STRADEGY
Urban, Environmental & Strategic Planning

Awatoto Pump Station Upgrade: Ecological Assessment

Dr Andy Hicks, June 2026

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1. EXECUTIVE SUMMARY

Hawke's Bay Regional Council (HBRC) proposes to upgrade the existing Awatoto Pump Station under the Severe Weather Emergency Legislation (SWILA) Order in Council (OIC), following damage and performance issues identified during Cyclone Gabrielle in February 2023. The upgrade is intended to improve the operational reliability and flood management function of the pump station within a low-lying, highly modified drainage catchment. This assessment describes the ecological values present and evaluates the potential effects associated with construction and operation of the proposed upgrade.

The pump station and surrounding works area are located within an extensively modified floodplain environment characterised by engineered drainage channels, stopbanks, and exotic-dominated vegetation. Broadscale habitat mapping confirms that terrestrial habitats within the works footprint are of negligible to low ecological value, reflecting high levels of disturbance, limited indigenous vegetation, and low habitat complexity. No naturally uncommon ecosystems were identified within or adjacent to the works area, and the proposal does not involve effects on such ecosystems.

Terrestrial ecological values at the site are limited. No at-risk or threatened terrestrial species are expected to be adversely affected by the works. Habitat suitability for protected fauna is low, and no significant habitat features are present. There are no trees proposed to be removed, and therefore no bat roosting habitat will be affected. Lizard surveys and habitat assessments indicate that the site is unlikely to support resident lizard populations due to the absence of suitable refuge structures and the level of disturbance across the site. Birds are known to utilise the wider estuarine environment; however, within the works footprint, habitats are limited and disturbance (noise and vibration) potentially propagating to the wider area during construction represents the primary potential effect. These effects are expected to be temporary and can be managed through standard construction practices, including timing of vegetation clearance where practicable.

The receiving environment downstream of the pump station is a tidally influenced coastal system associated with the Waitangi Estuary, which supports migratory freshwater fish species including longfin eel (*Anguilla dieffenbachii*), shortfin eel (*Anguilla australis*), and īnanga (*Galaxias maculatus*), among others. These are taonga species, with longfin classified as At Risk - Declining and īnanga classified as Threatened – Nationally Vulnerable. They rely on migration between freshwater and the marine environment to complete their life cycles.

Pump stations typically act as artificial barriers and are associated with risks to fish passage and fish welfare, particularly during downstream migration when pumping occurs. The proposal includes replacement of the existing pumps with 'fish-friendly' pumps designed to reduce the likelihood of injury to fish during downstream passage through features such as lower rotational speeds and less obstructed internal flow paths. While some level of residual risk will inevitably remain, the pumps being used are expected to reduce the risk of injury or mortality relative to the existing infrastructure.

The proposal does not provide for upstream fish passage. As a result, the pump station will continue to restrict upstream movement of fish, maintaining an existing barrier to longitudinal connectivity. This limits access to upstream habitat for migratory species, including taonga and at-risk / threatened species.

While this would be no change to the existing situation, the project seeks to recognize this matter and a mitigation package is proposed that focuses on the creation of new aquatic habitat downstream of any barriers to fish passage, within the broader Waitangi Estuary environment. This approach recognises that upstream access to approximately 1.3 ha of freshwater habitat will remain restricted by the pumpstation and seeks to provide an equivalent or greater extent of functional habitat in locations that remain accessible to migratory fish. The mitigation is anticipated to involve the establishment and enhancement of shallow aquatic and marginal habitats (at least 0.2m deep) that support taonga species, including inanga and tuna, within areas that are connected to the estuarine system. The intent of this approach is to offset the ongoing constraint on upstream access by increasing the availability and quality of downstream habitat that is accessible throughout the migration cycle, thereby maintaining or improving the overall availability of habitat within the wider system. Given that the created habitat will have better accessibility and be of superior habitat, this mitigation will result in a clear net positive outcome for freshwater and wetland values in the area.

With respect to wetlands, no significant natural inland wetlands are present within the works footprint. While a small swale feature exhibiting wetland characteristics was identified, it is highly modified, dominated by exotic vegetation, and does not independently support significant wetland values. The proposal is not expected to result in significant adverse effects on natural inland wetlands.

The works are not expected to increase the risk of pest plant or animal spread beyond the existing baseline conditions. The site is located within a downstream floodplain environment that is already subject to pest species pressures. Standard biosecurity and construction management measures can be implemented to manage risks associated with soil movement, disturbance, and machinery.

Construction-related ecological effects are expected to be localised and temporary. These include disturbance to bird species (noise and vibration), minor habitat disturbance within already modified areas, and potential risks to water quality during works. These effects can be managed through standard environmental controls implemented via a Construction Environmental Management Plan (CEMP), including sediment control, spill management, and ecological induction of contractors.

In summary, the works are confined to an existing, highly modified pump station site and do not involve significant effects on terrestrial ecosystems, naturally uncommon ecosystems, or significant wetland values. Potential effects on protected terrestrial fauna are limited, with no felling of trees and low likelihood of lizards or bats being present. Some management of vegetation clearance timing may be required to avoid disturbance to nesting birds.

The primary ecological consideration from this proposal is the effect on fish passage. A mitigation package is proposed to address, what is in fact an existing situation. This mitigation package will increase the amount of superior aquatic habitat accessible to fish by creation of new aquatic habitat, and result in a clear net positive outcome. The proposal introduces changes to pump design that are expected to reduce the risk of injury to downstream-migrating fish, especially eels. There remains some uncertainty around the performance of these pumps in a New Zealand context but, given the lack of fish passage upstream of the pump station, the actual risk to fish posed by the pump is already minor and represents an improvement to the status quo.

Taking these factors together, actual ecological effects of the proposal are characterised as low in magnitude, localised, with the largest impacts associated with temporary construction disturbance and ongoing fish passage impediment. The proposed mitigation and management measures are expected to address these effects within the context of the existing modified environment and result in a net positive outcome for ecological values.

2. INTRODUCTION

Hawke's Bay Regional Council (HBRC) is proposing to upgrade the existing Awatoto Pump Station under the Order in Council (OIC) Severe Weather Emergency Legislation (SWILA) framework. The upgrade responds to infrastructure vulnerabilities exposed during Cyclone Gabrielle in February 2023 and is intended to improve the resilience, reliability, and performance of flood protection assets serving the Awatoto catchment. The OIC enables the expedited delivery of specified flood protection and drainage infrastructure works. While SWILA provides a streamlined consenting pathway, it does not remove the requirement to appropriately identify and assess ecological effects associated with the proposed works.

This report provides the ecological scoping and impact assessment required to support the resource consent application for the Awatoto Pump Station upgrade. It identifies relevant ecological values, assesses potential effects, and outlines measures to avoid, minimise, or manage ecological risks associated with the proposed works. The assessment is proportionate to the scale and nature of the proposed works and focuses on ecological values that may be affected during construction and operation of the upgraded pump station.

The assessment focuses on:

- The identified scope of assessment required under the Severe Weather Emergency Recovery (Hawke's Bay Flood Protection Works) Order 2024;
- The existing environmental context at Awatoto; and
- Ecological effects in the context of a highly modified site with recent flood history.

This report does not assess stopbank upgrade works that are being progressed separately under a different consent application and are outside the scope of this assessment.

The Awatoto Pump Station discharges to a tidally influenced coastal receiving environment connected to the Waitangi Estuary, which supports migratory freshwater fish species, including longfin and shortfin eels. Pump stations represent an instream barrier and mortality risk to migrating fish, so the design and operation of the pumping systems are an important consideration. As part of the upgrade, the existing pumps will be replaced with purpose-designed fish-friendly pumps. While residual risk is likely to remain, the proposed upgrade is intended to lead to a substantive improvement over the existing infrastructure in terms of exploring an alternative pump design and reducing the risk from flood protection operations to fish.

3. PROJECT OVERVIEW AND ECOLOGICAL CONTEXT

The proposed project involves the upgrade of the existing Awatoto Pump Station, including replacement of pumping equipment and associated structural, mechanical, and electrical works required to improve flood response capacity and operational reliability. Construction activities will be largely confined to the existing pump station footprint and its immediate surrounds, including areas required for access, construction laydown, and safe operation of the upgraded facility.

The Awatoto Pump Station serves a low-lying, highly modified catchment, functioning to maintain an artificially lowered water table and facilitate rapid drainage during heavy rainfall events. The catchment is predominantly rural with some industrial and infrastructure land uses and has undergone extensive modification over time. The upgrade of the adjacent stopbank is being progressed as a separate project and does not form part of this assessment, which is accordingly limited to ecological effects associated with the pump station works themselves.

Although situated within a highly modified environment, the station's discharge enters a tidally influenced coastal system associated with the Waitangi Estuary, recognised for its ecological and cultural values. This environment supports migratory freshwater fish species — including the taonga species longfin (*Anguilla dieffenbachii*) and shortfin (*Anguilla australis*) eels — that rely on downstream passage to complete their life cycles. Pump station operation represents an artificial barrier to fish passage and is a known source of injury and mortality for downstream-migrating fish, particularly large-bodied tuna undertaking spawning migrations during elevated flow conditions when pumping activity is at its highest.

As part of the proposed upgrade, the existing pumps will be replaced with purpose-designed fish-friendly submersible pumps (Bosman Vision series). These incorporate a single-blade, low-speed mixed-flow impeller and a wide, less-obstructed internal flow path, substantially reducing the likelihood of blade strike, shear stress, and physical compression compared with conventional axial flow flood pumps. The pumps are also capable of operating across a broad duty range, including at reduced rotational speeds during non-peak conditions, further lowering fish-passage risk. While no axial flow pump can completely eliminate risk to fish, the proposed replacement represents a material improvement over existing infrastructure and is expected to significantly reduce adverse effects on downstream-migrating fish relative to the current situation.

