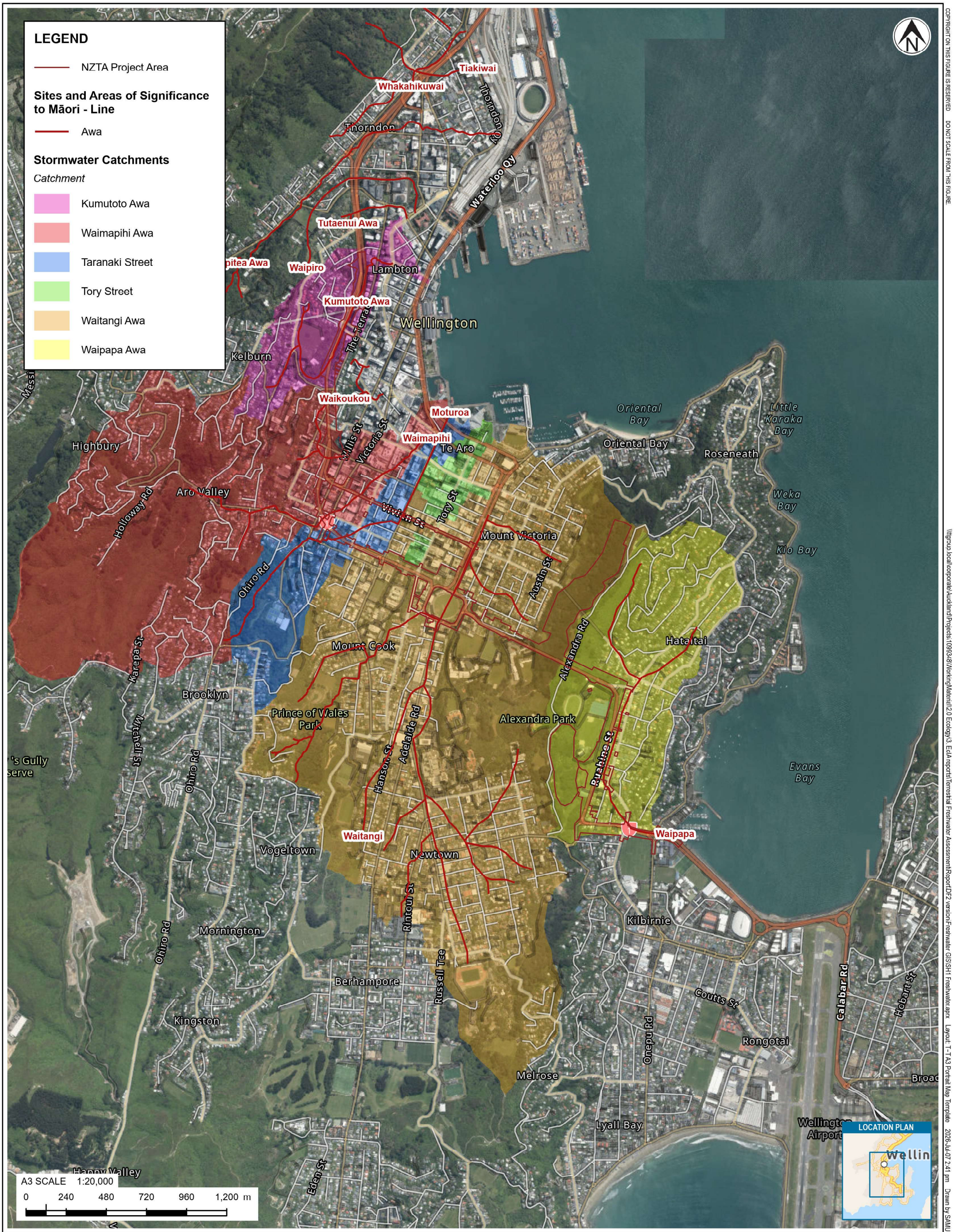
ANNEXURE A: Ecology Maps



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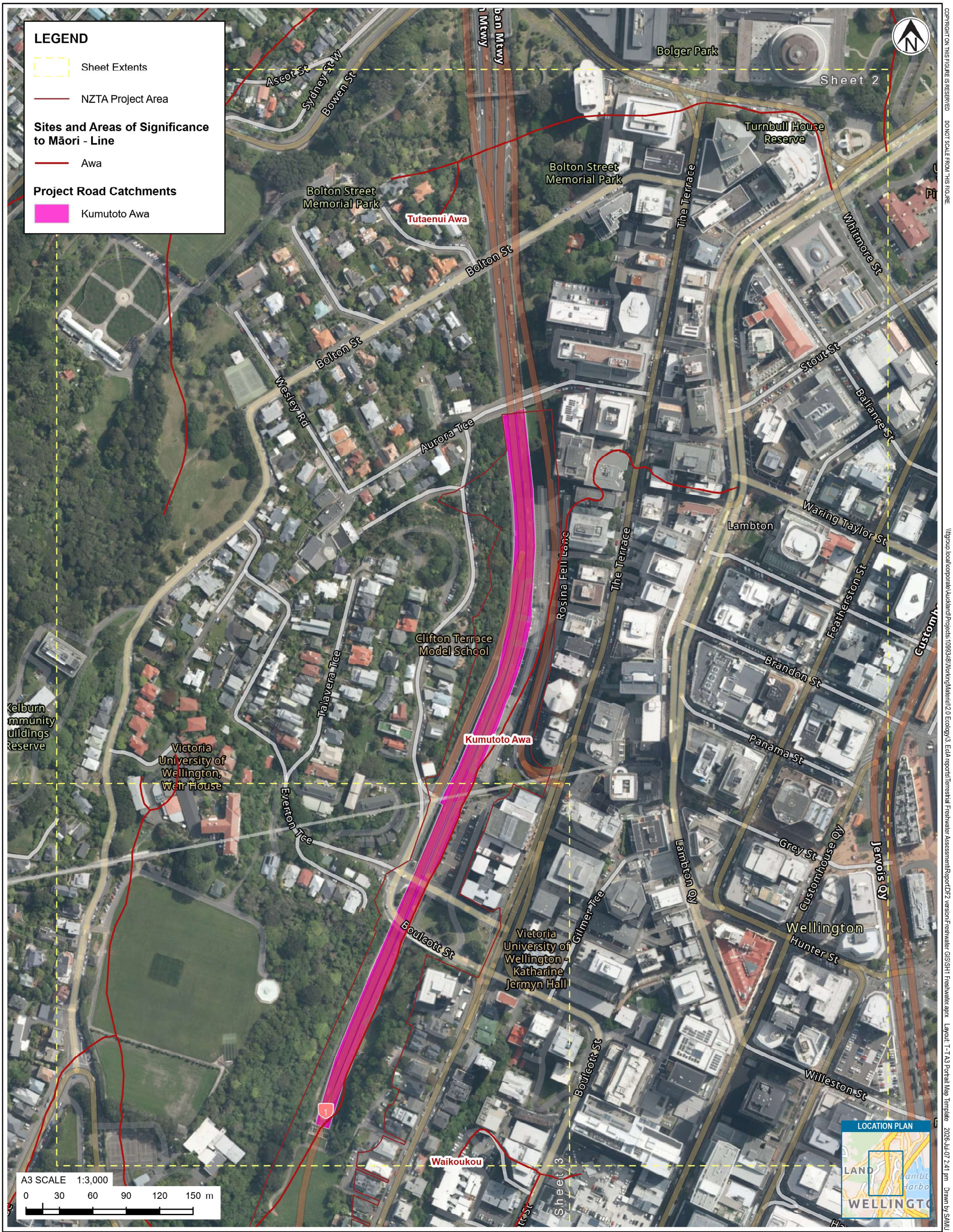
PROJECT **SH1 WELLINGTON IMPROVEMENTS**
TITLE FRESHWATER AND WETLAND ECOLOGY VALUES
SCALE (A3) 1:20,000 FIG No. FIGURE 1. REV 0



