VIRIDIS
Environmental Consultants

Te Ara Tipuna

Ecological Impact Assessment

Prepared for: Te Ara Tipuna Charitable Trust

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1 INTRODUCTION

Te Ara Tipuna Charitable Trust (Trust) engaged Viridis Limited (Viridis) to undertake an ecological impact assessment (EcIA) of the proposed Te Ara Tipuna trailway (also referred to below as the "Project" or "Ara"). Te Ara Tipuna will involve establishing and maintaining an approximately 345 km trail for pedestrians around the coast of Te Tairāwhiti, or the East Cape, Potikirua ki Te Toka a Taiau (between Gisborne and Potaka), with an inland loop to Hikurangi Maunga.[1] The location of the proposed Te Ara Tipuna is shown in Figure 1.

The ara corridor has been designed to align, where possible, with existing recreation tracks, beaches, farm tracks and unformed legal (paper) roads. In other areas it will be located alongside SH35 and formed local roads. The proposed route crosses public land, whenua Māori and private land. Much of the proposed Ara (approximately 75%) will be based on 'wayfinding', meaning there is no formed ara or physical works necessary to establish the ara, and instead walkers find their way between ara markers. In other locations, depending on local conditions and where there is a functional need, the Ara construction will involve the use of gravel, bridges, stairs and boardwalks. There will also be establishment of toilets throughout the Ara .

The Ara is located within Gisborne District. Resource consent for the proposed Ara is required from the Gisborne District Council under the Tairāwhiti Resource Management Plan 2023 (TRMP). The requirements of national environmental standards (e.g. the National Environmental Standard for Freshwater 2020 (NES-F), the National Policy Statement for Indigenous Biodiversity 2023 (NPS-IB)) and legislation (such as the Wildlife Act 1953 (Wildlife Act)) will also apply to development activities.

Due to the extensive length and remoteness of the Ara and the multitude of areas and landscapes it covers, the initial design and EcIA (prepared by Tairāwhiti Environment Centre (TEC) and Atkins (2023)) were prepared at a high level. That EcIA focused on the potential impact of the Ara on areas of ecological significance, it did not assess the ecological values across the whole extent of the Ara and the potential ecological impacts on those values.[2] TEC and Atkins were involved in refining the Ara alignment and design to avoid, minimise or mitigate the effects of the Ara on areas of high ecological value identified in the initial EcIA.

This EcIA report presents the results of a more detailed assessment of the ecological values across the entirety of the Ara and the types of effects that are anticipated as a result of the Project. It has been largely prepared on a desktop basis, with visits to selected locations along the Ara and onsite knowledge and expertise from Mr Atkins informing those assessments. We consider that this approach is appropriate given the long lead in times expected prior to construction works commencing (up to 10 years), which is needed accommodate discussions and agreements with landowners regarding access and to undertake detailed design to determine the final route (i.e. identifying the location and design of the generally 1.5m Ara within the proposed 50m corridor). As a result, detailed site-specific surveys at

[1] Originally a longer 500 km combined pedestrian, bike and horse track was proposed. The proposal has since been significantly reduced in length and width, with the Trail now proposed to only cater for pedestrians.

[2] The areas of ecological significance considered in TEC and Atkins (2023) were those identified in the relevant council plans and others managed outside of council plans (Te Tapuwae O Rongokako Marine Reserve – Pouawa, Ngā Whenua Rāhui Kawenata covenanted areas and QEII National Trust covenanted areas).

this juncture would likely be of limited value and a higher-level assessment and effect management framework proposed in this EcIA is the preferred and appropriate approach.

This EcIA also relies on indicative design information presented in the 'km by km' tracker of the length of the Ara (Tracker) prepared by Civil Project Solutions (CPS). The Tracker provides an upper conservative estimate of the scale and type of works that will be undertaken, and other key information, for each km of the Ara. To ensure the Tracker is appropriate to support this EcIA and its effects assessment, Viridis has worked directly with CPS to ensure the information in the Tracker is sufficient.

Viridis has also worked with CPS and the Trust to design, a set of conservative "bottom lines" or restrictions that will impose highly conservative controls on the ecological effects associated with Ara construction and operation. These conservative ecological effects restrictions go beyond the restrictions that would be imposed on a standard development. They have been designed in light of the nature of the Project and the predominantly desktop nature of this EcIA, to ensure that there is a high confidence in all ecological effects of the Ara remaining 'low'.

To support that outcome, an effects management framework has been developed that includes an ecological values traffic light system to highlight the areas of the proposed Ara that require higher levels of ecological effects restrictions. These restrictions include on the ground surveys of areas of higher ecological values to be conducted by an ecologist prior to any construction works to confirm consistency with the values, effects and mitigation measures outlined in this EcIA. We have recommended a management plan provide a clear framework for the proposed pre-construction confirmatory ecological surveys and have prepared a Draft Ecological Survey and Management Plan Protocol (ESMPP) for that purpose. The draft ESMPP has been updated from the previous version (Viridis, 2024) to ensure consistency with the ecological effects restrictions and the effects management framework outlined in this EcIA and is included in Appendix C.

The effects management framework also proposes stage-specific ecological management plans, to be prepared by an ecologist, which will set out the results of any confirmatory surveys, specify mitigation measures consistent with the minimum measures set out in this EcIA (as well as any others that respond to the confirmatory surveys) and confirm that the overall effects assessment utilising the methodology set out in this report is consistent with the overall 'low' effects conclusion that this EcIA reaches. Where potential ecologically sensitive areas have been identified, we have recommended tighter restrictions on ara construction (for example a narrower width of vegetation clearance) to further minimise the potential ecological effects.