4. ECOLOGICAL EVALUATION METHODS

Purpose and approach

Assessments were undertaken to identify ecological values that may be affected by the Awatoto Pump Station upgrade. The level of assessment was done with regards to the Severe Weather Emergency Recovery (Hawke's Bay Flood Protection Works) Order 2024 and were proportionate to the scale and nature of the proposal to upgrading an existing pump station within a highly modified landscape.

The methods therefore focused on identifying the ecological values relevant to the pumping station upgrade, and its ongoing operation and discharge, with particular attention to:

- naturally uncommon ecosystems
- at-risk or threatened species
- taonga species that may be significantly adversely affected during or as a result of construction
- significant natural inland wetland values
- pest plants or animals that may spread or become established with regard to the HBRC Pest Management Plan
- any fish, bird nesting areas, bat habitats, or habitats of species protected under the Wildlife Act 1953
- or other ecological risks that would require avoidance, mitigation, or management measures as part of the proposal.

Desktop assessment and site familiarisation

Existing ecological information available for the Awatoto area and Waitangi Estuary was reviewed including:

- Aerial imagery and LiDAR data;
- Freshwater fisheries information from national databases;
- Wetland mapping and regional planning information; and
- Previous ecological reports and monitoring.

Broadscale habitat mapping

Broadscale habitat surveys were undertaken to characterise the ecological context of the project area and to identify any ecological features that may be affected by the proposed works. This involved a combination of desktop assessment using recent aerial imagery, LiDAR, and existing ecological information, followed by site walkover surveys to ground-truth habitat conditions and confirm the extent and nature of modification.

During site walkovers, the study area was assessed in its entirety, with particular focus on areas within and adjacent to the proposed works footprint. Habitats were categorised into discrete habitat units based on land cover, hydrology, vegetation composition, and geomorphological features. This approach was used to break up the broader area into habitat units that aligned with their potential ecological value, to provide the context for the assessment of ecological effects.

Assessment of Ecological Value

The assessment of ecological value followed guidelines provided by the Environment Institute of Australia and New Zealand (EIANZ)1. The assessment is based on four matters: representativeness; rarity/distinctiveness; diversity and pattern; and ecological context. All matters are scored along a 5-point scale of Very High – High – Moderate – Low – Very Low. See Table 1 for the assessment approach.

An overall ecological value is produced based on the combination of scores for each of the matters listed in Table 1, as per Table 2.

Table 1 Matters considered when assessing ecological value / importance

Matter	Attributes of vegetation/ habitat/ community to be considered	Attributes of freshwater site or area to be considered
Representativeness	*Criteria for representing vegetation and aquatic habitats* Typical structure and composition Indigenous species dominate Expected species and tiers are present Thresholds may need to be lowered where all examples of a type are strongly modified (i.e. is it one of the better examples remaining?) *Criteria 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	Extent to which site/catchment is typical or characteristic Stream order Permanent, intermittent or ephemeral waterway Catchment size Standing water characteristics
Rarity/distinctiveness	*Criteria for rare/distinctive vegetation and habitats*: Naturally uncommon, or induced scarcity Amount of habitat or vegetation remaining Distinctive ecological features National priority for protection *Criteria 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 communities Unusual species or assemblages Endemism	Supporting nationally or locally Threatened, At Risk or uncommon species National distribution limits Endemism Distinctive ecological features Type of lake/pond/wetland/spring
Diversity and pattern	Level of natural diversity, abundance and distribution Biodiversity reflecting underlying diversity Biogeographical considerations – pattern, complexity	Level of natural diversity Diversity metrics Complexity of community Biogeographical considerations - pattern, complexity, size, shape

[1] Roper-Lindsay J, Fuller SA, Hooson S, Sanders MD, Ussher GT. 2018. Ecological impact assessment. EIANZ guidelines for use in New Zealand: terrestrial and freshwater ecosystems. 2nd Edition.

	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 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 Species role in ecosystem functioning – high level, key species identification, habitat as proxy	Stream order Instream habitat Riparian habitat Local environmental conditions and influences, site history and development Intactness, health and resilience of populations and communities Contribution to ecological networks, linkages, pathways Role in ecosystem functioning – high level, proxies

Table 2 Approach for scoring ecological value based on the four matters

Value	***Description***
Very High	*Area rates High for 3 or all of the four assessment matters listed in Table 1.* *Likely to be nationally important and recognised as such.*
High	*Area rates High for 2 of the assessment matters, Moderate and Low for the remainder; or* *Area rates High for 1 of the assessment matters, Moderate for the remainder.* *Likely to be regionally important and recognised as such.*
Moderate	*Area rates High for 1 matter, Moderate and Low for the remainder; or* *Area rates Moderate for 2 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 a local habitat for tolerant native species.*
Negligible	*Area rates Very Low for 3 matters and Moderate, Low or Very Low for the remainder.*

Assessment of Level of Effect

The approach outlined in the EIANZ guidelines were also used to describe the level of effects expected from the proposed activity, based on values that had been identified during the steps described earlier.

Briefly, the approach is to contrast the magnitude of potential (negative) effects against the quality of ecological values (explained above) currently present at a site. The magnitude of effect is based on the degree of loss or alteration to existing ecological elements or features, including a consideration of the duration of any effects. See Table 3.

Table 3 Ecological impact assessment level of effects.

Level of Effect		Current Ecological Value				
		Very High	**High**	**Moderate**	**Low**	**Negligible**
Magnitude of effect from activity	**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

Aquatic ecology and fish passage

Aquatic ecological values were assessed with a focus on:

- The reaches within the immediate area of construction impact;
- The upstream and downstream reaches of waterway where fish communities may be affected by barriers to fish passage;
- Migratory freshwater fish known or expected to use the lower catchment; and

Information on fish communities was compiled from the New Zealand Freshwater Fish Database (NZFFDB) and Freshwater Ecosystems of New Zealand (FENZ) predicted distributions. There were no environmental DNA (eDNA) results from relevant sites. No additional fish sampling was undertaken as existing information was sufficient to characterise relevant fish values and assess effects.

Wetland assessment

The areas around each proposed pump station and discharge points were examined for potential wetlands having regard to the latest protocols from the Ministry for the Environment[2,3,4]. A combination of high-resolution aerial imagery[5], LiDAR derived digital elevation models and vegetation assessments during sites visits was used.

A key step for identifying and delineating wetland habitat is looking at the characteristics of the plant community. Briefly, if an area is dominated by plants that are typically associated with wetlands, the site is identified as a wetland. If a site is dominated by plants that are typically associated with upland habitat, then it is classified as a non-wetland. Because ecology is not black and white, plant species have different degrees of affiliation with wetland habitats, and some plants can occur in either wet or dry conditions. Each plant species has therefore been assigned one of five indicator status categories based on the consistency of their association with wetland conditions[6]:

i) Obligate wetland, almost always associated with wetlands (OBL)
ii) Facultative wetland, usually occurs in wetlands but can occur in uplands (FACW)
iii) Facultative, commonly occurs in both wetland and non-wetland habitat (FAC)
iv) Facultative upland, occasionally occurs in wetlands but can occur in uplands (FACU)

[2] Ministry for the Environment. 2021. *Wetland delineation hydrology tool for Aotearoa New Zealand.* Wellington: Ministry for the Environment.
[3] Ministry for the Environment. 2022. *Pasture exclusion assessment methodology.* Wellington: Ministry for the Environment.
[4] Ministry for the Environment. 2022. *Wetland delineation protocols.* Wellington: Ministry for the Environment.
[5] Provided by The Surveying Company, via JP Neethling at HBRC.
[6] Clarkson BR, Fitzgerald NB, Champion PD, Forester L, Rance BD. 2021. New Zealand wetland plant list 2021. Manaaki Whenua – Landcare Research Contract Report LC3975 for Hawke's Bay Regional Council.

v) UPL, rarely occurs in wetlands and almost always associated with wetlands (UPL)

Depending on the initial inspection at a site, either a rapid delineation method is applied (when the plant community is obviously a wetland type, or not) or a more involved assessment is undertaken (when the nature of the plant community is less obvious). The latter requires precise measurements of the amount of area within a plot that is occupied by different species and a formula is applied to the species occupancy results to calculate a Prevalence Index (PI). A PI ≤3 is classed as wetland, and a PI >3 is classed as non-wetland. When wetland status is still not clear, additional assessments of soil and hydrology may need to be undertaken.

A separate step can be applied in areas dominated by exotic pasture species. Specifically, if designated exotic pasture species[7] cover more than 50% of an area, it passes the Pasture Exclusion Test and is designated as non-wetland.

The approach taken to identify wetlands during on ground assessments within the large construction footprint of this project was based on the logic outlined in Figure 1.

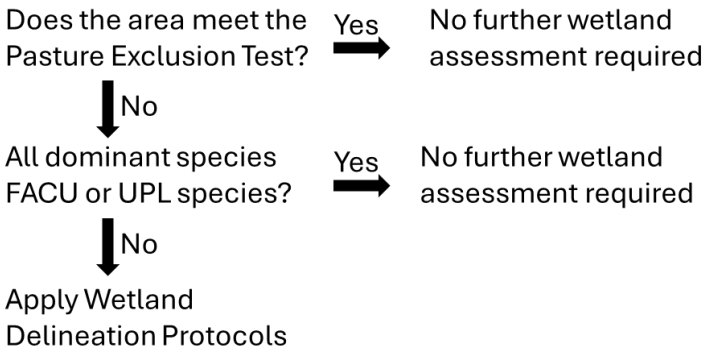

Figure 1 Wetland Assessment Logic

Protected wildlife

Assessments on the potential effects on wildlife protected under the Wildlife Act 1953 were broken down into the broader faunal groupings of bats, lizards and birds. Initial assessments were based on:

- Habitat suitability within the works area and likelihood of risk from the proposed activity;
- Known distribution records and regional survey data.
- Site disturbance and recent flood history.