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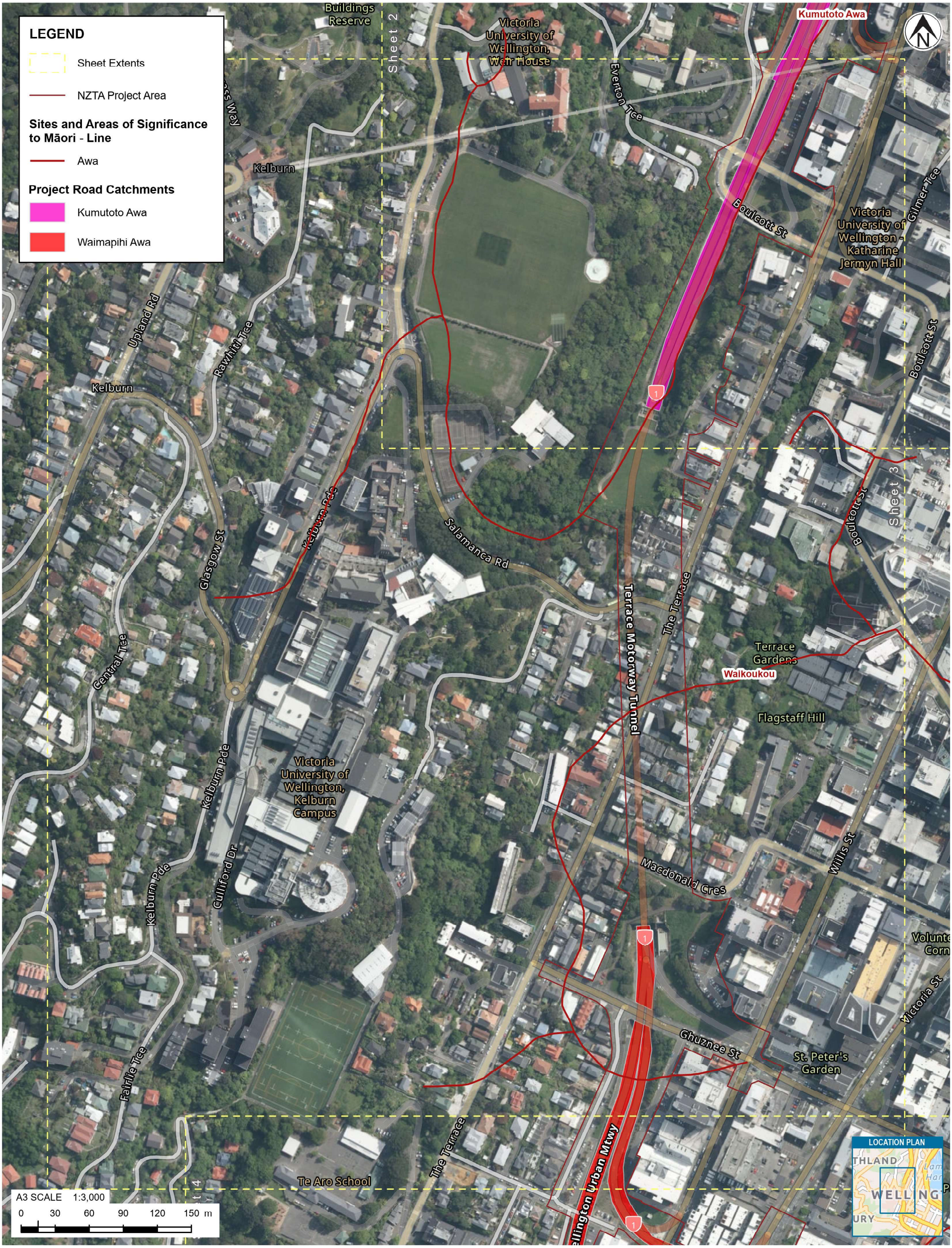

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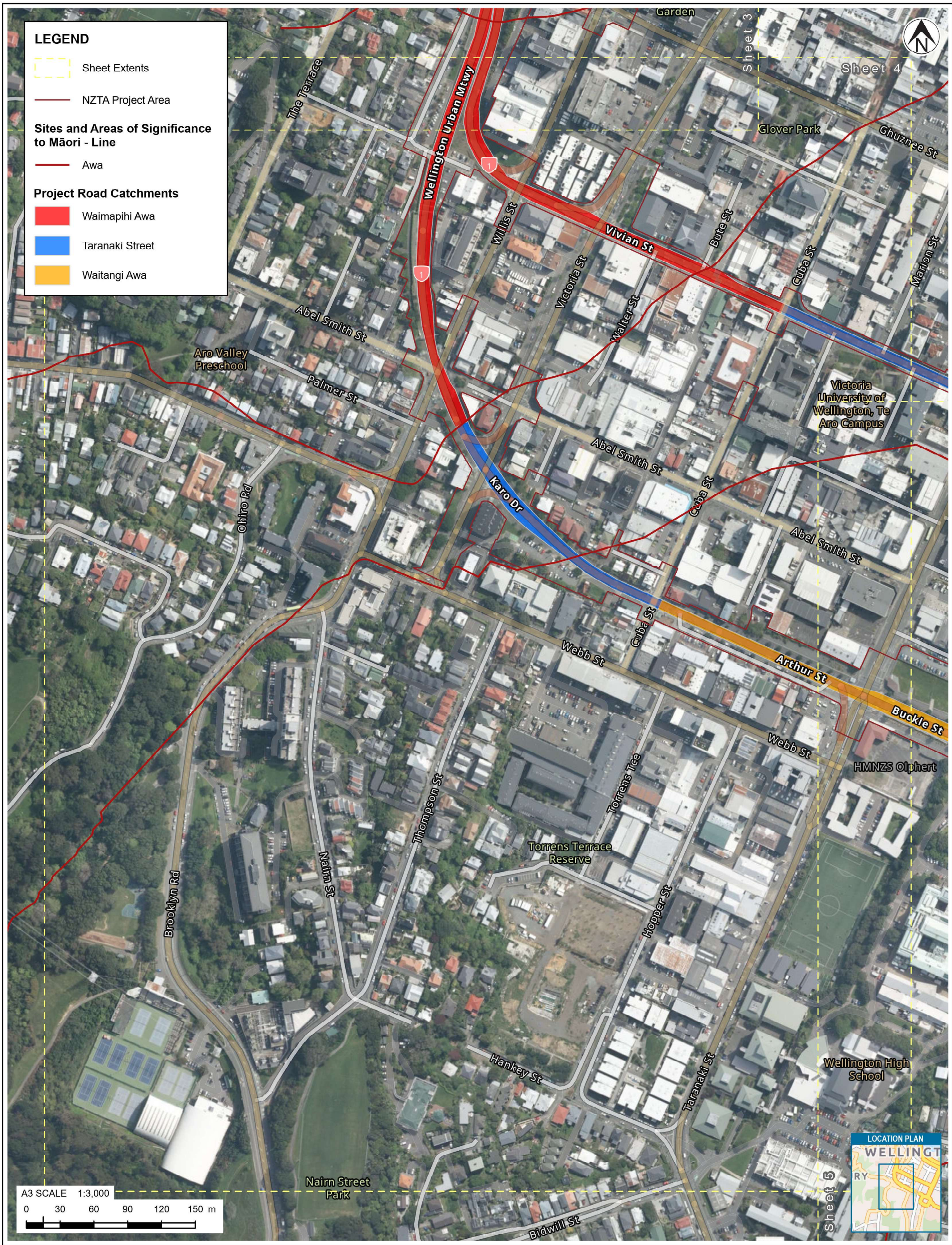

