptors	Input data		Justification for input parameters
Project/reference name	Kapiti Road		N/A
Biodiversity type	Natural inland wetland		As observed during site visits
Technical expert(s) input	L. Dooley, T Barnett, K Feickert		N/A
Benchmark	5		5 is the recommended benchmark as per Baber *et al.* (2021a).
How many habitat types OR sites are impacted	2		Two habitat types within the nine wetlands that will be impacted – wetlands have been combined into one unit dependent upon their ecological value, as they are similar in regards to vegetation composition, hydrology and connectivity, and have the same ecological value.
Number of proposed compensation actions	1		One action is proposed, being the construction of the compensation wetland complex to become representative of an indigenous wetland. This also includes restoration and providing a wetland buffer of 10 m and undertaking of animal pest control. This has been considered as one compensation action. As specified by Baber *et al.* (2021a): "*Where compensation actions differ AND are undertaken in different locations or sites, or the spatial extent of the compensation action is different, then each action must be assessed independently. In some instances, different compensation actions in the same location can be lumped into a single compensation action (e.g., native revegetation and weed control), provided appropriate justification is given. Similarly, it may be appropriate to combine the same compensation action at different locations into a single compensation action, with appropriate explanation*."
Net positive target	10%		*'For compensation a Net Positive outcome target of 10% is considered by the authors to be generally appropriate'* – Baber *et al.* (2021a).
Habitat/Site Impact(s)	Wetlands 1, 6, 7, 8 & 9	Wetlands 2 – 5	N/A
Impact risk contingency:	1	2	A score of two is representative of a 'Moderate risk/Moderate value'. A score of one is representative of a 'Low risk/Low value'. This has been conservatively applied, and it is expected that a score of one is perhaps more appropriate for both wetland types. It is not expected that there is likelihood of permanent and irreplaceable loss of significant biodiversity values occurring, as there are no significant biodiversity values at the impact site, and it is considered likely that the project will succeed in recreating 5.44 ha of indigenous wetland habitat, which, due to the pest control and buffer planting, will be of a much higher quality than the 4.33 ha of lost wetland habitat.
Impact uncertainty contingency:	1	1	A score of one is representative of a low uncertainty. It is considered that there is a low level of uncertainty regarding the risk of permanent or irreplaceable biodiversity loss.
Areal extent of impact (ha):	1.97	3.36	53,371 m^2 (5.33ha) of wetland loss is proposed to occur.
Value score prior to impact:	1.5	2.5	The wetlands are currently of low to moderate ecological value, and a potential ecological value of low to moderate, which equates to a score of 1.5 to 2.5.
Value score after impact:	0.001	0.001	0.001 is the lowest score able to be entered into the model, which equates to an ecological value of zero.

Compensation Action(s)	Restoration of the Compensation Wetland, as described above in Section	N/A
Discount rate:	3.0%	'*A discount rate of 3% is recommended*.' – Baber *et al.* (2021a).
Finite end point (years):	8	An eight year end point was decided upon based upon the extensive area of wetland restoration for monitoring the success of restoration plantings. Fast establishing herbaceous and shrub vegetation will provide cover whilst tree cover establishes. Plant spacing undertaken to allow for fast canopy closure, with failed planting replaced annually. Three tiers of vegetation will be planted and monitored for success. Kahikatea grows 10-70 cm annually[5], and pukatea grows 30 – 60 cm annually[6] with an expected 3.53 m height after eight years assuming annual growth rate of 0.40 m, assuming a planting height of 0.33 m (PB2 container size)
Compensation confidence contingency:	1	A score of one equates to 'high confidence'. Baber *et al*. (2021a) describe 'high confidence' as: *'The proposed compensation measure uses methods that are well-known, often implemented, and which have been proven to succeed greater than 75% of the time. However, complicating factors and/or expert opinion precludes greater confidence in this compensation measure. Likelihood of success is greater than 75% but less than 90%.* *'* This is considered a suitable level of confidence, given that restoration plantings and wetland creation are a frequently undertaken activity within Auckland, with good success rates, especially where ongoing maintenance is applied, as is recommended in this report.
Areal extent (ha) of compensation type:	5.44	This is the selected area in hectares of the Compensation Wetland
Value score prior to compensation:	0.001	The compensation wetland does not exist and will be constructed. As such, the "wetland" has no current ecological value as a wetland.
Value score after compensation:	4	It is expected that with the proposed restoration activities, the ecological value of the wetlands would increase to a 'Very High' ecological value, which equates to a score of 4. The required range of species will be specifically planted to achieve a high species richness. Diversity of wetland saturation types (pools, permanent saturation, intermittent saturation, drylands) allow for a variety of indigenous specimens to be established.