Bats

Based on the initial assessment, no targeted investigations around bats were required because there are no potential roosting trees on site that would be removed as part of the project, meaning there is no risk to any bats that may or may not be present in the area.

Lizards

Biodiversity information for lizards was reviewed using a range of existing data sources, including the Department of Conservation's Bioweb Herpetofauna database and online distribution atlas, research-grade observations available through iNaturalist, and published information on species' known ranges and threat

[7] Cosgrove G, Dodd M, James, T. 2022. National list of exotic pasture species. Prepared for the Ministry of the Environment by AgResearch Ltd. Wellington: Ministry for the Environment.

classifications. A 5km radius was applied to the project footprint to define 'nearby' records. This information was supplemented by a review of relevant regional reports and previous ecological assessments where available.

The area contained some large areas of rank grass which is noted as potential habitat for at least one species of skink that may occur in the area, and so targeted lizard searches were undertaken using the Diurnal Search Method described in the Department of Conservation's Herpetofauna Toolbox. The survey occurred in areas within and immediately adjacent to the proposed construction footprint between 10am and 12pm on the 11th of April 2025. Conditions were suitable for lizard surveys, being fine with light winds (<15 km/h) and temperatures ranging from 15-18 degrees. Focused effort was spent on potential refuge features, by first scanning these visually from a distance using Bushnell 8×42 mm binoculars. Closer inspection involved systematic examination of crevices and cover objects using torchlight, with loose debris such as logs and concrete blocks promptly lifted and replaced. A Nikon D5100 DSLR fitted with a 55–300 mm zoom lens was used to assist with observation and documentation during searches. Although there were large areas of rank grass, potential refuge structures within this vegetation were scarce.

Birds

Information on avifauna was compiled through a review of existing literature. This included previously completed ecological assessments and surveys in the local area, relevant regional reports, and published information on species distributions and ecology. Where available, this information was used to identify species known or likely to occur within the wider site context.

There are numerous records that point to an abundance of a diverse range of native bird species in the broader Waitangi Estuary area, and observations of birds were made opportunistically during the site visits. The available information on birds was superior to anything that could be reasonably undertaken as part of this assessment and so the existing information was largely relied on to identify the range of potential bird species that may be present on site.

5. ECOLOGICAL VALUES

Broadscale Habitat Mapping

Broadscale habitat mapping identified a small number of discrete habitat units within and adjacent to the Mission / Awatoto pump station footprint (Figure 2), reflecting a highly modified, low-lying coastal environment. The mapped habitats are closely associated with existing flood protection infrastructure, drainage features, and the tidally influenced receiving environment.

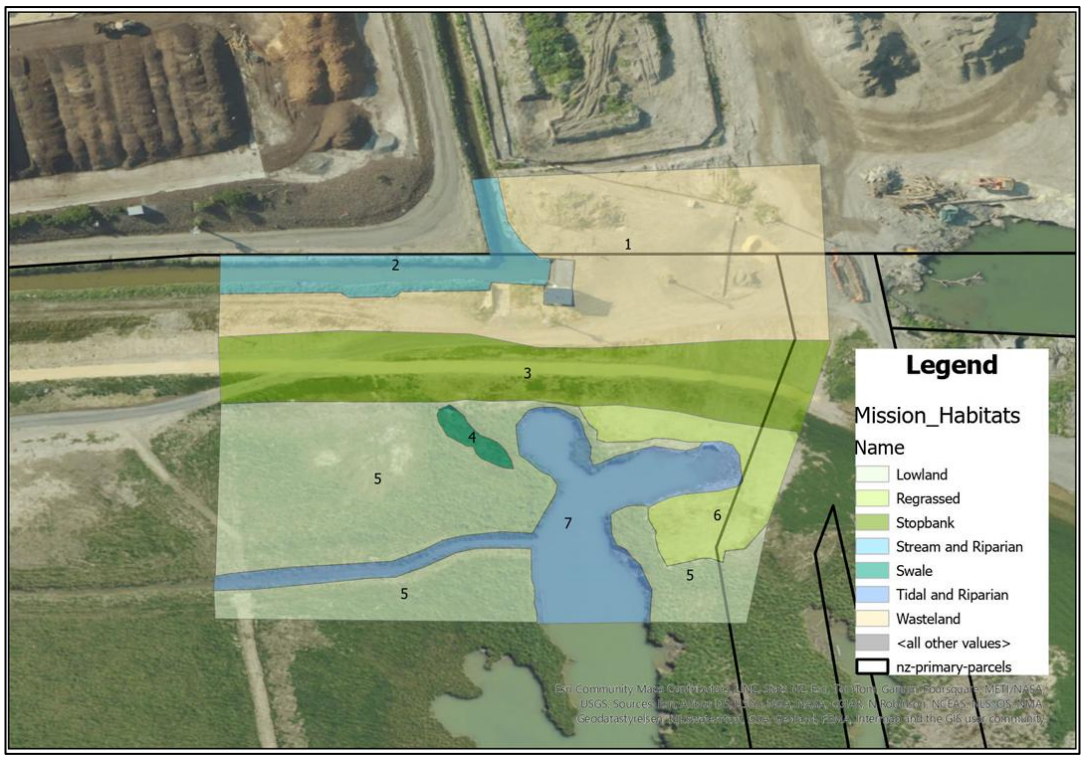

Figure 2 Broadscale Habitat Mapping

Stopbank

The stopbank corridor comprises engineered flood protection infrastructure, along with compacted fill, access tracks, and maintained grass cover (Figure 1). Vegetation is dominated by exotic species (see Table 4), is often sparse and low-growing and subject to regular disturbance and maintenance. This habitat unit has negligible ecological value (see Table 5) other than for transient use by common fauna.

Figure 3 Stopbank habitat unit

Table 4 Plant species observed in the stopbank habitat unit

Common Name	Latin Name	Biostatus	Wetland Indicator Status
Kikuyu	*Cenchrus clandestinus*	Exotic	FACU
Bermuda grass	*Cynodon dactylon*	Exotic	FACU
Cocksfoot	*Dactylis glomerata*	Exotic	FACU
Chewing's fescue	*Festuca rubra*	Exotic	FACU
Perennial ryegrass	*Lolium perenne*	Exotic	FACU
Paspalum	*Paspalum dilatatum*	Exotic	FACU
Narrow-leaved plantain	*Plantago lanceolata*	Exotic	FACU
Kentucky bluegrass	*Poa pratensis*	Exotic	FACU
Rat's-tail	*Sporobolus africanus*	Exotic	FACU
White clover	*Trifolium repens*	Exotic	FACU
Fennel	*Foeniculum vulgare*	Exotic	UPL
Hoary mustard	*Hirschfeldia incana*	Exotic	UPL
Large-flowered mallow	*Malva sylvestris*	Exotic	UPL

Table 5 Stopbank assessment of ecological value

Matter	Value	Reasons
Representativeness	Very Low	Exotic species dominate an unnatural and regularly disturbed landform. Highly managed (mown short).
Rarity/distinctiveness	Very Low	Does not support any rare or threatened species. No indigenous plant communities.
Diversity and Pattern	Very Low	A constructed habitat with highly unnatural management.
Ecological Context	Very Low	A highly unnatural origin and current context. Creates an unnatural barrier within the natural floodplain.
Overall Score	Negligible	*Very low for 3 or more matters. Negligible ecological value.*

Stream and riparian margin

This habitat unit consists of a modified stream channel with associated riparian margin adjacent to the pump station infrastructure (Figure 2). The channel is highly engineered with incised banks. Riparian vegetation is narrow and largely composed of exotic and opportunistic species (Table 6). While habitat quality is degraded, this unit provides connectivity within the wider drainage and tidal system and is relevant for being a key node for fish passage to the upstream catchment.

Figure 4 Stream and riparian margin habitat unit. Top, looking west up the main inflow. Bottom, looking north up the channel draining the industrial area.