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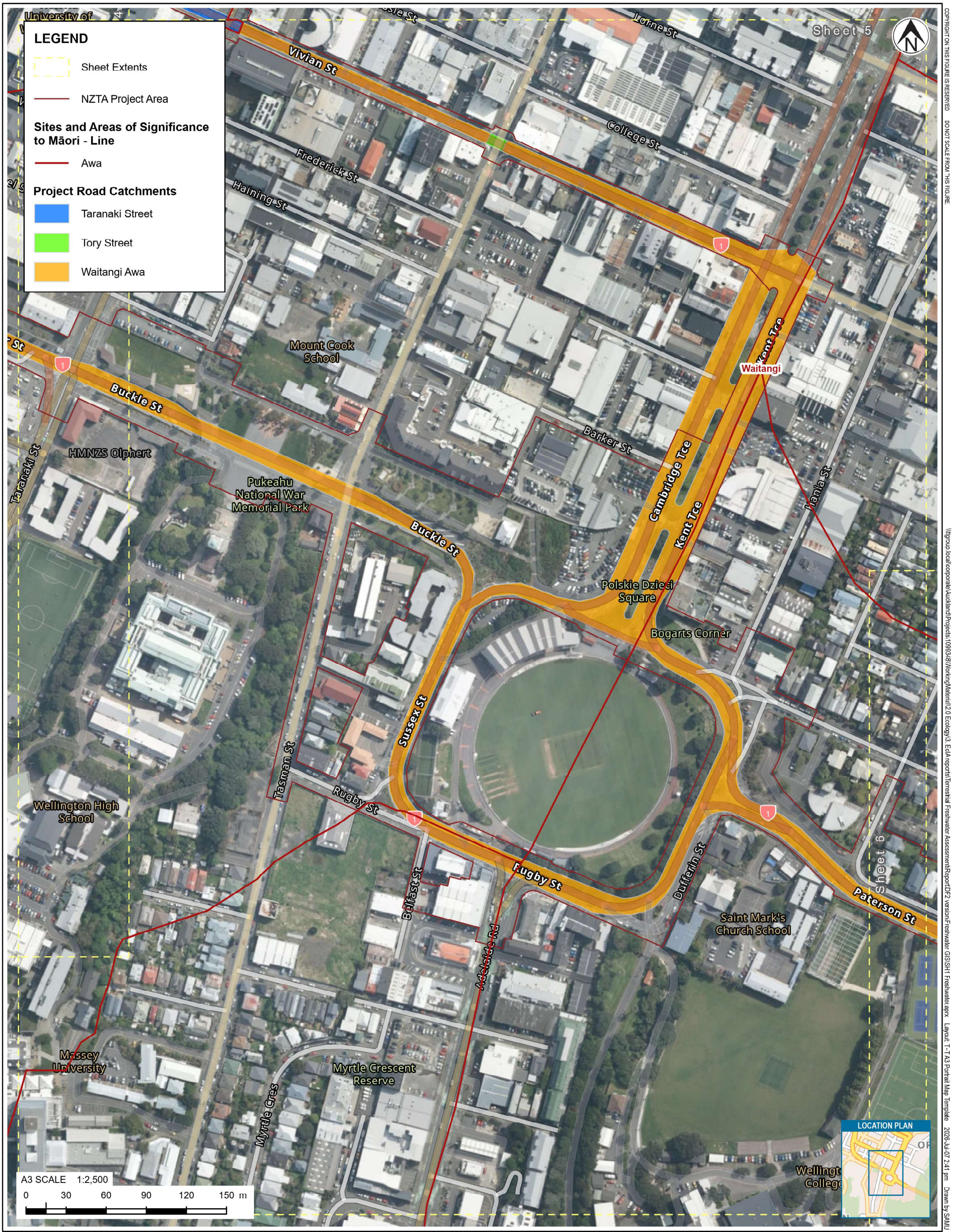