[5] https://www.tanestrees.org.nz/species-profiles/kahikatea/ accessed 17/06/2025
[6] https://www.tanestrees.org.nz/species-profiles/pukatea/ accessed 17/06/2025

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Model Inputs		
Input descriptors	Input data	
Project/reference name	Kapiti Road	
Biodiversity type	Palustrine wetland	
Technical expert(s) input	L Dooley, T Barnett	
Benchmark	5	
How many habitat types OR sites are impacted	2	
Number of proposed compensation actions	1	
Net gain target	10%	
Habitat/Site Impact(s)	Low value wetlands	Moderate value
Impact risk contingency:	1	2
Impact uncertainty contingency:	1	1
Areal extent of impact (ha):	1.97	3.36
Value score prior to impact:	1.5	2.5
Value score after impact:	0.001	0.001
Compensation Action(s)		
Discount rate:	3.0%	
Finite end point (years):	8	
Compensation confidence contingency:	1	
Areal extent (ha) of compensation type:	5.44	
Value score prior to compensation:	0.001	
Value score after compensation:	4	

Model outputs			
	Total impact score	Low value wetlands	Moderate value
Impact score	-2.47160	-0.62014	-1.85146
	Total compensation score		
Compensation score	3.17705	3.17705	
Net gain outcome	28.5%		

This Biodiversity Compensation Model (BCM) and the accompanying User Guide has been developed by:
M. Baber, J. Dickson, J. Quinn, J. Markham, G. Ussher, S. Jackson and S. Heggie-Gracie

Figure 4. BCM model inputs and outputs for compensation of 5.33 ha of wetland loss

8. STAGED RESTORATION AND MONITORING

8.1 Staged Restoration

A multistage approach is required to fully create, restore and enhance the vegetation within the proposed compensation wetland and the riparian areas. Enrichment species require more protection from the elements and are best planted 3-5 years after pioneer planting. The multistage approach is outlined below:

Stage 1:	**A. Construction**	Completion of any works required on channels or levels within the wetland for restoration
	B. Weed management	Although all weeds should be eradicated with the earthworks, maintain the weed control and manage all weeds present and dispose at a transfer station.
	C. Animal pest control	Begin baiting and trapping programmes to reduce animal pest indices.
Stage 2: **Planting Programme**		Prepare enhancement area and plant pioneer species according to the planting schedule.
Stage 3: **Ongoing Maintenance**		Replace any unsuccessful plantings and release seedlings from any persistent invasives or new incursions. Assess which plantings have been successful and consider alternatives where unsuccessful. Weed maintenance should continue for a minimum of five years. Plant enrichment species should be planted after 3-5 years.

These works would be carried out in accordance with Plans for:

- Weed Management;
- Animal Pest Management; and
- Wetland and Riparian Planting.

Table 5 provides species list of native plants that are appropriate to the habitats and the ecological area. The Kapiti Whituna Swamp and Marsh Type Wetland planting lists (Appendix 4 and Appendix 5) were reviewed as part of the species selection. These lists are recommendations and provide a basis to ensure the biodiversity outcomes are achievable; but are subject to refinement upon consultation, including with mana whenua.

Table 5. Indicative Planting Schedules – Wetland Planting

Area and habitat type	Common name	Scientific name	Wetland plant indicator rating #
Permanent standing water/open water areas	*Carex secta*	pūrei	OBL
	Eleocharis sphacelata	kuta, tall spike sedge	OBL
	Isolepis prolifera	budding club-rush	OBL
	Machaerina articulata	jointed twig rush	OBL
	Schoenoplectus tabernaemontani	kuta, lake clubrush	OBL
Temporary standing water, permanent saturation: Temporary standing water, permanent saturation:	*Astelia grandis*	swamp astelia	OBL
	Austroderia fulvida	toetoe	FAC
	Carex geminata	cutty grass, rautahi	FACW
	Carex virgata	swamp sedge	FACW
	Coprosma propinqua	mingimingi	FAC
	Coprosma tenuicaulis	swamp coprosma	FACW
	Cordyline australis	cabbage tree, tī kōuka	FAC
	Cyperus ustulatus	giant umbrella sedge, Upoko-tangata	FACW
	Dacrycarpus dacrydioides	kahikatea	FAC
	Isolepis prolifera	budding club-rush	OBL
	Juncus edgariae	wīwī	FACW
	Laurelia novae-zelandiae	pukatea	FAC
	Phormium tenax	harakeke, New Zealand flax	FACW
	Syzygium maire	swamp maire, maire tawake	OBL
Higher areas with intermittent saturation and occasional flooding:	*Coprosma propinqua*	mingimingi	FAC
	Coprosma rotundifolia	round-leaved coprosma	FAC
	Cordyline australis	cabbage tree, tī kōuka	FAC
	Dacrycarpus dacrydioides	kahikatea, white pine	FAC
	Freycinetia banksii	kiekie	FACU
	Hoheria angustifolia	narrow-leaved houhere	FACU
	Laurelia novae-zelandiae	pukatea	FAC
	Leptospermum scoparium	mānuka	FAC
	Melicope simplex	poataniwha	Not Rated
	Melicytus micranthus	swamp māhoe	FAC
	Myrsine divaricata	weeping māpou	FAC
	Pennantia corymbosa	kaikōmako	Not Rated
	Phormium tenax	harakeke, New Zealand flax	FACW
	Plagianthus regius subsp. *regius*	mānatu, lowland ribbonwood	FACU
	Sophora microphylla	kōwhai	Not Rated