Table 6 Plant species observed in the stream and riparian margin habitat unit

Common Name	Latin Name	Biostatus	Wetland Indicator Status
Hemlock	*Conium maculatum*	Exotic	FAC
Yorkshire fog	*Holcus lanatus*	Exotic	FAC
Tall fescue	*Lolium arundinaceum*	Exotic	FAC
Curled dock	*Rumex crispus*	Exotic	FAC
Bermuda grass	*Cynodon dactylon*	Exotic	FACU
Cocksfoot	*Dactylis glomerata*	Exotic	FACU
Broad-leaved flea-bane	*Erigeron sumatrensis*	Exotic	FACU
Paspalum	*Paspalum dilatatum*	Exotic	FACU
Narrow-leaved plantain	*Plantago lanceolata*	Exotic	FACU
Jersey cudweed	*Pseudognaphalium luteoalbum*	Exotic	FACU
Black nightshade	*Solanum nigrum*	Exotic	FACU
Prickly sow thistle	*Sonchus asper*	Exotic	FACU
Red clover	*Trifolium pratense*	Exotic	FACU
White clover	*Trifolium repens*	Exotic	FACU
Prairie grass	*Bromus catharticus*	Exotic	UPL
Fennel	*Foeniculum vulgare*	Exotic	UPL
Oxtongue	*Helminthotheca echioides*	Exotic	UPL
Hoary mustard	*Hirschfeldia incana*	Exotic	UPL
Tree lupin	*Lupinus arboreus*	Exotic	UPL
Large-flowered mallow	*Malva sylvestris*	Exotic	UPL
Spotted bur medick	*Medicago arabica*	Exotic	UPL
Bur medick	*Medicago nigra*	Exotic	UPL
Turnip weed	*Rapistrum rugosum*	Exotic	UPL
Woolly mullein	*Verbascum thapsus*	Exotic	UPL
Bachelor's button	*Cotula coronpifolia*	Native	FACW
Creeping bent	*Agrostis stolonifera*	Exotic	FACW
Water speedwell	*Veronica anagallis-aquatica*	Exotic	OBL

Table 7 Stream and riparian margin (terrestrial) assessment of ecological value

Matter	Value	Reasons
Representativeness	Very Low	Exotic herbs and grasses. Only one indigenous species in low abundance. Highly modified landform.
Rarity/distinctiveness	Very Low	The terrestrial component does not support any rare or threatened species. 1 native species observed.
Diversity and Pattern	Very Low	Plant diversity is exotic-dominated and unlikely to provide any substantial habitat for native fauna.

Ecological Context	Low	Provides terrestrial habitat corridor that connects upstream and downstream aquatic habitats, but is within a highly modified landscape and highly degraded.
Overall Score	Negligible	*Very low for 3 or more matters. Negligible ecological value.*

Swale

A shallow swale feature was observed within the lowland area (Figure 3). The swale is likely to be seasonally wet and was dominated by creeping bent grass with a variety of pasture associated grass and weed species (Table 8). This habitat has low ecological value (Table 9) but may provide transitional habitat for common wetland-associated fauna, especially during wetter periods.

Table 8 Plant species observed in the swale habitat unit

Common Name	Latin Name	Biostatus	Wetland Indicator Status
Yorkshire fog	*Holcus lanatus*	Exotic	FAC
Tall fescue	*Lolium arundinaceum*	Exotic	FAC
Curled dock	*Rumex crispus*	Exotic	FAC
Creeping bent	*Agrostis stolonifera*	Exotic	FACW

Figure 5 Swale habitat unit

Table 9 Swale assessment of ecological value

Matter	Value	Reasons
Representativeness	Very low	Exotic species dominate, appears to be an induced feature related to emergency bypass pumping, and not representative of indigenous riparian wetlands.
Rarity/distinctiveness	Low	Wetlands are rare habitat (so low rather than very low), but this unit is not likely to provide critical habitat for any rare indigenous species.
Diversity and Pattern	Low	No natural plant diversity reflected. Native birds may use the area, but habitat quality low and predation risk high.
Ecological Context	Low	Sits within the broader Waitangi estuary and wetland complex. But is a minor feature and appears induced.
Overall Score	Low-Negligible	*No matter scores moderate, all matters low or very low. Limited ecological value other than as a local habitat for tolerant native species.*

Tidal and riparian habitat

The tidal and riparian habitat unit occupies the lowest-lying area of the site and comprises a tidally influenced receiving environment linked to the Tūtaekurī backwash and broader Waitangi estuary (Figure 4). This area includes shallow open water and saturated margins that expand and contract with tidal cycles. Although modified, this habitat supports higher ecological values, particularly for migratory fish species, estuary-associated fauna and aquatic bird species and represents the primary ecological interface between the pump station discharge and the wider coastal system. Although the banks themselves are dominated by a variety of exotic grasses and herbs, plants associated with the tidal fringe have a higher representation from native species (e.g. raupō, marsh clubrush and Bachelor's buttons, Table 10).

Figure 6 Tidal and riparian habitat unit

Table 10 Plant species observed in the Tidal and Riparian Habitat unit

Common Name	Latin Name	Biostatus	Wetland Indicator Status
Hemlock	*Conium maculatum*	Exotic	FAC
Yorkshire fog	*Holcus lanatus*	Exotic	FAC
Tall fescue	*Lolium arundinaceum*	Exotic	FAC
Blackberry	*Rubus fruticosus*	Exotic	FAC
Curled dock	*Rumex crispus*	Exotic	FAC
Bermuda grass	*Cynodon dactylon*	Exotic	FACU
Cocksfoot	*Dactylis glomerata*	Exotic	FACU
Broad-leaved flea-bane	*Erigeron sumatrensis*	Exotic	FACU
Shrubby haloragis	*Haloragis erecta subsp. erecta*	Native	FACU
Narrow-leaved plantain	*Plantago lanceolata*	Exotic	FACU
Black nightshade	*Solanum nigrum*	Exotic	FACU
Prickly sow thistle	*Sonchus asper*	Exotic	FACU
Red clover	*Trifolium pratense*	Exotic	FACU
White clover	*Trifolium repens*	Exotic	FACU
Creeping bent	*Agrostis stolonifera*	Exotic	FACW
Bachelor's button	*Cotula coronpifolia*	Native	FACW
Marsh clubrush	*Bolboschoenus fluviatilis*	Native	OBL
Water celery	*Helosciadium nodiflorum*	Exotic	OBL
Raupō	*Typha orientalis*	Native	OBL
Water speedwell	*Veronica anagallis-aquatica*	Exotic	OBL
Prairie grass	*Bromus catharticus*	Exotic	UPL
Fennel	*Foeniculum vulgare*	Exotic	UPL
Oxtongue	*Helminthotheca echioides*	Exotic	UPL
Hoary mustard	*Hirschfeldia incana*	Exotic	UPL
Large-flowered mallow	*Malva sylvestris*	Exotic	UPL
Turnip weed	*Rapistrum rugosum*	Exotic	UPL
Woolly mullein	*Verbascum thapsus*	Exotic	UPL

This habitat unit has been assessed as having a high ecological value (Table 11).

Table 11 Tidal and riparian habitat assessment of ecological value

Matter	Value	Reasons
Representativeness	Moderate	The intertidal component of this habitat unit has good representation from native plants, especially closer to the large backwater channel. The aquatic habitat should support a full suite of native fish and associated aquatic estuarine fauna. Bird life is also likely to be representative of estuarine backwaters. The higher elevation components are more disturbed and exotic dominated and are likely to have strong influence from mammalian predators.
Rarity/distinctiveness	High	Estuaries are considered a naturally uncommon ecosystem type[8]. This area retains its estuarine functionality, albeit as a backwater are notable influences from the existing pump station operation and proximity to stopbank and associated artificial land formations. Close to known inanga spawning habitat (i.e. critical habitat for a threatened species). No threatened plant species observed.
Diversity and Pattern	Moderate	Good natural plant diversity in intertidal zone, but very poor elsewhere. Full complement of expected native fish are likely to occur, along with a diverse range of native birds that are resistant/resilient to mammalian predators. Not likely to provide critical habitat for any fish/bird species other than for inanga spawning.
Ecological Context	High	Sits within the broader Waitangi estuary and wetland complex, with full connectivity to estuarine processes. Provides potential inanga spawning habitat (threatened species).
Overall Score	High	*Area rates High for 2 of the assessment matters, Moderate and Low for the remainder. Likely to be regionally important and recognised as such.*

[8] https://www.landcareresearch.co.nz/publications/naturally-uncommon-ecosystems/wetlands/estuaries

Wasteland

Areas mapped as wasteland include hardstand, compacted surfaces, construction areas, and zones of bare or sparsely vegetated ground (Figure 5). These areas are subject to frequent disturbance and have negligible ecological value, offering little potential habitat beyond transient use by highly mobile or disturbance-tolerant species. No native plant species observed (Table 12). This habitat unit is of negligible ecological value (Table 13).

Figure 7 Wasteland habitat unit

Table 12 Plant species observed in the wasteland habitat unit

Common Name	Latin Name	Biostatus	Wetland Indicator Status
Bermuda grass	*Cynodon dactylon*	Exotic	FACU
Broad-leaved flea-bane	*Erigeron sumatrensis*	Exotic	FACU
Paspalum	*Paspalum dilatatum*	Exotic	FACU
Narrow-leaved plantain	*Plantago lanceolata*	Exotic	FACU
Jersey cudweed	*Pseudognaphalium luteoalbum*	Exotic	FACU
Black nightshade	*Solanum nigrum*	Exotic	FACU
White clover	*Trifolium repens*	Exotic	FACU
Fennel	*Foeniculum vulgare*	Exotic	UPL
Hoary mustard	*Hirschfeldia incana*	Exotic	UPL
Large-flowered mallow	*Malva sylvestris*	Exotic	UPL

Table 13 Wasteland assessment of ecological value

Matter	Value	Reasons
Representativeness	Very Low	Bare ground and exotic species dominate an unnatural and regularly disturbed landform. A highly unnatural and managed environment.
Rarity/distinctiveness	Very Low	Does not support any rare or threatened species. No indigenous plant communities. Supports exotic mammalian predators.
Diversity and Pattern	Very Low	A highly disturbed environment with negligible diversity or ecological function.
Ecological Context	Very Low	This area presents the most disturbed habitat unit within a broader disturbed context.
Overall Score	Negligible	*Very low for 3 or more matters. Negligible ecological value.*

Lowland

The Lowland habitat unit comprises flat to gently sloping, low-lying land associated with the river berm (Figure 6). Vegetation within the lowland unit is dominated by rank grass and associated exotic pasture species (Table 14). There is minimal indigenous plant cover and the structural diversity is limited to rank grassland. The area is subject to periodic inundation during high river flows. This habitat unit has been assessed as having low ecological value (Table 15).