We have also proposed range of mitigation measure to manage the operational effects of the Project, which we suggest are reflected in the Ara's Operational Maintenance and Management Plan (OMPP).

Finally, we note that, although not required to address any residual adverse ecological effect (given our conclusion of overall 'Low' effects after mitigation), the Applicant is proposing to undertake ecological restoration planting of any permanently removed indigenous vegetation from identified Ecologically Sensitive Areas, at a ratio of 2:1. We consider that this, together with the effects management framework proposed, is likely to mean that the Project has an overall positive effect with respect to terrestrial ecology.

Figure 1. Route of Te Ara Tipuna as indicated by red line (map source: LINZ, NZ Topo250)

2 METHODOLOGY

2.1 Initial Route Selection

Prior to lodgement of the consent application, the Ara route was designed by CPS in consultation with Graeme Atkins and the TEC to minimise the potential ecological effects of the Ara. Graeme Atkins is a well-respected local ecologist who has worked extensively in Tairāwhiti with "Threatened"[3] species, plants, and animals for over thirty years.[4] Mr Atkins lives along the ara route (north of Ruatōria)and is intimately familiar with the area.

2.2 Project Design, Updates and Assumptions

Since the application was originally lodged, further review of the Ara route has been undertaken, and the length and width of the ara have been significantly reduced, thereby reducing the potential for ecological effects. There have also been further changes to the ara route arising out of consultation with the NZ Transport Agency Waka Kotahi, consultation with some land owners, the findings of the site visit and to ensure existing tracks are utilised.The Tracker spreadsheet, prepared by CPS, also now provides a conservative upper estimate of the extent and type of construction works that will be undertaken, and other key information, for each km of the Ara. A conservative approach has been adopted because a full walkover of the Ara has not been possible, and a number of assumptions have been used in preparing the Tracker (see CPS 2025d for more details on those assumptions). Viridis contributed to defining the scope of the Tracker to ensure that it provided useful information on which to base the assessment of ecological impacts of the Ara (such as vegetation clearance areas, vegetation types, dune crossings, extent of wayfinding / nature of the Ara). Given its conservative nature, the Tracker is considered an appropriate tool to understand the upper limits of potential ecological effects of the Project, along with the indicative construction methodology, concept designs, revised approach to waterbody crossings and cross-sections prepared by CPS and incorporated in the Construction Management Plan (CMP).

Given the largely desk top nature of this ecological impact assessment, a similarly conservative approach has been taken with regard to developing an ecological effects management framework and assessing the ecological effects. The assumptions about the Project that have informed this ecological assessment of effects include:

- The Ara will provide passage for pedestrians only;
- The Ara will be aligned where possible with existing recreation tracks, beaches, farm tracks, formed roads and unformed legal (paper) roads;

[3] The New Zealand Threat Classification System (NZTCS) is used to classify New Zealand's wild species according to their threat of extinction (Rolfe *et al.*, 2022). Reports detailing the threat status of New Zealand's fauna and flora are available from the NZTCS data base (https://nztcs.org.nz/).

[4] Mr Atkins was formerly a Department of Conservation Ranger and was the winner of the Loder Cup in 2020, an award presented by the Department of Conservation to recognise individuals or groups who work to investigate, promote, retain, and cherish Aotearoa New Zealand's indigenous flora and whose work has made a tangible difference to the protection of indigenous flora over and above their employment expectations. In 2024 Mr Atkins was a finalist for the Ministry for the Environment's Environmental Hero of the Year for his environmental advocacy and commitment to kaitiakitanga and environmental restoration.

- The Ara will be located within a 50 m consented corridor[5], enabling micro-siting of the ara within the consented corridor during detailed design to avoid or minimise ecological effects;
- Where practical, the lowest ecological impact route will be selected within the consented corridor;
- Wayfinding will be the predominant ara type, with gravel, earthworks, vegetation clearance and structures such as stairs or boardwalks only being installed where there is a functional need;
- Works within watercourses will be avoided where possible by utilising wayfinding or existing or newly proposed bridges to cross streams and rivers;
- Any culverts will be constructed to meet the permitted activity requirements of the TRMP and the NES-F;
- Works and vegetation clearance within and within 10 m of wetlands will be avoided; and
- Works and vegetation clearance within the Coastal Marine Area[6] will be avoided as much as possible, although there may be a need for works and vegetation clearance associated with bridge construction.

2.3 Site visit

A high-level site visit was undertaken with the Te Ara Tipuna team (including the landscape architect, engineer, planners and lawyer) to various locations along the ara to:

- enable site familiarisation and an improved understanding of the nature of the environment within the ara footprint;
- confirm key assumptions made in the ecological assessment regarding the ecological effects of the proposed works and the proposed approach to managing those effects; and
- check the classification of selected ara sections with regard to the ecology traffic lights and ecologically sensitive areas.

The site visits were undertaken on 4 and 5 June 2025 during mixed fine and rainy weather. The locations visited included a range of sites that were reasonably accessible from the road, including terrestrial protected areas, several indigenous vegetation types, areas adjacent to wetlands, coastal access routes and beaches and river crossings.

[5] At Section 1.7.3, the Assessment of Environmental Effects report (T&T, 2025) also describes a Sensitive Area Consent Corridor, being a 100 m corridor (50 m either side of the proposed centre line of the Ara). The rationale for a wider Sensitive Area Consent Corridor in ecologically or landscape sensitive areas is to provide greater flexibility at the detailed design stage to locate the track in a way that further enables adverse effects to be minimised, beyond what is assessed in this report.