= Clarkson et al. 2021

8.2 Monitoring

Monitoring of biodiversity compensation actions is critical to determining overall compensation success, and both stream and wetland compensation areas should be monitored to ensure the expected biodiversity gains are achieved, with additional measures to be undertaken if the gains fall short of expect outcomes.

8.2.1 Wetland Compensation, Enhancement and Monitoring Plan

The wetland and riparian planting areas should be monitored annually for weed presence, with problem weeds controlled periodically. Wetland monitoring should be undertaken biennially, in

general accordance with the Wetland Condition Index (Clarkson *et al.*, 2003) or other suitable monitoring methodology to assess trends in wetland condition.

The monitoring methodology will include the implementation of permanent vegetation plots within the wetland. The calculations in the Wetland Condition Index (WCI) will be utilised to derive a score for each plot, and also the wetland as a whole, which will enable trends in wetland condition to be tracked. It is recommended that the dominance test and prevalence index calculations (as per Clarkson, 2014) also be applied to the plot data, to also provide some indication of the frequency and degree of saturation of the plots and consequently the success of the wetland habitat creation.

The WCI methodology also includes informal data collection methods for terrestrial fauna. In the absence of ongoing formal fauna surveys, these surveys will provide some information on the native fauna utilising the wetland habitats.

The above requirements are reflected in the draft consent conditions**,** which provide the mechanism for the establishment, ongoing management and monitoring of the proposed wetland compensation areas. This includes monitoring of wetland condition and vegetation establishment to confirm that the compensation measures are performing as intended and achieving the anticipated ecological outcomes, including no net loss of wetland extent and ecological values and an overall net positive outcome for wetland biodiversity values**.**

8.2.2 Pest Management Plan

It is recommended that the pest management plan include measures for animal pest control to be undertaken throughout the site. Accurate recording of results from the pest control programmes is important for providing information on the status of predator populations on the properties over time. Annual reports summarising the results of the pest control should be prepared and made available to Council compliance for review. The pest control operator would be responsible for collecting data on trap catches, maintaining the pest control devices, and preparation of summary reports.

At a minimum, the following set of information should be collected:

- Location of the traps;
- Number of kills;
- Number of traps nights; and
- Lure/bait (i.e., apple) used.

Baiting records:

- Placement of bait stations;
- Bait type;
- Timing of placement;
- Quantity used during each re-baiting; and
- Quantity of bait take each check (i.e., percentage bait-take).

9. PRINCIPLES OF COMPENSATION

The NPS-FM sets out thirteen principles that underpin the concept of aquatic biodiversity compensation (which also align with the NRP principles for biodiversity offsetting). These principles are identified in Table 6, with a brief explanation of how the proposed aquatic habitat compensation for the site will appropriately implement or satisfy them.

Table 6. Principles of aquatic biodiversity compensation and how these will be achieved within the Project Area.