Figure 8 Lowland habitat unit

Table 14 Plant species observed in the Lowland Habitat unit

Common Name	Latin Name	Biostatus	Wetland Indicator Status
Hemlock	*Conium maculatum*	Exotic	FAC
Yorkshire fog	*Holcus lanatus*	Exotic	FAC
Tall fescue	*Lolium arundinaceum*	Exotic	FAC
Creeping buttercup	*Ranunculus repens*	Exotic	FAC
Blackberry	*Rubus fruticosus*	Exotic	FAC
Scotch thistle	*Cirsium vulgare*	Exotic	FACU
Bermuda grass	*Cynodon dactylon*	Exotic	FACU
Cocksfoot	*Dactylis glomerata*	Exotic	FACU
broad-leaved flea-bane	*Erigeron sumatrensis*	Exotic	FACU
Narrow-leaved plantain	*Plantago lanceolata*	Exotic	FACU

Black nightshade	*Solanum nigrum*	Exotic	FACU
White clover	*Trifolium repens*	Exotic	FACU
Creeping bent	*Agrostis stolonifera*	Exotic	FACW
Crack willow	*Salix x fragilis*	Exotic	FACW
Prairie grass	*Bromus catharticus*	Exotic	UPL
Fennel	*Foeniculum vulgare*	Exotic	UPL
Hoary mustard	*Hirschfeldia incana*	Exotic	UPL
Tree lupin	*Lupinus arboreus*	Exotic	UPL
Large-flowered mallow	*Malva sylvestris*	Exotic	UPL
Lily of the valley vine	*Salpichroa origanifolia*	Exotic	UPL

Table 15 Lowland assessment of ecological value

Matter	Value	Reasons
Representativeness	Low	Exotic herb and grass dominated. No indigenous species observed. Highly modified landform but still forms part of floodplain.
Rarity/distinctiveness	Low	This area is not known to support any rare or threatened species but native birds tolerant to mammalian predators likely utilise this area (but not as critical habitat).
Diversity and Pattern	Low	Plant diversity is exotic-dominated and unlikely to provide any substantial habitat for native fauna. Predation pressure from mammalian predators is likely high but area is likely to be utilised by a reasonable diversity of native birds.
Ecological Context	Low	The river berm forms part of the riparian corridor that extends along both sides of a large river system. But is surrounded by exotic habitats and constrained by stop bank.
Overall Score	Low	*Low for all matters. Limited ecological value other than as a local habitat for tolerant native species.*

Regrassed

The Regrassed habitat unit consists of areas that have been recently re-contoured and re-established in pasture following repair and associated earthworks of the stopbank after Cyclone Gabrielle (Figure 7). These areas support a relatively uniform community of exotic pasture grasses and associated weeds that reflect a recent sowing rather than natural colonisation, with adventive species from the surrounding area beginning to establish (Table 16).

While vegetation cover is present, the regrassed areas exhibit very low habitat complexity, with an absence of layered vegetation, woody material, or stable refuge features. Unlikely to support any native fauna values other than as opportunistic use by common native birds. It has been assessed as having negligible ecological value (Table 17).

Figure 9 Regrassed Habitat Unit

Table 16 Plant species observed in the Regrassed Habitat unit

Common Name	Latin Name	Biostatus	Wetland Indicator Status
Hemlock	*Conium maculatum*	Exotic	FAC
Yorkshire fog	*Holcus lanatus*	Exotic	FAC
Tall fescue	*Lolium arundinaceum*	Exotic	FAC
Creeping buttercup	*Ranunculus repens*	Exotic	FAC
Bermuda grass	*Cynodon dactylon*	Exotic	FACU
Cocksfoot	*Dactylis glomerata*	Exotic	FACU
Broad-leaved flea-bane	*Erigeron sumatrensis*	Exotic	FACU
Chewing's fescue	*Festuca rubra*	Exotic	FACU
Perennial ryegrass	*Lolium perenne*	Exotic	FACU
Narrow-leaved plantain	*Plantago lanceolata*	Exotic	FACU
Kentucky bluegrass	*Poa pratensis*	Exotic	FACU
Black nightshade	*Solanum nigrum*	Exotic	FACU
Red clover	*Trifolium pratense*	Exotic	FACU
White clover	*Trifolium repens*	Exotic	FACU
Prairie grass	*Bromus catharticus*	Exotic	UPL
Hoary mustard	*Hirschfeldia incana*	Exotic	UPL
Large-flowered mallow	*Malva sylvestris*	Exotic	UPL
Vetch	*Vicia sativa*	Exotic	UPL

Table 17 Regrassed assessment of ecological value

Matter	Value	Reasons
Representativeness	Very Low	Exotic species dominate in a recently disturbed and recreated area.
Rarity/distinctiveness	Very Low	Does not support any rare or threatened species. No indigenous plant communities.
Diversity and Pattern	Very Low	A recently constructed habitat intended to support a managed exotic grassland in the long term.
Ecological Context	Very Low	An unnatural origin and disturbed context.
Overall Score	Negligible	*Very low for 3 or more matters. Negligible ecological value.*

Aquatic Ecology and Fish Passage

Freshwater fish

The Awatoto Pump Station sits within the lower reaches of the Tūtaekurī River and within the broader Waitangi Estuary complex. This means the freshwater fish community expected to occur is representative of a typical lowland, tidally influenced coastal system. There are records for 7 different native fish, 5 of which are dependent on migrations between freshwater and marine environments to complete their life cycles (See Table 18). The observed native species include longfin eel (*Anguilla dieffenbachii*), shortfin eel (*Anguilla australis*), īnanga (*Galaxias maculatus*), two bully species (*Gobiomorphus* spp.), along with other taxa such as common smelt (*Retropinna retropinna*) and black flounder (*Rhombosolea retiarii*).

Table 18 Freshwater fish species recorded or predicted to occur in the project area

Common Name	Latin Name	Biostatus and life history	Record in NZFFDB?	FENZ Likelihood	Threat status
Black flounder	Rhombosolea retiarii	Native marine wanderer	Yes	Possibly	Not Threatened
Common bully	Gobiomorphus cotidianus	Native migratory	Yes	Likely	Not Threatened
Common smelt	Retropinna retropinna	Native migratory	No	Possibly	Not Threatened
Giant bully	Gobiomorphus gobioides	Native migratory	Yes	Likely	At Risk – Naturally Uncommon
Īnanga	Galaxias maculatus	Native migratory	Yes	Possibly	Threatened – Nationally Vulnerable
Longfin eel	Anguilla dieffenbachii	Native migratory	Yes	Likely	At Risk – Declining
Shortfin eel	Anguilla australis	Native migratory	Yes	Highly Likely	Not Threatened
Yellow eye mullet	*Aldrichetta forsteri*	Native marine wanderer	Yes	Not modelled	Not Threatened
Mosquitofish	*Gambusia affinis*	Exotic	Yes	Likely	Introduced and naturalised
Banded kokopu	*Galaxias fasciatus*	Native migratory	No	Possibly	At Risk: Naturally Uncommon
Goldfish	*Carassius auratus*	Exotic	No	Highly Likely	Introduced and naturalised

There is no fish passage provided through the existing pump station infrastructure. The fish community that occurs upstream of the existing pump station will therefore be far less diverse and likely restricted to sporadic occurrences of both species of eel. This is because both eel species are tenacious colonisers, especially when elvers. They would be able to find their way over the stopbank during damp conditions rather than needing to

swim through the barriers associated with the stopbank and pump station, and the author has disturbed unidentified anguillids upstream of the pump station while doing previous assessments.

Extent of upstream habitat

Both the existing and proposed pump station installations present a barrier to upstream fish passage, preventing migratory fish from accessing any freshwater habitat that is upstream of the site. While downstream passage conditions may be improved under the proposed design, longitudinal connectivity for upstream movement will remain restricted. Given the strongly migratory (diadromous) nature of the fish community in this lowland coastal environment, it is therefore appropriate to characterise the ecological values associated with the site in the context of the extent of accessible freshwater habitat that it would provide a conduit to, rather than only assessing the habitat in the context of what is immediately adjacent to the pump station itself. This is because fish passage forms part of the ecological value that would otherwise be provided by the waterway that the pump station will be installed on. The extent of this fish passage value can be estimated in terms of the extent and quality of freshwater habitat that exists upstream.

A map outlining the extent of upstream waterway network isolated by the Pump Station is provided in Figure 8. An initial desktop assessment estimates the area of aquatic habitat at approximately 1.3 ha. This estimate is based on assigning different widths to different lengths of the network, and is provided to help understand the scale of the effect associated with restricted fish passage and therefore the sizing for appropriate mitigation measures. Field measurements undertaken in summer would provide both a more precise estimate of this aquatic habitat and confirm what stream segments provide permanent versus intermittent aquatic habitat.