[6] The CMA is defined in the Resource Management Act 1991 (RMA) as "the foreshore, seabed, and coastal water, and the air space above the water—

(a) of which the seaward boundary is the outer limits of the territorial sea:

(b) of which the landward boundary is the line of mean high water springs, except that where that line crosses a river, the landward boundary at that point shall be whichever is the lesser of—

(i) 1 kilometre upstream from the mouth of the river; or

(ii) the point upstream that is calculated by multiplying the width of the river mouth by 5"

2.4 Ecological Impact Assessment

The overarching approach of this analysis and reporting is to ascertain the existing ecological values along the proposed ara corridor and to determine the impact of the proposed works on those values.

We determined the ecological values relating to species, communities and systems, in general accordance with the Environment Institute of Australia and New Zealand (EIANZ) Ecological Impact Assessment guidelines (EcIAG) for use in New Zealand (Roper-Lindsay et. al. 2018). Using this framework, the EcIAG describes a simple ranking system to assign value to species as well as other matters of ecological importance such as species assemblages and levels of organisation. The overall ecological value is then determined on a scale from '*Negligible*' to '*Very High*'.

Criteria for describing the magnitude of effects are given in Chapter 6 of the EcIAG. The level of effect can then be determined through combining the value of the ecological feature/attribute with the score or rating for magnitude of effect to create a criterion for describing level of effects (Table 1). A moderate level of effect requires careful assessment and analysis of the individual case. For moderate levels of effects or above, measures need to be introduced to avoid effects through design, or appropriate mitigation needs to be incorporated (Roper-Lindsay *et al.* 2018).

Table 1. Criteria for describing the level of effects (from Roper-Lindsay et al. 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

Notes: Where text is italicised, it indicates 'significant effects' where mitigation is required.

2.5 Information Utilised

This assessment is based on a largely desktop review of available ecological information across the region (listed below) undertaken by a suitably qualified ecologist.

The types of vegetation, fauna and habitats likely to be present along the Ara corridor were reviewed using a range of information sources, including:

- Satellite imagery (Google Satellite);
- The Department of Conservation's (DoC's) herpetofauna, bat and bird databases;
- NIWA's New Zealand Freshwater Fish Database (NZFFD);
- The New Zealand Land Cover Database (LCDB) Version 5.0 from Landcare Research;
- Discussions with Graeme Atkins who has provided advice based on his local knowledge of species and habitats along the Ara corridor;
- eBird;

- iNaturalist;
- NZ Topo Map50 and Topo 250 Maps (LINZ);
- NZ River Lines, River Environment Classification c2.3 (NIWA);
- TRMP Maps, including the following layers:
  - Protection Management Areas (PMAs)
  - Marine Areas of Significant Conservation Value
  - Terrestrial Areas of Significant Conservation
  - Scheduled Water Bodies
  - Scheduled Rivers and Streams
  - Protected Watercourses
  - Provisional Regional Wetland Assessment 2022 (Morphum, 2024);
- Ngā Whenua Rāhui Open Data – NWR Protected Areas Public View; and
- QEII Trust Covenant Polygon shapefile.

The Geographical Information System software "QGIS" has been utilised to overlay the various databases and aerial imagery with the Ara corridor and undertake the assessment of existing values.

As noted above, the desktop assessment used the following ara data provided by CPS to assess the potential impact of the Ara on ecological values:

- The Tracker spreadsheet summarising the works expected to be required along the ara on a kilometre-by-kilometre basis (CPS 2025a);
- A spreadsheet summarising the waterbody crossings required (CPS 2025b), included in the CMP;
- The CMP (CPS 2025c); and
- The Tracker guidance document (CPS, 2025d).

2.6 Limitations

This assessment has been undertaken largely as a desktop study, without comprehensive on-ground ecological site assessments. As such, there is a risk that certain sensitive habitats or species—particularly in areas of the Ara corridor that have not been subject to prior ecological surveys—may not have been identified or accurately assessed. Despite these limitations, we are comfortable providing a conclusion on the potential ecological effects of the Project, because:

- our assessment has been informed through consultation with Mr Atkins, who has extensive local ecological knowledge in the Ara area;
- a high level site visit has been undertaken to selected locations along the proposed Ara to confirm the appropriateness of the assumptions made in assessing the ecological effects and in developing the ecological management framework;
- a highly conservative and restrictive approach has been taken to the design of the Ara and the limitations that have been applied regarding the nature, location and construction methodology associated with the Ara; and

- the construction methodology includes confirmatory surveys prior to construction to ensure the assessments made in this report are accurate.

With respect to the conservative/restrictive approach to Ara design, it is important to note that ecological protection measures have been embedded in the Ara design to a degree that exceeds what would be typically required for a development project. These measures include restrictions on ara width, vegetation clearance restrictions, clarity on the degree of wayfinding-only use proposed, and provisions for adaptive management during detailed design (i.e. re-routing within a 50 m corridor). These elevated safeguards ensure that potential ecological risks are able to be proactively managed, even in the absence of detailed field survey data.

3 ECOLOGICAL VALUES ASSESSMENT

3.1 Background

Te Ara Tipuna is within the Waiapu, Pukeamaru and Motu ecological districts (EDs). The locations of the EDs are shown in Figure 2. The key features of these EDs are described by DoC (1987) and summarised below.