Compensation principle	How this will be achieved within the Project Area
Adherence to effects management hierarchy	An Ecological Effects Assessment has been completed (Bioresearches, 2026a), and through this process the effects management hierarchy has been applied: • Avoidance addressed in urban design, engineering and economic assessments. • Mitigation of potential adverse effects on freshwater and terrestrial fauna with a Native Fish Recovery and Relocation Plan, a Lizard Management Plan and Avifauna management during the bird breeding season has been undertaken for other aspects of the project. • The constructed wetland will not be like-for-like to the impact wetlands (i.e. exotic dominant swamps), therefore, the impact wetlands cannot be offset and must be compensated for. Identification of residual adverse effects, after undertaking all feasible avoidance, remediation and/or mitigation measures, has identified wetland loss. Compensation Given the large extent of wetland extent available to be utilised for wetland compensation, the use of the BCM is considered appropriate to manage the effects of the wetland loss; to provide no net loss, and preferentially a net biodiversity gain.
When aquatic offsetting is not appropriate	Compensation can achieve the conservation outcomes specified in the NPS FM. There is no net loss of irreplaceable habitat; there is adequate certainty about the success of the proposed compensation measures; and it is the most technically feasible option to address the residual effects after application of the initial steps of the effects management hierarchy. The ecological values of the habitats proposed for compensation are assessed as Moderate to Low. The affected wetlands are not considered to be irreplaceable or vulnerable, in which their vegetation communities are exotic species with limited fauna habitats and do not represent a threatened habitat type.
Scale of aquatic compensation	The proposed expansion will result in a loss of 5.33 ha of wetland area, with 5.44 ha of wetland area created on the same site. The Net Gain Outcome, calculated using the BCM is 28.5%, well in excess of the recommended 10%. Effects to fauna utilising the wetland and adjacent areas within the footprint are adequately managed as described above. It is expected that the uplift in ecological value and consequently the ecosystem services provided by the re-creation of an indigenous wetland area will adequately compensate for the loss in exotic pastural wetland area; and will lead to a net positive outcomes for biodiversity values, including wetland function and habitat availability for fauna (such as wetland birds) within the wider project area.
Additionality	There are no current or future plans to undertake any of the proposed revegetation and restoration actions. The works are not otherwise required, funded or reasonably

	expected to occur in the absence of the Project, and therefore the calculated gains are attributable to the compensation package.
Leakage	The aquatic compensation design and implementation will avoid displacing harm to this location and will ensure that potential harm to existing biodiversity will be mitigated and temporary. The proposed compensation wetland involves establishing a large indigenous wetland within an area currently dominated by pasture and existing exotic pastural wetlands. Potential leakage effects include loss of existing wetland habitats during construction; changes to local hydrology; sedimentation of downstream areas; effects on native fauna. The existing pastoral wetlands will be incorporated into the new wetland footprint, and be replaced with a larger, more diverse indigenous wetland ecosystem. The loss of the existing wetlands is fully accounted for in the BCM. Other potential leakage effects, such as erosion and sedimentation, effects on native fauna will be managed through the ESCP and EMP. The compensation actions are not expected to adversely affect habitats outside of the compensation area.
Long term outcomes	All restoration actions will be legally protected in perpetuity and monitored for a minimum 8 years to ensure compensation targets are achieved. Plant maintenance, weed control, replacement planting, enrichment planting, pest animal control and regular monitoring and reporting are all included in the EMP, and carried into the conditions of consent. Consent conditions will require adaptive management, a remediation plan, and further monitoring until such time as the target are achieved.
Landscape context	The proposed wetland compensation and restoration will be undertaken within an approximately 5.48 ha area in the southern and south-western part of the Project Area. The proposed wetland creation, restoration and associated riparian planting will establish a large, contiguous and buffered area of wetland habitat, improving habitat connectivity and ecological function within the wider Project Area. The location and configuration of the compensation area will also provide enhanced habitat opportunities for indigenous fauna and contribute to a more coherent wetland and riparian habitat network.
Time lags	The BCM model has a time lag component incorporated within the methodology, but the improvements will be visible and effective within a season upon restoration and planting of the new wetland, as no trees and minimal shrubs are currently present in the wetland impact areas. The herbaceous wetland planting tier will establish rapidly within the first season, as they are dominated by fast growing native rushes and sedges and be replacing dominantly exotic wetted pasture species; with the shrub and tree tiers taking longer to establish. This is time lag is assessed as temporary and short term.
Trading up	When trading up forms part of aquatic compensation, the proposal demonstrates that the aquatic extent or values gained are demonstrably of greater or higher value than those lost. The proposal also shows the values lost are not comprised of Threatened or At Risk/Declining flora species or to plant species considered vulnerable or irreplaceable. At Risk/Declining and vulnerable fauna species will not be impacted through inappropriate habitat loss. The compensation wetland replacing the impact wetlands will be of higher ecological value, leading to net positive outcomes for biodiversity
Science and mātauranga Māori	The design and implementation of the biodiversity compensation will be informed by established and proven methods for wetland restoration and fauna and flora management. The draft GWRC consent conditions also specifically provide for mana