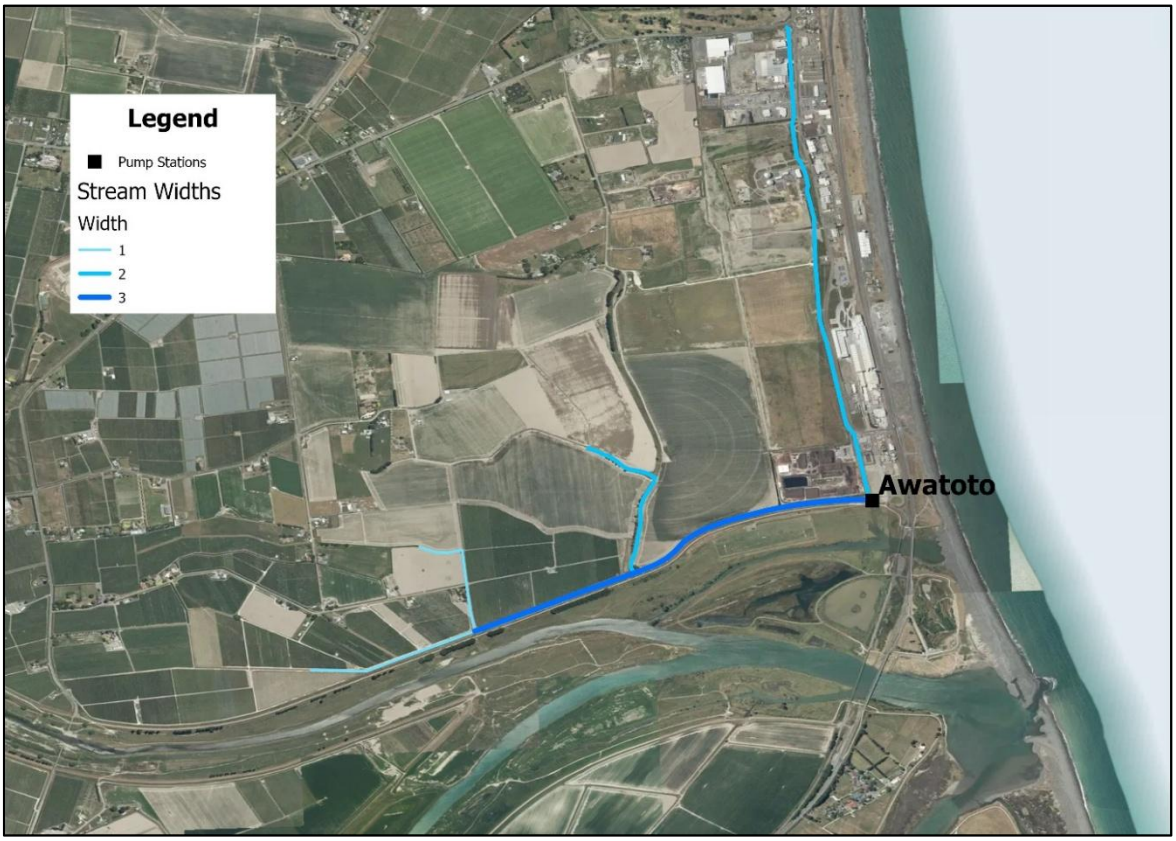

Figure 10 Extent of freshwater habitat upstream of the Awatoto Pump Station

Significant Natural Inland Wetland Values

The areas within and immediately surrounding the Awatoto Pump Station works footprint were assessed for features that met the definition for inland wetland. The “swale” habitat unit was the only feature dominated that would potentially meet this definition and looks to be an area of wetland habitat that has been created by the discharge point for a PTO-driven mobile pump (tractor-mounted emergency pumping unit). This formation pathway presents somewhat of a grey area in terms of legal wetland definitions but given that the swale feature itself does not look to have been deliberately designed and constructed, I have treated it as an induced wetland, rather than a deliberately constructed aquatic feature, and this means the swale area still qualifies as a natural inland wetland under current national definitions. Any loss in its extent would therefore need to be mitigated, if this ‘induced’ characterisation is accurate.

Vegetation within the swale is dominated by exotic pasture grasses (especially creeping bent) and associated weeds that are tolerant to wet conditions. There were no native plant species observed. As such, in isolation, the swale represents a highly modified and exotic plant dominated feature that would not qualify as supporting significant natural inland wetland values on its own. It is, however, in the vicinity of the much broader wetland and estuarine complex of the Waitangi Estuary, and so may experience visitation from some wetland birds associated with this wider complex. Because it also appears to meet the definition of a natural inland wetland, I consider that the swale should be considered a small part of the larger area of the Waitangi wetland complex (which is highly significant) when assessing its loss. Any loss in its extent should therefore be mitigated.

6. PROTECTED WILDLIFE

Lizards

No lizards were observed during the Diurnal Search undertaken for this project (April 2025), and no lizards were observed during diurnal surveys undertaken by WSP in March 2025 for an assessment on the nearby railway bridge which also covered part of the Pumping Station project footprint[9].

There were no records of native lizards within a 5km radius of the Awatoto Pump Station on iNaturalist, but there were a number of records for Northern Spotted Skink (*Oligosoma kokowai*) and Northern Grass Skink (*Oligosoma polychroma*) within 5km of the site in the DoC herpetological database (Figure 9).

Northern spotted skink is classified as At Risk: Uncommon nationally, but it is only known to occur in this one location in Hawke's Bay, and so the Napier population is therefore of very high regional significance. The population, however, is located on the opposite side of the State Highway, which forms a substantial barrier to movement, and is understood to be highly localised in extent. Given this separation and the absence of suitable dispersal pathways or habitat connectivity between the known population and the project site, it is considered unlikely that any Northern Spotted Skinks would occur within the project site. Accordingly, the risk of effects from this proposal on this regionally significant northern spotted skink population is assessed as negligible.

Nearby records for Northern Grass Skink are from the same Napier foreshore area, and this species is more likely to occur near the project footprint. The Awatoto Pump Station site and immediate surrounds provide relatively poor-quality habitat, however, and are considered to have a low likelihood of supporting any native lizards due to:

- Extensive site modification;
- Regular disturbance and maintenance;
- A lack of suitable habitat structures providing long term refuge;
- Isolation from any known populations with anything higher than a very low density of lizards; and
- Inundation and sediment deposition during Cyclone Gabrielle.

Although areas of long grass are present within and adjacent to the site, the habitat lacks the structural elements required to provide safe, long-term refuge for native lizards. In particular, there is an absence of long-standing habitat features typically required to support sustained lizard occupancy, such as large or complex woody debris accumulations, rock piles of cobble size or larger, or extensive anthropogenic debris (e.g. stacked concrete, rubble, or similar materials). Rank grass in the area would provide cover and foraging habitat but would not provide secure refugia. Debris piles that may provide secure refugia tend to be transitional in the project footprint as part of ongoing site maintenance and clean up. For example, debris piles that were present in the wasteland habitat at the time of survey were recent accumulations of flood debris that have since been cleared from the site.

Long grass without structural elements provides limited and transient cover but offers poor protection from land-based predation, temperature extremes, and disturbance, particularly in an exposed, low-lying environment. In the absence of stable refuge structures that offer secure shelter and overwintering opportunities, the site is considered unlikely to support resident lizard populations over the long term.

[9] Frost, E. 2025. Awatoto Bridge 217 Ecological Report Summary. Document Number C5001-02-577-12000-EW-PP-TREC-000001. WSP client report for Transport Rebuild East Coast.

As such, the potential lizard habitat within the project footprint has been assessed to be of low value for lizards, and the likelihood of lizards being present within the site is similarly low.

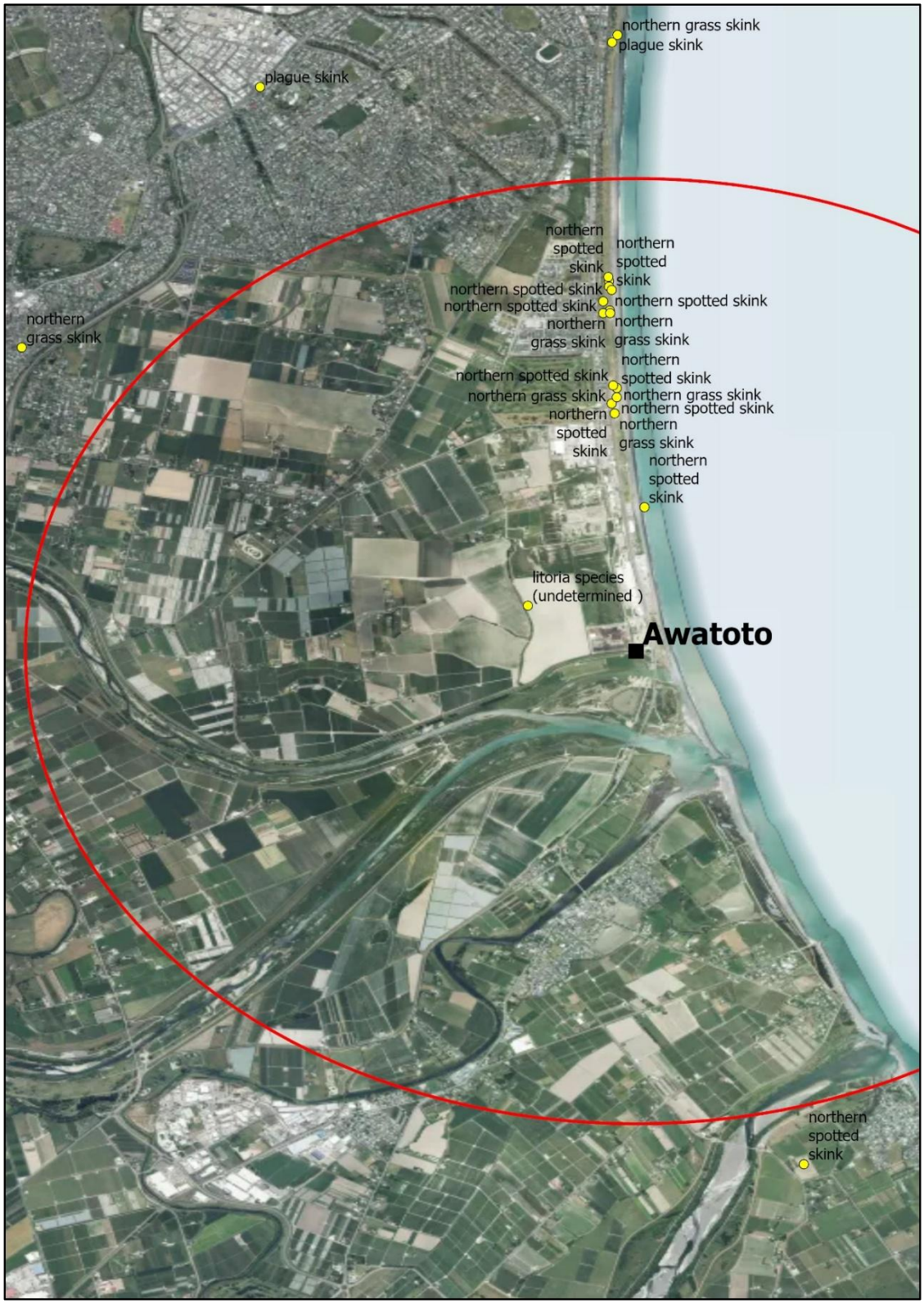

Figure 11 Lizard and amphibian records from the DoC Herpetological Database. Red circle represents 5km radius around Awatoto Pump Station.