The eastern section of the Ara and much of the Hikurangi Loop is within the Waiapu ED. This ED includes coastal lowlands and hills east of the Raukumara Range with rare indigenous forest remnants. The original hill country forest probably included mainly podocarp-hardwood, with some red beech (*Fuscospora fusca*) and silver beech (*Lophozonia menziesii*) on the highest land and black beech (*Fuscospora solandri*) on lower, mostly broken terrain. There is evidence of former extensive kahikatea (*Dacrycarpus dacrydioides*) dominated podocarp forest on alluvial flats, and semi-coastal and coastal forest on lower country. Much of the district is farmed, with increasing areas of exotic forest on severely eroded formerly farmed slopes. Indigenous forest remnants are rare.

The northern part of the Ara is within the Pukemaru ED. This has diverse topography, mainly hills with some steep and wide flat bottomed river values and narrow coastal terraces. The vegetation today is a mosaic of pasture, scrub and indigenous forest. The original forest cover was fairly extensive – mostly podocarp-hardwood-beech forest with black and hard beech (*Fuscospora truncata*) at lower altitudes and red beech, silver beech and black beech higher up. Tawa (*Beilschmiedia tawa*) is the main hard wood, mangeao (*Litsea calicaris*), tāwari (*Ixerba brexioides*) and kāmahi (*Pterophylla racemosa*) also occur. Pōhutukawa (*Metrosideros excelsa*) and pūriri (*Vitex lucens*) are present in coastal areas and kahikatea dominant forest on alluvial terraces.

The western part of the Hikurangi Loop is within the Motu ED. This is steep rugged country, deeply and finely incised with some peaks above the treeline. The highest point is Mount Hikurangi. Vegetation in this ecological district shows an altitudinal sequence of forest types from coastal pōhutukawa and pūriri, through low altitude conifer-tawa-hard beech forest rich in tanekaha (*Phyllocladus trichomanoides*), podocarp-red beech to silver beech forest.

In addition to the historic clearance of the original vegetation cover, the ecology of the East Cape has been compromised by a variety of introduced animal and plant pests. Introduced mammal species such as deer (*Cervus* sp.), possums (*Trichosurus vulpecula*), rats (*Rattus* spp.), mustelids (*Mustela* spp.), feral cats (*Felis catus*) and goats (*Capra aegagrus hircus*) have disrupted native ecosystems by preying on indigenous birds, insects, and reptiles, and by competing with native species for food and habitat. A variety of invasive plants are present which outcompete and smother regenerating native vegetation.

The East Cape's combination of soft, easily erodible sedimentary rock, historic clearance of the original vegetation cover, steep terrain, land use practices such as forestry and high rainfall events mean that the East Cape is very prone to erosion. The East Cape area has been significantly affected by major weather events such as Cyclone Gabrielle in 2023, which caused widespread flooding, erosion and landslides, with extensive sediment deposition affecting both freshwater and marine habitats. These factors also have had a significant adverse effect on the region's ecology.