	whenua to be invited to participate in the development of the wetland proposal, providing an opportunity for relevant mātauranga Māori, values and perspectives to be incorporated into the detailed design and implementation of the compensation wetland. This will complement the ecological science underpinning the proposal and assist in maximising the ecological and cultural outcomes of the wetland restoration.
Tangata whenua or stakeholder participation	The Project has involved ongoing engagement with tangata whenua and relevant stakeholders. Importantly, the draft consent conditions seek to embed continued engagement and involvement with mana whenua throughout implementation of the Project, including in relation to the proposed wetland works. This provides an ongoing mechanism for mana whenua to participate in the development and implementation of the wetland compensation measures, rather than engagement being limited to the consenting process.
Transparency	The wetland compensation calculations are based on the primary attributes of the wetlands, which have been assigned in accordance with nationally and regionally accepted reference documents, including Johnson and Gerbeaux (2004) as published by the Department of Conservation and the Ministry for the Environment; as well as the EIANZ guidelines for assigning ecological values. The calculations are presented as Tables 3 and 4 and Figure 4 of this report, and can be supplied electronically for review. Detailed mapping of the existing condition of the restoration wetlands and their existing riparian buffer zones was also undertaken. These maps are provided within this report. The BCM calculations are also tabulated in this report. A site-specific planting plan will be developed, and success monitoring of the restoration activities is recommended; and regular maintenance and monitoring reports will be provided to Council and (where appropriate) other stakeholders.

10. CONCLUSIONS

Development of 77 and 109 Kapiti Road and 1 Brett Ambler Way, will result in wetland loss, in which nine areas of dominantly exotic pastural wetlands, totalling 5.33 ha in area will be lost.

Following application of the effects management hierarchy, compensation for the residual loss of these natural inland wetlands is proposed through the creation and restoration of an indigenous wetland complex within the Project Area and in close proximity to the impacted wetlands. Application of the BCM predicts a net positive outcome of 28.5%, meaning that the calculated ecological gains from the proposed compensation package exceed the calculated impact score by 28.5%. This exceeds the recommended minimum 10% margin and demonstrates that the proposed compensation will address the residual loss of the affected low to moderate value wetlands. The proposed compensation will also achieve no net loss of wetland extent and ecological values, while providing an overall net positive outcome for wetland biodiversity values.

The compensation wetland will be supported by detailed planting, monitoring and pest management requirements, including appropriate species composition, habitat enhancement, ongoing maintenance and monitoring of wetland establishment and condition. These measures are reflected in the draft consent conditions, providing an enforceable mechanism to ensure the compensation wetland is established and managed to achieve the anticipated ecological outcomes over the long term.

Overall, the proposed wetland creation, restoration and enhancement will provide a substantial positive aquatic ecological outcome, including increased indigenous wetland habitat, improved biodiversity values and enhanced habitat connectivity within the wider Project Area.

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12. APPENDICES

Appendix 1. Ecological Values and Effects Summary Table from the project AEcE.

Copy of Table 14 (Bioresearches, 2026a): Level of effect of the removal of vegetation and aquatic habitats on the relevant species groups or habitats. The level of effect is calculated using the EIANZ AEcE matrix.

Grouping	Species or habitat	Ecological value	Magnitude of effect	Level of effect prior to effects management	Proposed effects management	Level of effect following effects management undertaken as recommended in this report	Residual Level of effect
Terrestrial Habitat	Exotic grassland	Negligible	High	Very low	Level of effects low and very low, aside from potential fauna management, no mitigation / management required. Significant benefits by planting native trees and shrubs adjacent to restored stream and wetland areas; significant benefits with removal of pest plants.	Positive	Net gain
	Exotic scrubland	Low	High	Low		Positive	Net gain
Freshwater Habitat	Wharemaukū Stream	Moderate	High	Moderate	Stream restoration and enhancement with hydrologic variation, connectivity to wetland habitats, native restoration plantings, removal of fish barriers. Removal of culverts and partial fish barriers within the site.	Positive	Low
	Watercourse 1	Negligible (upper reach) Low (lower reach)	High	Low & very low		Low & very low	Net gain
	Drain 1	Negligible	Very high	Low		Low	Net gain
	Drain 2	Negligible	Very high	Low		Low	Net gain
	Drain 3	Negligible	Very high	Low		Low	Net gain
	Drain 4	Negligible	Very high	Low		Low	Net gain
Wetland Habitat	Wetland 1	Low	Very high	Moderate		Moderate	Net gain

	Wetland 2	Moderate	Very high	High	Effects cannot be minimised or remediated and must be offset or compensated through Wetland creation and wetland restoration. Restoration to include native vegetation, multiple tiers, sustained hydrology; connected to the wider catchment and riparian vegetation. Removal of pest plants.	High	Net gain
	Wetland 3	Moderate	Very high	High		High	Net gain
	Wetland 4	Moderate	Very high	High		High	Net gain
	Wetland 5	Moderate	Very high	High		High	Net gain
	Wetland 6	Low	Very high	Moderate		Moderate	Net gain
	Wetland 7	Low	Very high	Moderate		Moderate	Net gain
	Wetland 8	Low	Very high	Moderate		Moderate	Net gain
	Wetland 9	Low	Very high	Moderate		Moderate	Net gain
Fauna	Avifauna	Moderate	High	Moderate	Implementation of nesting bird surveys prior to vegetation clearance, and management of any nests found.	Low	Low
	Herpetofauna	Moderate	Very high	High	Implementation of lizard management plan	Low	Low
	Bats	Negligible, not considered further.	N/A	N/A	N/A	N/A	N/A
	Native fish	Moderate	High	Moderate	Native fish recovery and relocation from impacted watercourse and wetland habitats	Negligible	Very Low

Appendix 2. National Policy Statement for Freshwater Management (NPS-FM) Principles for Aquatic Compensation.