Birds

A total of 1047 individuals from 11 different indigenous bird species were observed in the Waitangi Estuary area during a region-wide coastal bird survey in 2021[10], which represented the 11th equal highest diversity of areas sampled along the Hawke's Bay coastline, and the 3rd highest in terms of abundance. A very high diversity of indigenous water-associated bird species (n = 40) was reported from the estuary and lower Tūtaekurī River in a compilation of observations made from the 1960s through to the 1980s[11].

Notable species known to utilise the wider area and that may utilise habitats close to the project footprint include two Threatened - Nationally Critical species (Australasian bittern and white heron), the spotless crake (At Risk – Relict) and the banded dotterel (At Risk – Declining).

The diversity of bird species evident above will be present in the wider area. While bird values within the broader area are Very High, the works footprint consists of active infrastructure and hardstand areas with limited nesting or roosting opportunities. While there may be temporary disturbance (e.g. noise, vibrations) if works are undertaken during breeding season, this would be in the form of discouraging birds from using the area for nesting only. With other areas available in close proximity no specific management is considered necessary beyond standard site establishment works, which can be provided for as part of the Ecology Management Plan.

Bats

Bat habitat is absent within the pump station footprint, which contains no mature trees, structures, or vegetation suitable for roosting. Based on habitat characteristics and regional survey information, bats are considered highly unlikely to utilise this site or be affected by the proposed works. The bat values for this site are therefore considered Very Low.

[10] McArthur, N., Cotter, S., Curzon-Hobson, G., Flux, I., Flux, M., Mosen, C. 2022. State and trends in the abundance and distribution of riverbed-nesting shorebirds on the Tutaekuri, Ngaruroro and Tukituki Rivers. Client report prepared for Hawke's Bay Regional Council, Napier.
[11] Parrish, G.R. 1988. Wildlife and Wildlife Habitat of Hawke's Bay Rivers. Science and Research Series No. 2. Science & Research Directorate, Department of Conservation, Wellington.

7. THE PROPOSAL

The Awatoto Pump Station upgrade includes replacement and upgrade of existing pump station components, modifications to associated drainage infrastructure, and site works required to enable installation of new equipment and improve operational reliability.

The proposed works will involve a range of construction activities within and immediately adjacent to the existing pump station footprint, as well as within the adjacent stopbank and river margin. Key activities include site establishment (including temporary hardstand, access routes, and laydown areas), excavation and earthworks, installation of a sheet-piled cofferdam to facilitate below-ground construction, dewatering of excavations, construction of new pump station infrastructure, and installation of discharge pipelines through the existing stopbank. Works will also include removal or modification of existing infrastructure and reinstatement of disturbed areas following completion.

Construction will be undertaken in a staged manner from mid-2026 to late-2027, with peak disturbance occurring during initial site establishment, cofferdam installation, excavation, and outfall construction phases. Construction activities have the potential to result in disturbance to terrestrial and aquatic habitats in the immediate vicinity. This includes vegetation clearance, ground disturbance, and localised modification of drainage and river margin environments. In-stream and near-stream works (including cofferdam establishment, dewatering, outfall construction, and riprap placement) present potential for temporary increases in sediment mobilisation, turbidity, and changes to local water quality. Dewatering activities will also generate temporary discharges that require management to avoid adverse effects on receiving environments. Note, because fish passage is not currently provided through the stopbank, the proposed construction work is not considered to present any impediment to fish passage.

There is also potential for disturbance associated with the handling of contaminated sediments within the upper soil profile and the movement of machinery within and near aquatic habitats. However, these effects will be managed through implementation of standard and project-specific erosion and sediment control measures, dewatering management, and other controls set out in the Construction Environmental Management Plan (CEMP).

Once operational, the upgraded pump station will continue to function as part of the managed drainage network, regulating water levels within the surrounding low-lying landscape. The operational environment within the pump station footprint will remain a highly modified, infrastructure-dominated system, with ongoing maintenance activities, periodic disturbance, and limited opportunity for the development of natural habitat features. From an ecological effects perspective, the long-term operation within the site footprint is largely equivalent to the status quo.

Although the site footprint will be similar to the status quo, the design and operation of the pumps themselves involve elements of improvement from a fish passage perspective.

The proposal includes the replacement of the existing pumps with purpose-designed fish-friendly submersible pumps (Bosman pumps). If pumps function as expected, this will represent an improvement for downstream fish passage in terms of reduced damage and mortality, particularly for large-bodied migratory species such as longfin and shortfin eels.

The Bosman pumps have been independently tested under European standards. While these standards provide a consistent methodology for quantifying fish damage, they do not define thresholds for acceptable mortality or injury, have not been tested in New Zealand conditions for New Zealand species, nor prescribe criteria for classifying a pump as “fish friendly”. As a result, performance ratings derived from these tests can be difficult to interpret in a New Zealand context, particularly for large-bodied migratory species such as tuna, whose size range and swimming behaviour differ from the smaller European species typically used in testing.

Because there is no existing upstream fish passage, and no passage will be provided as part of this project, the diversity and abundance of fish upstream of the pump station that will be at risk from pumping activity will remain low. Given the relatively low population of fish species upstream of this pumpstation, testing the performance of these fish friendly pumps is unlikely to produce insightful information. It is also considered unnecessary given the low risk-to-fish profile of this site (and i.e. low potential for adverse effects from pumping activity).

In terms of upstream migration, the project does not provide for upstream fish passage, meaning that fish will remain unable to access habitat upstream of the pump station. This is no different to the current situation.

While downstream passage conditions will be improved, the project does not provide for upstream fish passage, meaning that fish will remain unable to access habitat upstream of the pump station.

This represents an existing adverse effect on fish passage, that while not addressed by the proposed pumping station design, will instead be addressed by the creation of new aquatic habitat.

The extent of habitat creation will be in proportion to the area of upstream habitat that remains inaccessible (this is initially estimated at approximately 1.3 ha of shallow water). The final location and detailed design of this habitat is to be confirmed post consent; however, it is anticipated that the constructed habitat will provide higher-quality aquatic conditions than those currently present upstream, including improved aquatic connectivity, habitat diversity, and proximity to the coastal environment. Importantly, the habitat will be fully accessible to fish, including migratory species, and is expected to support a range of aquatic fauna including aquatic birds.

Overall, while upstream passage at the pump station is not provided, the creation of new, accessible aquatic habitat is expected to provide a clear net positive outcome for aquatic ecological values at the site.

Level of Effects

The expected magnitude of effects from the above activities were compared to ecological values identified earlier, and the level of effect was calculated according to Table 3 (repeated here for ease of reference) for each of the habitat units and wildlife groups.

Table 19 Ecological impact assessment level of effects.

Level of Effect		**Current Ecological Value**				
		Very High	**High**	**Moderate**	**Low**	**Negligible**
Magnitude of effect from activity	**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

Habitat Units

Stopbank

This habitat unit has a current ecological value of Negligible. The proposed activity will involve construction works within an already highly modified stopbank environment dominated by maintained exotic grasses and associated infrastructure. While construction will temporarily disturb or remove existing vegetation within the immediate footprint, the affected habitat is of very low complexity, is routinely maintained, and will be reinstated to a similar low-value condition following completion of the works. In that context, the expected magnitude of effect is Low. Based on the current ecological value of Negligible, the resulting level of effect is Very Low.

Stream and Riparian Margin

The stream and riparian margin habitat unit has a current ecological value of Negligible in terrestrial terms, notwithstanding its role in providing aquatic connectivity within the wider drainage and tidal system. The proposal will involve localised disturbance to this habitat through site establishment, excavation, outfall works, and associated construction activity adjacent to the channel margins. These activities will temporarily alter portions of the immediate margin and create short-term disturbance, but the affected habitat is already narrow, exotic-dominated and highly modified. Assuming that erosion and sediment control, dewatering management, and general construction environmental controls are appropriately implemented, the magnitude of effect on the riparian margin habitat itself is expected to be Moderate. Based on a current ecological value of Negligible, the resulting level of effect is therefore Very Low.