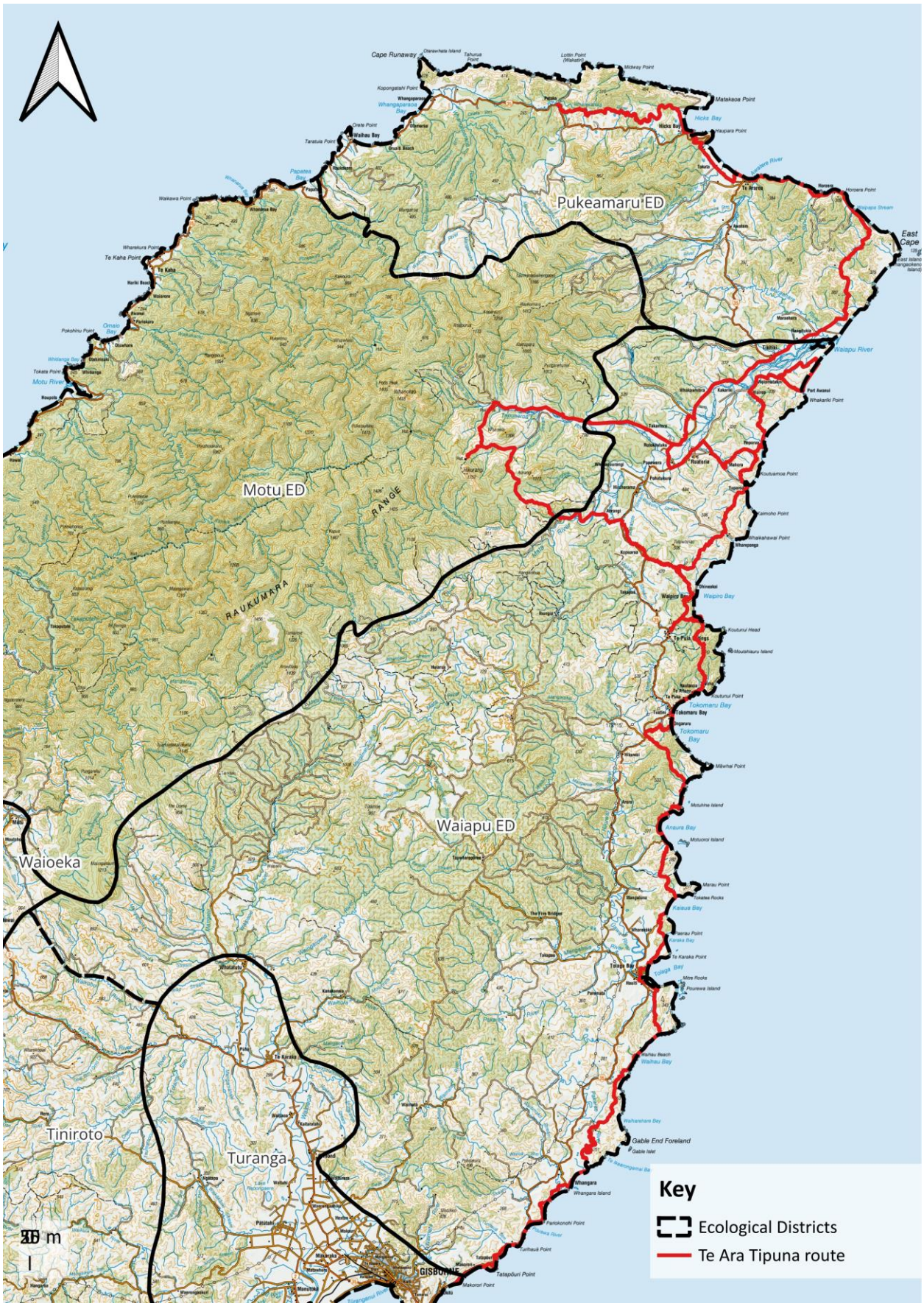

Figure 2. Ecological Districts in relation Te Ara Tipuna (map source: LINZ, NZ Topo250).

3.2 Terrestrial Ecology

3.2.1 Vegetation

Te Ara Tipuna Ara passes through a variety of vegetation types, including:

- Grazed pasture;
- Native forest remnants ranging from coastal pōhutukawa and pūriri, to kahikatea to low altitude conifer-tawa-hard beech forest and podocarp-hardwood forest;
- Scrub and regenerating vegetation such as mānuka (*Leptospermum scoparium*) and kānuka (*Kunzea* sp.) dominant scrub;
- Sand dune vegetation; and
- Plantation forest.

Table 2 summarises the results of a desktop assessment of the different types of vegetation the ara passes through. We completed this assessment by using QGIS to overlay the ara route with the LCDB and satellite imagery to classify ara sections according to land cover. From this, summary data was calculated on the proportion of the Ara passing through different land cover types. The ecological value was assessed by considering the value of the vegetation or habitat type based on the likely diversity of indigenous plant species (i.e. botanical value) and subsequent diversity of habitat (note that ecological values relating to terrestrial fauna habitat are discussed in other sections).

Table 2. The vegetation types the proposed Ara passes through and botanical values

Vegetation or habitat type	% of the Ara	Botanical value in accordance with EIANZ guidelines
Grassland, pasture and crops	63%	Low
Indigenous forest / broadleaved indigenous forest	7%	Moderate - High
Kānuka / mānuka dominated forest	14%	Moderate
Exotic forest	4%	Low
Scrubland / shrubland	1%	Low - moderate
Other habitat types (e.g. sand, gravel, rock, built up areas)	11%	Low

Some rare flora are known to occur in the Gisborne District. Table 3 summarises rare flora that are found within the Gisborne District and highlights some that are known to be present in areas close to the ara.

Table 3. Rare plants present in the Gisborne District (adapted from Schedule G7B Tairāwhiti Resource Management Plan 2017, with advice from Graeme Atkins).

Common Name	Scientific Name	Threat and Conservation Status
Swamp Musk[1, 2]	*Mazus NZ impolitus hirtus*	Threatened – Nationally Critical
Forget-me-not[1]	*Myosotis petiolata s.s.*	Threatened – Nationally Critical
Coastal Cress[1] | Matangoa	*Rorippa divaricata*	Threatened – Nationally Vulnerable
Giant Broom[1]	*Carmichaelia williamsii*	At-Risk – Relict

Common Name	Scientific Name	Threat and Conservation Status
Heart Leaved Kōhūhū [1]	*Pittosporum obcordatum*	Threatened – Nationally Vulnerable
Kākābeak[1, 2] | Kōwhai Ngutu-Kākā	*Clianthus maximus*	Threatened – Nationally Critical
Dactylanthus[1, 2] | Pua o Te Reinga	*Dactylanthus taylorii*	Threatened – Nationally Vulnerable
Green Mistletoe[1] | Tāpia, Pirita, Kohuorangi	*Tupeia antarctica*	At-Risk – Declining
Pīngao[1, 2], Pikao	*Desmoschoenus spiralis*	At-Risk – Declining
Raukumara[1, 2]	*Brachyglottis perdicioides*	Threatened – Nationally Critical
Red Mistletoe[1] | Pikirangi, Pirita, Roeroe, Pirinoa	*Peraxilla tetrapetala*	At Risk – Declining
Scarlet Mistletoe[1] | Korukoru, Pirita, Roeroe	*Peraxilla colensoi*	At Risk – Declining
Teucridium[1]	*Teucridium parvifolium*	At Risk – Declining
New Zealand Calceolaria[1]	*Jovellana sinclairii*	At Risk – Declining
Mida[1] | Maire	*Mida salicifolia*	At Risk – Declining
Raukawa[1]	*Raukaua edgerleyi*	At Risk – Declining
Musk[1]	*Mazus NZ impolitus*	Threatened – Nationally Vulnerable
Shore Plantain[1]	*Plantago picta*	At Risk – Naturally Uncommon
Hikurangi Tutu[1]	*Coriaria pottsiana*	Threatened – Nationally Critical
Dwarf Mistletoe[1]	*Korthalsella salicornioides*	At Risk – Declining
-	*Peperomia tetraphylla*[1]	At Risk – Declining
Marsh fern[2]	*Thelypteris confluens*	At Risk – Declining
Native hibiscus | Puarangi[2]	*Hibiscus richardsonii*	Threatened – Nationally Critical
Cranwell's Iris[2] | Cranwell's Mikoikoi	*Libertia cranwelliae*	Threatened – Nationally Critical

Notes: 1: Identified in Appendix G7B of the Tairāwhiti Resource Management Plan
2: Known to occur near Ara corridor (Graeme Atkins, pers. com., 24/03/2025).