These principles apply to the use of aquatic compensation for the loss of extent or values of natural inland wetlands and rivers ("extent or values" below).

1. Adherence to effects management hierarchy: Aquatic compensation is a commitment to redress more than minor residual adverse effects, and should be contemplated only after steps to avoid, minimise, remedy, and offset adverse effects are demonstrated to have been sequentially exhausted.
2. When aquatic compensation is not appropriate: Aquatic compensation is not appropriate where, in terms of conservation outcomes, the extent or values are not able to be compensated for. Examples of aquatic compensation not being appropriate would include where:
    (a) the affected part of the natural inland wetland or river bed, or its values, including species, are irreplaceable or vulnerable:
    (b) effects on the extent or values are uncertain, unknown, or little understood, but potential effects are significantly adverse:
    (c) there are no technically feasible options by which to secure gains within an acceptable timeframe.
3. Scale of aquatic compensation: The extent or values to be lost through the activity to which the aquatic compensation applies are addressed by positive effects that outweigh the adverse effects.
4. Additionality: Aquatic compensation achieves gains in extent or values above and beyond gains that would have occurred in the absence of the compensation, such as gains that are additional to any minimisation and remediation or offsetting undertaken in relation to the adverse effects of the activity.
5. Leakage: Aquatic compensation design and implementation avoids displacing harm to other locations (including harm to existing biodiversity at the compensation site).
6. Long-term outcomes: Aquatic compensation is managed to secure outcomes of the activity that last as least as long as the impacts, and preferably in perpetuity. Consideration must be given to long-term issues around funding, location, management, and monitoring.
7. Landscape context: An aquatic compensation action is undertaken where this will result in the best ecological outcome, preferably close to the impact site or within the same ecological district. The action considers the landscape context of both the impact site and the compensation site, taking into account interactions between species, habitats and ecosystems, spatial and hydrological connections, and ecosystem function.
8. Time lags: The delay between loss of extent or values at the impact site and the gain or maturity of extent or values at the compensation site is minimised so that the calculated gains are achieved within the consent period or, as appropriate, a longer period (but not more than 35 years).
9. Trading up: When trading up forms part of aquatic compensation, the proposal demonstrates that the aquatic extent or values gained are demonstrably of greater or higher value than those lost. The proposal also shows the values lost are not to Threatened or At Risk/Declining species or to species considered vulnerable or irreplaceable.

10. Financial contribution: A financial contribution is only considered if it directly funds an intended aquatic gain or benefit that complies with the rest of these principles.
11. Science and mātauranga Māori: The design and implementation of aquatic compensation is a documented process informed by science where available, and mātauranga Māori at place.
12. Tangata whenua or stakeholder participation: Opportunity for the effective and early participation of tangata whenua or stakeholders is demonstrated when planning aquatic compensation, including its evaluation, selection, design, implementation, and monitoring.
13. Transparency: The design and implementation of aquatic compensation, and communication of its results to the public, is undertaken in a transparent and timely manner.

Appendix 3. 2023 Vegetation Plot Data from Bioresearches and GWRC (2023)

Latin name	Wetland Rating	Biostatus	W1	W2	W3	W3	W4	W4	W5	W6	W7	W8
			Bio	Bio	GWRC-A1	GWRC-A2	GWRC-B1	Bio	GWRC-D1	GWRC-C1	Bio	Bio
Agrostis stolonifera	FACW	Exotic	10	30					15	20	1	10
Holcus Lanatus	FAC	Exotic			1		30	50	10		10	
Juncus articulatus	FACW	Exotic			5							
Juncus effusus	FACW	Exotic		10	15		2		60		2	40
Lolium *arundinaceum*	FAC	Exotic							20	1	66	
Lotus pedunculatus	FAC	Exotic			2	5	5		5		1	
Ludwigia palustris	OBL	Exotic										10
Paspalum distichum	FACW	Exotic	10	30	60	25				80	2	
Persicaria decipiens	OBL	Exotic			2							10
Persicaria hydropiper	FACW	Exotic	80	30	10	85	70		2			10
Plantago lanceolata	FACU	Exotic							1			
Ranunculus repens	FAC	Exotic	10	10	15	5	10				10	10
Rumex crispus	FAC	Exotic		5	3							
Rumex obtusifolius	FAC	Exotic	5									
Ulex europaeus	FACU	Exotic							1			
Gonocarpus micranthus	FAC	Native						15				
Isolepis prolifera	OBL	Native			5			40		15		40
Juncus edgariae	FACW	Native		5								
Juncus planifolius	FACW	Native			1							
Juncus sarophorus	FACW	Native		5	1	1					8	
Total			**115**	**125**	**120**	**121**	**117**	**105**	**114**	**116**	**100**	**120**
Count Native Vegetation			**0**	**10**	**7**	**1**	**0**	**55**	**1**	**15**	**8**	**40**
% Native Vegetation			**0**	**8**	**6**	**1**	**0**	**52**	**1**	**13**	**8**	**31**