Swale

The swale habitat unit has been assessed as having Low–Negligible ecological value, reflecting its induced and highly modified character, notwithstanding that it appears to meet the definition of a natural inland wetland. If works were to directly disturb or remove part of this feature, the effect would be more than trivial because

wetland extent would be reduced, even though the feature itself is of relatively low quality and entirely exotic in vegetation composition. On that basis, the expected magnitude of direct effect is characterised here as Moderate. A Moderate magnitude effect on a feature of Low ecological value would equate to a Low level of effect. If the swale is avoided during construction, or if any loss is fully remedied through reinstatement or through the wider aquatic/wetland habitat package, the residual effect would reduce accordingly or become a net positive if any created wetland is of superior habitat quality.

Tidal and riparian habitat

The tidal and riparian habitat unit has a current ecological value of High, reflecting its connection to the broader Waitangi Estuary and wetland complex, its role in supporting migratory fish and estuarine fauna, and its potential value for aquatic bird species and inanga spawning. The proposal has the greatest potential to affect this habitat unit through temporary construction disturbance associated with cofferdam installation, dewatering, outfall construction, riprap placement, machinery movement, and short-term reductions in local water quality if sediment is mobilised. However, the area directly affected is localised relative to the broader habitat unit, the disturbance is temporary, and the works occur in an already modified edge environment associated with an existing pump station discharge point. Assuming standard and project-specific controls are implemented, the magnitude of effect is assessed here as Moderate. Against a current ecological value of High, Table 19 indicates that the corresponding level of effect is High but temporary.

Wasteland

The wasteland habitat unit has a current ecological value of Negligible. It comprises hardstand, compacted surfaces, bare ground and other highly disturbed areas with little ecological function beyond transient use by highly mobile and disturbance-tolerant species. The proposal will disturb these areas further during construction, but this will not materially alter ecological values because those values are already extremely limited. The expected magnitude of effect is therefore Negligible to Low. Adopting the more conservative Low magnitude still results in a Very Low level of effect when applied to a habitat unit of Negligible ecological value.

Lowland

The lowland habitat unit has a current ecological value of Low. Although it is dominated by rank exotic grassland and has limited structural diversity, it does provide some local habitat for common native fauna and forms part of the wider river berm and floodplain context. Construction activity has the potential to temporarily remove or disturb portions of this habitat through access, laydown, machinery operation, earthworks and reinstatement. However, the habitat is already highly modified, exotic-dominated, and subject to periodic natural and anthropogenic disturbance. The expected magnitude of effect is therefore best characterised as Low. On the basis of a Low current ecological value and Low magnitude of effect, the resulting level of effect is Very Low.

Regrassed

The regrassed habitat unit has a current ecological value of Negligible. It is a recently recreated pasture environment of very low habitat complexity and negligible ecological function. Construction effects within this unit will be confined to further temporary disturbance of an already artificial and recently modified habitat type. The expected magnitude of effect is therefore Low, noting that the habitat can be readily reinstated to an equivalent condition. When compared with a current ecological value of Negligible, the resulting level of effect is Very Low.

Fish

The aquatic environment associated with the pump station discharge supports a fish community of High ecological value, due to its connectivity to the Waitangi Estuary, the presence of taonga species, and the presence of at-risk or threatened freshwater species including the site being a potential īnanga spawning site.

The proposed activity results in a mixed fish passage outcome. The replacement of the existing pumps with purpose-designed fish-friendly pumps is expected to reduce the risk of injury or mortality to downstream-migrating fish relative to the current situation. On the other hand, the proposal does not provide for upstream passage, meaning that the existing barrier to upstream migration remains.

In the absence of the proposed habitat creation package, the residual adverse effect associated with continued loss of upstream access is estimated here as of Low to Moderate magnitude, noting the proposal does not introduce a new barrier but rather maintains an existing one while improving downstream survivability. In the context of High ecological value, the resulting adverse level of effect is calculated as Low to High.

The proposal also includes creation of new accessible aquatic habitat downstream of the barrier, however, that is intended to offset the loss of access to approximately 1.3 ha of upstream habitat. If that package is appropriately delivered, the overall freshwater outcome would shift from a residual Low to High level of effect to a clear Net Positive outcome.

Wetlands

The small swale feature is considered to meet the current definition of natural inland wetlands, and while it is highly modified and of limited intrinsic quality, it should be treated as part of the wider Waitangi wetland complex for assessment purposes. In isolation, its ecological value is Low–Negligible, but any direct loss still warrants mitigation because wetland extent would be reduced. If the proposal avoids direct effects on wetland extent, then the expected magnitude of wetland effect is Negligible to Low, corresponding to a Very Low level of effect. If some wetland loss is unavoidable, then the unmitigated magnitude of effect would be Moderate or higher and equate to a level of effect of Low or higher (noting its current Low value).

Consistent with Ecology Principles, however, any loss should be remedied through reinstatement or habitat creation, and where the replacement habitat is at least equivalent in area and of improved ecological quality, the overall effects would equate to a Net Gain and contribute to a Net Positive outcome for wetlands. The creation of wetland habitat could be undertaken in tandem with the creation of the mitigation habitat for fish.

Lizards

Native lizards are considered unlikely to occur within the project site due to the limited availability of suitable habitat, and as such, the risk of harm to, and level of effect on, lizards is assessed as low. However, where areas of rank grass are present, or if any piles of debris remain on site for an extended period (e.g. weeks), there remains a small potential for transient individuals to occur. As a precautionary measure, any low risk to lizards from this activity can be further reduced through the implementation of 'soft clearing' techniques, whereby rank grass is progressively mown or trimmed, and where debris piles are carefully moved out of the way, in advance of any more impactful construction works. This approach encourages any lizards present to disperse from the works area prior to ground disturbance, and the adoption of soft clearance techniques in the construction methods would further minimise any risk to native lizards. Accordingly, if soft cleaning measures are undertaken as prescribed, the expected magnitude of effect on lizards is Negligible to Low, with a resulting level of effect of Very Low.

Birds

The primary ecological risk to birds would be disturbance from any major construction noise and vibration during construction, rather than habitat loss.

Bird species are known to utilise the wider Waitangi Estuary and coastal environment, but nesting and roosting opportunities are limited within the works footprint itself, and the main risk is temporary disturbance to proximal habitats during construction rather than direct disturbance or habitat loss. The current ecological value of bird habitat within the immediate works footprint is assessed here as Low, notwithstanding the much higher avifauna values of the broader estuarine system outside the primary construction footprint. Vegetation clearance, machinery movement, noise and human activity may cause temporary disturbance to bird species using the site or immediate surrounds, particularly if works overlap with nesting periods.

If vegetation clearance on the estuarine side of the stopbank can avoid the September to January period, the expected magnitude of effect would be Low and result in an overall level of effect of Very Low. If this period cannot be avoided, standard site establishment works can be undertaken to help avoid occupation of the work site and ensure suitable buffer zones.

Bats

Bat roosting habitat is absent from the pump station footprint and bats are considered highly unlikely to be affected by the proposed works. On that basis, the current ecological value of the site for bats is characterised as Negligible. Because there are no mature trees or structures suitable for roosting within the footprint, and no identified bat habitat features will be removed, the expected magnitude of effect is Negligible. This equates to a Very Low level of effect on bats.

8. SUMMARY OF ECOLOGICAL EFFECTS

With appropriate management, the proposed works are expected to have only a Very Low level of effect on the following ecological features; Stopbank, Stream and Riparian Margin; Wasteland; Lowland; Regrassed; Lizards; Birds and Bats.

The proposal is expected to have a Low level of effect on tidal and riparian habitat and fish passage following mitigation, noting that temporary unmitigated effects on tidal and riparian habitat may be higher during construction.

The proposal is expected to create opportunities for Net Gain and contribute to Net Positive outcomes for; Swale/wetlands and Fish, if wetland remediation and the proposed aquatic habitat creation package are implemented as part of the overall proposal.

See Table 20 for the full summary.

Table 20 Summary of ecological values and levels of effect

Habitat Unit	Current Ecological Value	Unmitigated Level of Effect	Mitigated Level of Effect
Stopbank	Negligible	Very Low	Very Low
Stream and Riparian Margin	Negligible	Very Low	Very Low
Swale	Low-Negligible	Low	Net Gain
Tidal and riparian habitat	High	High (temporary)	Low
Wasteland	Negligible	Very Low	Very Low
Lowland	Low	Very Low	Very Low
Regrassed	Negligible	Very Low	Very Low
Fish	High	Low to High	Net Gain
Wetlands	Low-Negligible	Very Low to Low	Net Gain
Lizards	Low	Very Low	Very Low
Birds	Low	Very Low	Very Low
Bats	Very Low	Very Low	Very Low

9. SUMMARY AND CONCLUSIONS

The project footprint is located within a highly modified floodplain environment, with the majority of terrestrial habitats assessed as having Low-Negligible ecological value. These areas are dominated by exotic vegetation, engineered landforms, and ongoing disturbance, and provide limited habitat for indigenous species. As a result, ecological effects associated with construction and reinstatement within these habitats are expected to be Very Low.

Higher ecological values are associated with the tidally influenced receiving environment connected to the Waitangi Estuary, and with the fish communities it supports. These values are locally important but occur within a system that is already modified and influenced by the existing pump station.

While the proposal maintains the existing constraint on upstream fish passage, the project includes a targeted habitat creation and wetland enhancement package, which is intended to offset lost access to upstream habitat and improve the availability and quality of accessible aquatic habitat within the wider system.

Overall, the proposal is expected to result in predominantly Very Low residual ecological effects, with Low effects for higher-value environments (after mitigations are applied). The proposed mitigation and habitat creation measures also provide a clear pathway to deliver net positive ecological outcomes, particularly for freshwater and wetland values.