3.2.2 Terrestrial fauna habitat

Herpetofauna

Herpetofauna (reptiles and amphibians) comprise a significant component of New Zealand's terrestrial fauna. There are currently 135 endemic herpetofauna taxa recognised in New Zealand, 85.9% of which are considered "Threatened" or "At-Risk" (Hitchmough *et al.*, 2021). All indigenous reptiles and amphibians are legally protected under the Wildlife Act 1953, and vegetation and landscape features that provide significant habitat for native herpetofauna are managed by the RMA. Any disturbance, handling and relocation of resident reptile and amphibian populations is unlawful unless it is authorised by a Wildlife Permit, which is granted and administered by DoC and typically includes management measures and restrictions on works to avoid adverse impacts on those populations.

A review of the information in DoC's Herpetofauna database (accessed 6/11/2024), iNaturalist records, Purdie (2022) and New Zealand Herpetological Society (NZHS, undated) was undertaken to identify the terrestrial herpetofauna species that may potentially be found along the Ara. The species identified and their habitat types are summarised in Table 4.

Table 4. Terrestrial herpetofauna species potentially found along Te Ara Tipuna

Common name	Binomial name	Conservation status	Habitat type	DoC herpetological database records within 10 km of the ara
Barking gecko	*Naultinus punctatus*	At Risk - Declining	Forested habitats including swamps, scrubland, sub-alpine scrub, mature forest, scrubby/regenerating habitats.	Yes
Ngahere gecko	*Mokopirirakau* "southern North Island"	At Risk - Declining	Forested habitats, including swamps, scrubland, and mature forests (beech, podocarp, and broadleaf).	Yes
Forest gecko	*Mokopirirakau granulatus*	At Risk - Declining	Primarily arboreal (tree-dwelling), closely associated with a range of different habitats, including swamps, scrubland, regenerating habitats, mature forests (beech, podocarp, and broadleaf), and rock fields.	Yes
Pacific gecko	*Dactylocnemis pacificus*	Not Threatened	Swamps, scrubland, mature forests, rocky coastlines, back-dunes, rocky islets, and rock outcrops. In these habitats, they often take refuge within creviced rock and clay banks, tree hollows, under loose bark, in dense ground vegetation (such as *Gahnia* spp.), and in epiphytes.	No
Raukawa gecko	*Woodworthia maculata*	Not Threatened	Strongly associated with coastal habitats. Often associated with rocky habitats, however, can be found in variety of habitats, from sandy or rocky coastlines right through to inland beech and broadleaf forests.	Yes
Copper skink	*Oligosoma aeneum*	At Risk - Declining	Forest, scrubland, beaches, pasture, gardens, thick rank grass, under rocks, logs and other debris.	Yes
Ornate skink	*Oligosoma ornatum*	At Risk - Declining	Forested areas, shrubland and heavily vegetated coastlines. Often found amongst leaf litter, in dense low foliage, thick rank grass and under rocks or logs.	Yes
Striped skink	*Oligosoma striatum*	At Risk - Declining	Native forest, rank pasture hardwood and pampas shelterbelts. Primarily arboreal but also found under rotting logs.	No
Shore skink	*Oligosoma smithi*	At Risk - Declining	Dunelands, rocky coastal platforms, pebble/boulder beaches. Often utilise debris washed up onto the high tide mark as refugia, including driftwood, beach-	Yes

Common name	Binomial name	Conservation status	Habitat type	DoC herpetological database records within 10 km of the ara
			wrecked animals, and clumps of seaweed.	
Northern grass skink	*Oligosoma polychroma*	Not Threatened	Preferring open areas including coastal vegetation, rock piles, grassland, flaxland, shrubland, screes, forest margins tussock and modified urban / suburban habitats. Often takes refuge in dense vegetation or under rocks and logs.	Yes

The introduced plague skink (*Lampropholis delicata*) is also likely to be present along the proposed Ara. These skinks occur across a wide range of habitats, including gardens, industrial sites, road and railway clearings, rough pasture, open coastal habitats, as well as clearings around forests and shrublands. The plague skink is not protected by legislation, and is not subject to this assessment.

Suitable habitat types where lizard fauna may be found along the route of Te Ara Tipuna include:

- Forested areas including mature forest, regenerating forest and scrubland;
- Wetland vegetation;
- Dense low lying vegetation and ground cover;
- Rank grass and weedy areas;
- In rock piles and under rocks, logs and other vegetation; and
- Coastal areas, including dunelands, sandy or rocky coastlines, pebble/boulder beaches, driftwood.

The majority of the ara will go through managed pasture and we consider this habitat type to be of negligible or low ecological value to herpetofauna. Where suitable lizard habitat is present along the ara, we have assessed the ecological value for herpetofauna under the EIANZ guidelines to be 'Moderate to High'.

Bats

New Zealand has two species of endemic bats / pekapeka on the mainland. The most widespread is the long-tailed bat (*Chalinolobus tuberculatus*, Threatened – nationally critical), although colonies are assumed to be small and their health is largely unknown (O'Donnell et al., 2023). The lesser short-tailed bat has three described subspecies; the northern lesser short-tailed bat (*Mystacina tuberculata aupourica,* Threatened – nationally vulnerable), the central lesser short-tailed bat (*Mystacina tuberculata rhyacobia,* At-risk – declining) and the southern lesser short-tailed bat (*Mystacina tuberculata tuberculata,* Threatened – nationally increasing) (O'Donnell et al., 2023). The central short-tailed bat is known to occur in the East Cape (DoC, undated).