Appendix 4. Planting Lists: Kapiti Whaitua Swamp Type Wetland (Source: GWRC).

Kapiti Whaitua Swamp Type Wetland - Planting - Suitable Species list
Foxton Ecological district

Found in wetland 99-100% of the time	Plant in the wettest areas of the swamp	
Found in wetlands 60-99% of the time	Plant in the other areas of the swamp	
Found in wetlands 30-60% of the time	Plant on the dryer margins of the swamp	

Trees

Cordyline australis	Tī kōuka, cabbage tree	
Dacrycarpus dacrydioides	Kahikatea, white pine	
Hoheria angustifolia	Narrow-leaved lacebark	
Laurelia novae-zelandiae	Pukatea	
Syzygium maire	Swamp maire	

Shrubs

Coprosma pedicellata		
Coprosma propinqua	Mingimingi	
Coprosma propinqua var. propinqua	Mingimingi	
Coprosma rotundifolia		
Coprosma tenuicaulis	Hukihuki, swamp coprosma	
Coprosma X cunninghamii		
Leptospermum scoparium	Mānuka	
Plagianthus divaricatus (Plant only within 500m of the coast)	Mākaka, saltmarsh ribbonwood	

Ferns and fern allies

Azolla rubra	Kārearea	
Blechnum minus	Swamp kiokio	
Blechnum novae-zelandiae	Kiokio	
Gleichenia dicarpa	Tangle fern	
Gleichenia microphylla	Carrier tangle fern	
Histiopteris incisa	Water fern	
Hiya distans		

Grasses/Tussocks

Amphibromus fluitans	Swamp grass	
Astelia grandis	Swamp astelia	
Austroderia fulvida	Toetoe	
Austroderia toetoe		
Deschampsia cespitosa	Tufted hair grass	
Deyeuxia quadriseta		
Hierochloe redolens	Kāretu	
Isachne globosa	Swamp millet	
Lachnagrostis filiformis	Wind grass	
Phormium tenax	Harakeke, flax	
Typha orientalis	Raupō	

Rushes

Apodasmia similis	Oioi (Plant only within 500m of the coast)	
Juncus australis		
Juncus distegus		
Juncus edgariae		
Juncus kraussii subsp. *australiensis*	Sea rush (Plant only within 500m of the coast)	
Juncus pallidus		
Juncus pauciflorus		
Juncus planifolius		
Juncus prismatocarpus		
Juncus pusillus		
Juncus sarophorus		
Juncus usitatus		

Sedges

Bolboschoenus caldwellii	(Plant only within 300m of the coast)	
Carex coriacea	Rautahi	
Carex dipsacea		
Carex dissita		
Carex geminata		
Carex lambertiana		
Carex lessoniana		
Carex maorica		
Carex resectans		
Carex secta	Pūrei	
Carex sinclairii		
Carex solandri		
Carex virgata	Swamp sedge	
Cyperus ustulatus	Upokotangata, giant umbrella sedge	
Eleocharis acuta	Sharp spike-sedge	
Eleocharis gracilis	Slender spike-sedge	
Eleocharis sphacelata	Kuta Kuta	
Gahnia xanthocarpa	Kauri grass	
Isolepis basilaris		
Isolepis distigmatosa		
Isolepis inundata		
Isolepis prolifera		
Isolepis reticularis		
Machaerina arthrophylla		
Machaerina articulata	Jointed twig rish	
Machaerina juncea		
Machaerina rubiginosa		
Machaerina tenax		
Schoenoplectus pungens	Three-square(Plant only within 500m of the coast)	
Schoenoplectus tabernaemontani	Kuta, lake sedge	
Schoenus apogon		
Schoenus concinnus		
Schoenus maschalinus		
Schoenus nitens		