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SCALE (A3) 1:2,500 FIG No. FIGURE 1. REV 0

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LEGEND

Sheet Extents

NZTA Project Area

Sites and Areas of Significance to Māori - Line

Awa

Project Road Catchments

Waipapa Awa

Sheet 7

Sheet 8

Rd

Waitoa Rd

Konini Rd

Hinau Rd

Mount Victoria Tunnel

Taurima St

Taurima St

Taurima St

Waitoa Rd

Waipapa

Moxham Ave

Moxham Ave

Tapiri St

Ruahine St

Zohrab St

A3 SCALE 1:1,500

0 10 20 30 40 50 m

LOCATION PLAN

HATA

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LEGEND

- Sheet Extents
- NZTA Project Area
- Wetlands

Sites and Areas of Significance to Māori - Line

- Awa

Project Road Catchments

- Waipapa Awa

Sheet 7
Sheet 8
Wetland 1
Wetland 2
Wetland 2
Wetland 2
Wetland 3
Wetland 4
Kilbirnie School
Kilbirnie Park
Evans Bay Marina Park
Saint Patri College
Ruahine St
Moxham Ave
Tapiri St
Hamilton Rd
Kupe St
Overtoun Tce
Wellington Rd
Wellington Rd
Evans Bay Pde
Alexandra Rd
Wellington Rd
Crawford Rd
Henry St
Henry St
Paeroa St
Colville St
Coromandel St

A3 SCALE 1:3,000
0 30 60 90 120 150 m

LOCATION PLAN
HATAITA

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ANNEXURE B: Ecological Impact Assessment Guidelines

Annexure B Table 1: Factors to consider in scoring sites values in relation to species representativeness, rarity, diversity and pattern, and ecological context (adapted from EIANZ, 2018)

Value	Species values	Vegetation/Habitat values
Very High	Nationally threatened – endangered, critical, or vulnerable.	Supporting more than one national priority type. Nationally Threatened species found or likely to occur there, either permanently or occasionally.
High	Nationally At Risk– declining.	Supporting one national priority type or naturally uncommon ecosystem and/or a designated SEA in a regional or District Plan. At Risk - Declining species found or likely to occur there, either permanently or occasionally.
Moderate-high	Nationally At Risk– recovering, relict, or naturally uncommon.	A site that meets ecological significance criteria as set out the relevant regional or district policies and plans.
Moderate	Not nationally threatened or At Risk, but locally uncommon or rare.	A site that does not meet ecological significance criteria but that contributes to local ecosystem services (e.g. water quality or erosion control).
Low	Not threatened nationally, common locally.	Nationally or locally common with a low or negligible contribution to local ecosystem services.

Annexure B Table 2: Ecological values assigned to terrestrial habitats (adapted from EIANZ, 2018)

Attributes to be considered when assigning ecological value or importance to a site or area of vegetation/habitat/community	
Matters	**Attributes to be considered**
Representativeness	Attributes for representative vegetation and aquatic habitats: ▪ Typical structure and composition. ▪ Indigenous species dominate. ▪ Expected species and tiers are present. Attributes for representative species and species assemblages: ▪ Species assemblages that are typical of the habitat. ▪ Indigenous species that occur in most of the guilds expected for the habitat type.
Rarity/distinctiveness	Attributes for rare/distinctive vegetation and habitats: ▪ Naturally uncommon, or induced scarcity. ▪ Amount of habitat or vegetation remaining. ▪ Distinctive ecological features. ▪ National priority for protection. Attributes for rare/distinctive species or species assemblages: ▪ Habitat supporting nationally Threatened or At-Risk species, or locally uncommon species. ▪ Regional or national distribution limits of species or community. ▪ Unusual species or assemblages. ▪ Endemism
Diversity and Pattern	▪ Level of natural diversity, abundance, and distribution. ▪ Biodiversity reflecting underlying diversity. ▪ Biogeographical considerations – pattern, complexity. ▪ Temporal considerations, considerations of lifecycles, daily or seasonal cycles of habitat availability and utilisation.
Ecological context	▪ Site history, and local environmental conditions which have influenced the development of habitats and communities. ▪ The essential characteristics that determine an ecosystem's integrity, form, functioning, and resilience (from "intrinsic value" as defined in the RMA). ▪ Size, shape, and buffering. ▪ Condition and sensitivity to change. ▪ Contribution of the site to ecological networks, linkages, pathways and the protection and exchange of genetic material.