Bats roost in tree hollows and under split bark of native and exotic trees, and also in rocky overhangs. Bat roosts have been recorded in trees with diameters at breast height (dbh) as small as 15.5 cm (Dekrout, 2009) and a study in South Canterbury found that 25 % of long-tailed bat roosts were in trees smaller than 18.8 dbh (Sedgeley & O'Donnell, 2004). Bats go into a 'torpor' in cold weather and stay in

their roosts. They wake up as soon as the weather becomes warmer. Over the breeding season, large communal roosts occur in similar habitat. Bats tend to utilise linear features in the landscape, including vegetation edges, gullies, waterways, and road corridors as they transit between roosts and foraging sites. Long-tailed bats in particular are known to be highly mobile, with large home ranges (>5,000 ha) and can travel large distances (~25 km) each night during foraging. Short-tailed bats require specific habitat consisting of good-quality forest vegetation, and have adapted to ground hunting. They are one of the few bats in the world that spends large amounts of time on the forest floor, using their folded wings as 'front limbs' for scrambling around. Despite this, short tailed bats still have large home ranges (around 1600 ha for adult males) (Christie & O'Donnell, 2014). Long and short-tailed bats are both identified as 'highly mobile fauna' in the NPS-IB.

New Zealand bats are protected species under the Wildlife Act. It is an offence to catch alive or kill, hunt, possess, molest, or disturb bats under the Act. Any projects where tree or vegetation removal overlaps with the occurrence of bats, there is a risk of killing or injuring any bats that may be present.

A review of data in DoC's bat database (accessed May 2025), found that there is a wide spread of long-tailed bat records across the East Cape. While most records are from more inland areas away from the coast, there are a number of records from coastal areas, and many records are within 25 km of the coast and the proposed route corridor. There are few records for the short-tailed bat on the East Cape, with all being in forested areas well away from the coast. One record for short-tailed bat was south-west of the proposed Hikurangi Loop. There are no negative results for bat detection entered in the bat database for the East Cape. While this may reflect a lack of reporting of negative results in the area, it does suggest that bat monitoring has a high degree of detection success when undertaken.

Overall, taking a conservative approach for this assessment, we consider that there is potential for long-tailed bats to be present in suitable trees within the route of Te Ara Tipuna. There is also potential for short-tailed bats to be present, particularly in the area of the Hikurangi Loop where the species has been recorded previously. Where suitable trees for bat roosting habitat are located, we expect that the bat habitat values will be 'High' under the EIANZ guidelines. For trees less than 15 cm dbh, we expect the bat habitat values to be 'Negligible' - 'Low'.

Birds

We undertook a review of the local planning documents, wildlife databases (e.g. DoC databases, eBird and iNaturalist) and literature (Coleman, 2010) to identify the native bird species potentially present along the Ara. The birds potentially present in the area of the Ara, their conservation status and brief notes on their habitats and where they nest are presented in Table 5. We have focussed on those birds that may nest or rely on habitat in areas that the Ara may intersect, rather than, for example, some seabirds that may be sighted in these areas but spend most of their lives and breed away from the areas of the Ara corridor. Those birds that have an "At Risk" conservation status aren't considered threatened, but could quickly become so if conservation management reduces, if a new threat arises, or declines continue unabated. Those birds with a "Threatened" conservation status have the greatest risk of extinction.

As much of the ara corridor is close to the coast, a variety of bird species present in coastal environments are expected to be present and have the potential to be affected, for example banded dotterel, New Zealand dotterel, shags, oystercatcher, gulls, terns and little blue penguins. Most of the native coastal bird species potentially present have an "At Risk" status, and the Caspian tern and reef heron have a "Threatened" status.

The Ara will pass close to wetlands or lakes and ponds in some areas. Birds that may be found in these areas include some "Threatened" species (e.g. Australasian bittern, grey duck and dabchick) and several "At Risk" species such as the royal spoonbill, marsh crake and the fernbird.

Where the Ara crosses or follows streams or rivers, there is potential for birds such as banded dotterel, black billed gull (both At Risk), whio (Threatened), or pied stilt (not threatened) to be present.

Where the Ara corridor passes through forest habitats, birds usually associated with forested areas such as tūī, fantail, kereru, ruru, whitehead, grey warbler and bellbirds, which are "Not Threatened" species, will potentially be present and more rarely "At Risk" species such as robins and kāka. "Threatened" species such as long tailed cuckoo may also be present. There are no known kiwi populations along or near to the proposed Ara corridor (Graeme Atkins, pers. com., 25/03/2025), and no kiwi observations in the vicinity of the Ara are recorded in the available wildlife databases.

Birds that could be present in a variety of habitats include weka and New Zealand falcon, which have "At Risk" classifications and the Australasian harrier and kingfisher ("Not Threatened"). In more open pastoral habitats, paradise shelduck, spur winged plover, pūkeko ("Not Threatened") and the "At Risk Declining" pipit may be present.