Climbers

Calystegia sepium subsp. roseata	Pink bindweed	
Rubus australis	Swamp lawyer	
Rubus schmidelioides	Tātarāmoa, bush lawyer, white-leaved lawyer	

Orchids

Prasophyllum colensoi	Leek orchid	

Herbs and ground covers

Althenia bilocularis		
Apium prostratum	New Zeland celery	
Argentina anserinoides	Silverweed	
Callitriche muelleri		
Callitriche petriei		
Cardamine corymbosa		
Cardamine dolichostyla	Panapana	
Centella uniflora		
Centipeda cunninghamii		
Centipeda elatinoides	Sneezeweed	
Centipeda minima	Sneezeweed	
Cotula coronopifolia	Yellow buttons	
Crassula sinclairii		
Dichondra brevifolia		
Drosera binata	Forked sundew	
Elatine gratioloides		
Epilobium billardiereanum		
Epilobium brunnescens		
Epilobium chionanthum		
Epilobium hirtigerum		
Epilobium insulare		
Epilobium komarovianum		
Epilobium nerteroides		
Epilobium pallidiflorum		
Euchiton involucratus		
Glossostigma elatinoides		
Gonocarpus micranthus		
Gratiola sexdentata		
Gunnera dentata		
Gunnera prorepens		
Hierochloe redolens	Kāretu	
Hydrocotyle hydrophila		
Hydrocotyle microphylla		
Hydrocotyle moschata	Hairy pennywort	
Hydrocotyle moschata var. Moschata		
Hydrocotyle novae-zeelandiae		
Hydrocotyle pterocarpa		
Hypericum pusillum		
Lemna disperma	Duckweed	
Leptinella tenella		
Limosella lineata		
Lobelia angulata	Pānakenake	
Mazus novaezeelandiae subsp. Impolitus f. impolitus		
Myriophyllum propinquum		
Myriophyllum triphyllum		
Myriophyllum votschii		
Nertera scapanioides		
Ophioglossum petiolatum	Stalked adder's tongue	
Oxalis exilis		
Persicaria decipiens		

Pilularia novae-hollandiae	Pillwort	
Potamogeton cheesemanii	Manihi, red pondweed	
Potamogeton ochreatus	Blunt pondweed	
Potamogeton suboblongus	Rērēwai, mud pondweed	
Ranunculus amphitrichus	Waoriki	
Ranunculus glabrifolius		
Ranunculus macropus	Swamp buttercup	
Ranunculus membranifolius		
Rorippa palustris	Poniu, marsh yellow cress	
Rumex flexuosus	Native dock	
Ruppia polycarpa		
Sebaea ovata		
Sparganium subglobosum	Mārū, burr-reed	
Stuckenia pectinata		
Urtica perconfusa	Swamp nettle	
Viola filicaulis	Forest violet	
Viola lyallii	Haaka	
Wolffia australiana	Watermeal	
Zannichellia palustris	Horned pondweed	

Moss

Sphagnum australe	Sphagnum	
Sphagnum cristatum	Sphagnum	
Sphagnum falcatulum	Sphagnum	

Appendix 5. Planting Lists: Kapiti Whaitua Marsh Type Wetland (Source: GWRC).

Climbers

Calystegia sepium subsp. roseata	Pink bindweed	

Orchids

Herbs and ground covers

Althenia bilocularis		
Apium prostratum	New Zeland celery	
Argentina anserinoides	Silverweed	
Centella uniflora		
Centipeda cunninghamii		
Cotula coronopifolia	Yellow buttons	
Epilobium billardiereanum		
Epilobium brunnescens		
Epilobium chionanthum		
Epilobium hirtigerum		
Epilobium komarovianum		
Epilobium macropus		
Epilobium nerteroides		
Epilobium pallidiflorum		
Euchiton japonicus		
Gonocarpus micranthus		
Hydrocotyle moschata	Hairy pennywort	
Hydrocotyle moschata var. Moschata		
Hydrocotyle novae-zeelandiae		
Lemna disperma	Duckweed	
Leptinella dioica	Hairless leptinella	
Leptinella tenella		
Lobelia carens		
Mazus novaezeelandiae subsp. Impolitus f. impolitus		
Myriophyllum propinquum		
Myriophyllum triphyllum		
Myriophyllum votschii		
Nertera scapanioides		
Oxalis magellanica		
Persicaria decipiens		
Ranunculus amphitrichus	Waoriki	
Ranunculus glabrifolius		
Ranunculus limosella		
Rumex flexuosus	Native dock	
Sonchus kirkii	Shore Pūhā	FAC
Viola lyallii	Haaka	

Moss

Sphagnum australe	Sphagnum	
Sphagnum cristatum	Sphagnum	
Sphagnum falcatulum	Sphagnum	