Attributes to be considered when assigning ecological value or importance to a site or area of vegetation/habitat/community	
	Species role in ecosystem functioning – high level, key species identification, habitat as proxy.

Annexure B Table 3: Scoring for sites or areas combining values for four matters in Annexure B Table 2

Value	Description
Very High	▪ Area rates High for three or all the four assessment matters listed in Annexure B Table 2. Likely to be nationally important and recognised as such.
High	▪ Area rates High for two of the assessment matters, Moderate and Low for the remainder, or Area rates High for one of the assessment maters, Moderate for the remainder. Likely to be regionally important and recognised as such.
Moderate	▪ Area rates High for one matter, Moderate and Low for the remainder, or Area rates Moderate for two or more assessment matters Low or Very Low for the remainder Likely to be important at the level of the Ecological District.
Low	▪ Area rates Low or Very Low for majority of assessment matters and Moderate for one. Limited ecological value other than as local habitat for tolerant native species.
Negligible	▪ Area rates Very Low for three matters and Low or Very Low for remainder.

Annexure B Table 4: Factors to consider in scoring ecological freshwater values (adapted from Roper-Lindsay et al., 2018)

Value	Explanation	Characteristics
Very High	A reference quality watercourse in condition close to its pre-human condition with the expected assemblages of flora and fauna and no contributions of contaminants from human induced activities including agriculture. Negligible degradation e.g. stream within a native forest catchment.	▪ Benthic invertebrate community typically has high diversity, species richness and abundance. ▪ Benthic invertebrate community contains many taxa that are sensitive to organic enrichment and settled sediments. ▪ Benthic community typically with no single dominant species or group of species. ▪ MCI scores typically 120 or greater. ▪ EPT richness and proportion of overall benthic invertebrate community typically high. ▪ SEV scores high, typically >0.8. ▪ Fish communities typically diverse and abundant. ▪ Riparian vegetation typically with a well-established closed canopy. ▪ Stream channel and morphology natural. ▪ Stream banks natural typically with limited erosion. ▪ Habitat natural and unmodified.
High	A watercourse with high ecological or conservation value but which has been modified through loss of riparian vegetation, fish barriers, and stock access or similar, to the extent it is no longer reference quality. Slight to moderate degradation e.g. exotic forest or mixed forest/agriculture catchment.	▪ Benthic invertebrate community typically has high diversity, species richness and abundance. ▪ Benthic invertebrate community contains many taxa that are sensitive to organic enrichment and settled sediments. ▪ Benthic community typically with no single dominant species or group of species. ▪ MCI scores typically 80-100 or greater. ▪ EPT richness and proportion of overall benthic invertebrate community typically moderate to high. ▪ SEV scores moderate to high, typically 0.6-0.8. ▪ Fish communities typically diverse and abundant. ▪ Riparian vegetation typically with a well-established closed canopy. ▪ No pest or invasive fish (excluding trout and salmon) species present. ▪ Stream channel and morphology natural. ▪ Stream banks natural typically with limited erosion.

Value	Explanation	Characteristics
		▪ Habitat largely unmodified.
Moderate	A watercourse which contains fragments of its former values but has a high proportion of tolerant fauna, obvious water quality issues and/or sedimentation issues. Moderate to high degradation e.g. high-intensity agriculture catchment.	▪ Benthic invertebrate community typically has low diversity, species richness and abundance. ▪ Benthic invertebrate community dominated by taxa that are not sensitive to organic enrichment and settled sediments. ▪ Benthic community typically with dominant species or group of species. ▪ MCI scores typically 40-80. ▪ EPT richness and proportion of overall benthic invertebrate community typically low. ▪ SEV scores moderate, typically 0.4-0.6. ▪ Fish communities typically moderate diversity of only 3-4 species. ▪ Pest or invasive fish species (excluding trout and salmon) may be present. ▪ Stream channel and morphology typically modified (e.g. channelised). ▪ Stream banks may be modified or managed and may be highly engineered and/or evidence of significant erosion. ▪ Riparian vegetation may have a well-established closed canopy. ▪ Habitat modified.
Low	A highly modified watercourse with poor diversity and abundance of aquatic fauna and significant water quality issues. Very high degradation e.g. modified urban stream.	▪ Benthic invertebrate community typically has low diversity, species richness and abundance. ▪ Benthic invertebrate community dominated by taxa that are not sensitive to organic enrichment and settled sediments. ▪ Benthic community typically with dominant species or group of species. ▪ MCI scores typically 60 or lower. ▪ EPT richness and proportion of overall benthic invertebrate community typically low or zero. ▪ SEV scores low to moderate, typically less than 0.4. ▪ Fish communities typically low diversity of only 1-2 species. ▪ Pest or invasive fish (excluding trout and salmon) species present. ▪ Stream channel and morphology typically modified (e.g. channelised). ▪ Stream banks often highly modified or managed and maybe highly engineered and/or evidence of significant erosion. ▪ Riparian vegetation typically without a well-established closed canopy. ▪ Habitat highly modified.

Annexure B Table 5: Summary of the criteria for describing the magnitude of effect (EIANZ, 2018)

Magnitude	Heading
Very High	▪ Total loss of, or very major alteration to, key elements/features/ of the existing baseline conditions, such that the post-development character, composition and/or attributes will be fundamentally changed and may be lost from the site altogether; AND/OR ▪ Loss of a very high proportion of the known population or range of the element/feature.
High	▪ Major loss or major alteration to key elements/features of the existing baseline conditions such that the post-development character, composition and/or attributes will be fundamentally changed; AND/OR ▪ Loss of a high proportion of the known population or range of the element/feature.

Magnitude	Heading
Moderate	▪ Loss or alteration to one or more key elements/features of the existing baseline conditions, such that the post-development character, composition and/or attributes will be partially changed; AND/OR ▪ Loss of a moderate proportion of the known population or range of the element/feature.
Low	▪ Minor shift away from existing baseline conditions. Change arising from the loss/alteration will be discernible, but underlying character, composition and/or attributes of the existing baseline condition will be similar to pre-development circumstances or patterns; AND/OR ▪ Having a minor effect on the known population or range of the element/feature.
Negligible	▪ Very slight change from the existing baseline condition. Change barely distinguishable, approximating to the 'no change' situation; AND/OR ▪ Having negligible effect on the known population or range of the element/feature.

Note: Baseline conditions are defined as 'the conditions that would pertain in the absence of a proposed action' (Roper-Lindsay et al., 2018).

Annexure B Table 6: Timescale for duration of effect (EIANZ, 2018)

Timescale	Description
Permanent	Effects continuing for an undefined time beyond the span of one human generation (taken as approximately 25 years).
Long-term	Where there is likely to be substantial improvement after a 25-year period (e.g. the replacement of mature trees by young trees that need >25 years to reach maturity, or restoration of ground after removal of a development) the effect can be termed 'long term'.
Temporary[1]	▪ Long term (15-25 years or longer – see above). ▪ Medium term (5-15 years). ▪ Short term (up to 5 years). ▪ Construction phase (days or months).

Note: [1]Note that in the context of some planning documents, 'temporary' can have a defined timeframe.

Annexure B Table 7: Criteria for describing overall levels of ecological effects (EIANZ, 2018)

Magnitude of effect	Ecological value				
	Very high	High	Moderate	Low	Negligible
Very High	Very high	Very high	High	Moderate	Low
High	Very high	Very high	Moderate	Low	Very low
Moderate	High	High	Moderate	Low	Very low
Low	Moderate	Low	Low	Very low	Very low
Negligible	Low	Very low	Very low	Very low	Very low
Positive	Net gain	Net gain	Net gain	Net gain	Net gain

Note: Overall level-of-effect categories are used to determine if residual effects management is required over and above measures to reduce the severity of effects through efforts to avoid, remedy or mitigate adverse effects. Usually, if the level of residual effect is assessed as being "Moderate" or greater, this warrants efforts to offset or compensate for these effects.

ANNEXURE C: Wetland Delineation Results

Wetland delineation

	Rapid test	Dominance test		Prevalence test		Hydric soils test	Hydrology test	Threatened sp. test	Pasture test	
Site	Pass/Fail	Index	Pass/Fail	Index	Pass/Fail	Pass/Fail	Pass/Fail		Pass/Fail	Classification
Wetland 1	Pass	100%	Pass	1.7	Pass	Not required	Pass	Fail	Fail (0%)	Wetland
Wetland 2	Fail	100%	Pass	1.8	Pass	Not required	Pass	Fail	Fail (0%)	Wetland
Wetland 3	Fail	100%	Pass	2.5	Pass	Not required	Pass	Fail	Fail (0%)	Wetland
Wetland 4	Fail	100%	Pass	2.4	Pass	Not required	Pass	Fail	Fail (31%)	Wetland

ANNEXURE D: BCM

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Model Inputs	
Input descriptors	Input data
Project/reference name	SH1 Wellington Improvements
Biodiversity type	Wetland
Technical expert(s) input	SAMU
Benchmark	5
How many habitat types OR sites are impacted	1
Number of proposed compensation actions	1
Net gain target	20%
Habitat/Site Impact(s)	Habitat/Site Impact 1
Impact risk contingency:	2
Impact uncertainty contingency:	3
Areal extent of impact (ha):	0.0885
Value score prior to impact:	2.1
Value score after impact:	0.001
Compensation Action(s)	Compensation Action 1
Discount rate:	3.0%
Finite end point (years):	10
Compensation confidence contingency:	2
Areal extent (ha) of compensation type:	0.5
Value score prior to compensation:	0.5
Value score after compensation:	1.5

Model outputs		
	Total impact score	Habitat/Site Impact 1
Impact score	-0.04681	-0.04681
	Total compensation score	Compensation Action 1
Compensation score	0.06139	0.06139
Net gain outcome	31.1%	

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

Model Input	Data Input and Explanation
Habitat/Site Impacts	
Impact risk contingency	Data Input: 2 Explanation: Exotic dominated wetlands have been assigned a low ecological value, however in recognition of the rarity of wetlands as an ecosystem type at a regional and national scale, this has been elevated to a score of 'Moderate' within the BCM.
Impact uncertainty contingency	Data Input: 3 Explanation: The impact uncertainty has been assessed as High, as the wetlands located within the Project footprint will be permanently lost, with replacement through offset or compensation not proposed. Instead, a 'trade out' approach to uplift local biodiversity value is instead proposed.
Value score prior to impact	Data input: 2.1

	Explanation: Following the guidance document for the use of the BCM (Baber et al., 2021), a value of between 1-<2 equates to a biodiversity attribute/type of low ecological value. In recognition of the rarity of wetlands at a regional and national scale, this value has been increased to 2.1, which sits within the 'Moderate' value category. While this assessment has identified these wetlands as 'Low' ecological value, a 'Moderate' value category within the BCM based on the "trading out" approach has been used.
Value score after impact	Data input: 0.001 Explanation: The model cannot receive a value of 0 and will be permanently lost, therefor the lowest value of 0.001 has been used.
Compensation actions	
Discount rate	Input: 3% Explanation: A standard discount rate of 3% has been used.
Finite end point (years)	Input: 10 years
Compensation confidence contingency	Input: 2 Explanation: There is generally high confidence that the proposed restoration and compensation actions are achievable across the landscape identified.
Areal extent (ha) of compensation type	Input: 0.5 ha
Value score prior to compensation	Input: 0.5 Explanation: While the compensation site is entirely composed of exotic weeds, pasture grass, and contains little-to-no native ecological value, we have conservatively assessed the value score prior to compensation as 0.5, representing 10% of a benchmark ecosystem.
Value score after compensation	Input: 1.5 Explanation: Following restoration and compensation actions, we have assigned an ecological value of 1.5, concluding the expected ecological value after implementation will represent 30% of a benchmark ecosystem type.

Principles of Compensation (Appendix 7, NPS-FM; 2020 (Amended December 2025))	Summary of how principle has been addressed in this report or reference to relevant report section.
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.	Efforts to avoid, minimise, and remedy have been detailed in Section 6.
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.	Although this principle is not fully achieved, as no like-for-like aquatic compensation is proposed, compensation for alternative biodiversity values is proposed instead. This approach is referred to in this report as a 'trade-out'.
(3. No net loss and preferably a net gain: This is demonstrated by a like-for-like quantitative loss/gain calculation and is achieved when the extent or values gained at the offset site (measured by type, amount and condition) are equivalent to or exceed those being lost at the impact site.	A BCM has been used to model a net gain in biodiversity outcome approach for the compensation detailed in this report.
(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	The proposed compensation is only occurring to address the loss of natural inland wetland extent.

Principles of Compensation (Appendix 7, NPS-FM; 2020 (Amended December 2025))	Summary of how principle has been addressed in this report or reference to relevant report section.
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).	The design and implementation of the proposed compensation will ensure this principle is met.
(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.	The proposed compensation will be secured through the use of Matai Moana Reserve land, with respect to the relevant stakeholders.
(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.	The proposed compensation has been proposed to bring biodiversity gains closer to the point of impact, contributing to a wider landscape biodiversity uplift, as a preferred approach determined in consultation with GWRC, WCC, and Mana Whenua.
(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).	Time lags have been addressed through the use of a discount rate of 3%.
(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	A 'trade out' approach is proposed whereby compensation seeks to improve biodiversity values of a different ecosystem type. For the reasons detailed in this report, a trade up is not feasible.
(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.	A financial contribution is considered an appropriate alternative if the proposed compensation approach is deemed unfeasible.
(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.	The design and delivery of the wetland compensation will be undertaken in partnership with mana whenua to ensure integration of mātauranga Māori.
(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	The design and delivery of the wetland offset can be undertaken in partnership with mana whenua.
(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.	The compensation approach detailed in this report has been clearly outlined.