Table 5. Native bird fauna potentially present along Te Ara Tipuna

Common name	Binomial name	Conservation status	Habitat type
Wide range of habitat types			
Kingfisher / kōtare	*Todiramphus sanctus vagans*	Not Threatened	Forest, river margins, farmland, lakes estuaries and rocky coastlines. Nesting October – January in holes/tunnels in trees, cliffs, banks and cuttings.
Weka	*Gallirallus australis greyi*	At Risk, Relict	Variety of habitats from the coastline to above the tree-line, including wetlands, rough pasture, shrubland, and native and plantation forests. Nest August-January in dense vegetation, usually under an object or within a burrow.
Pūkeko	*Porphyrio melanotus melanotus*	Not Threatened	Typically found near sheltered fresh or brackish water (e.g. vegetated swamps, streams or lagoons), especially adjacent to open grassy areas and pasture. Nest year round in nests often build near or over water.
Welcome swallow	*Hirundo neoxena neoxena*	Not Threatened	Most habitats except forested. Often close to coast or wetlands. Nesting on shaded ledges or man-made structures August – February.
Australasian harrier / kāhu	*Circus approximans*	Not Threatened	Coastal fringe, estuaries, wetlands pine forest, farmland, high country. Nesting September to April in nests on the ground, in low bushes, long grass, scrub or wetlands.
New Zealand falcon / kārearea	*Falco novaeseelandiae*	At Risk, Recovering	Wide variety of habitats from coast to above the treeline, including forest, tussock, rough grazed hill country and pine forest. Nest August – May in a

Common name	Binomial name	Conservation status	Habitat type
			simple scrape in the ground with varying amounts of cover, on a ledge or within an epiphyte in a tree.
Black backed gull	*Larus dominicanus*	Not Threatened. Not protected under the Wildlife Act.	Coastal and inland non-forested habitats.
Coastal areas			
Little blue penguin, kororā	*Eudyptula minor*	At Risk, Declining	Coastal. Nest July – February close to the sea in burrows or in caves, rock crevices, under logs or in or under a variety of man-made structures. Nesting is followed by a moulting period, where individuals must remain dry on land while they complete their moult. Peak moulting is generally between January and March, but it can extend into April.
Variable oystercatcher	*Haematopus unicolor*	At Risk, Recovering	Coastal – variety of coastal habitats such as sandy beaches, sand spits, dunes, mud flats, paddocks. Nest October to March on sand or grassy areas or bare ground slightly inland.
New Zealand dotterel, tūturiwhatu	*Charadrius obscurus*	At Risk, Recovering	Coastal. Mainly breed August to February on sandy beaches and sandspits (usually near stream-mouths), some on shell banks in harbours, a few on gravel beaches. Nests simple scrapes in substrate. Known to nest at a number of beaches along the route of the Ara, including Pouawa, Tolaga Bay, Nuhiti Beach, Karorotino, Hautai, East Cape and Hicks Bay beaches (Graeme Atkins, pers. com.).
Banded dotterel	*Charadrius bicinctus*	At Risk, Declining	Coastal and riverbeds. Nest July to January in riverbeds, herbfields, beaches and farmland. Known to nest in braided rivers along the Ara, such as Waipou River mouth, and in the Te Araroa area (Graeme Atkins, pers. comm.).
White-fronted tern	*Sterna striata*	At Risk, Declining	Coastal and river beds. Nests October – January in large dense colonies on shingle river beds, sand dunes, stacks and cliffs (in a scrape in shingle, sand or bare rock).
Caspian tern / taranui	*Hydroprogne caspia*	Threatened, Nationally Vulnerable	Coastal – sheltered bays and harbours. Nesting in colonies or as isolated pairs September - January on open coastal shellbanks, sandspits, occasionally brained rivers. Nest a shallow scrape in sand or shingle.
Pied shag / Kāruhiruhi	*Phalacrocorax varius*	At Risk, Recovering	Coastal. Mainly forage in coastal marine waters, harbours and estuaries, some lakes and ponds. Nest August to March in trees along coastal cliffs year-

Common name	Binomial name	Conservation status	Habitat type
			round, but peaking February-April and August-October.
Little shag / kawaupaka	*Microcarbo melanoleucos*	At Risk, Relict	Coastal and freshwater habitats including lakes, rivers, ponds, streams. Nest in trees over-hanging water, on ledges or sea cliffs.
Black shag / māpunga	*Phalacrocorax carbo*	At Risk, Relict	Coastal waters, estuaries, harbours, rivers, streams, lakes and ponds. Nest year round in trees or shrubs, on the ground in swamps, coastal cliffs and headlands and on artificial structures.
Red-billed gull / Tarāpunga	*Chroicocephalus novaehollandiae*	At Risk, Declining	Coastal. Nesting occurs mid-September to February in dense colonies, mainly restricted to the eastern coasts of the North and South Islands on stacks, cliffs, river mouths and sandy and rocky shores
Reef heron / matuku moana	*Egretta sacra*	Threatened, Nationally endangered	Coastal. Nest September - December in dark places low to the ground, e.g. in rocky caverns and under old bridges.
Royal spoonbill / kōtuku ngutupapa	*Platalea regia*	At Risk, Naturally uncommon	Estuaries and wetlands. Nests in colonies in the exposed canopy of tall kahikatea trees, on the ground near estuaries, rivers and harbours, in reeds, in low shrubs, and on steep rocky headlands
White faced heron / Matuku moana	*Egretta novaehollandiae*	Not Threatened	Rocky shores, estuary mudflats, lakes, ponds, damp pasture and sports fields. Usually nest in the tops of large trees like pine and macrocarpa as early as June.
Banded rail / Moho pererū	*Gallirallus philippensis*	At Risk, Declining	Mainly mangroves (*Avicennia marina subsp. australasica*) and saltmarshes in estuaries. Nest September to March on rough platform of rush and reed fragments, usually in jointed rush thickets.
Wetlands, lakes, ponds, rivers, streams			
Marsh crake	*Zapornia pusilla*	At Risk, Declining	Freshwater and brackish wetland habitats. Small breeding population near Hicks Bay. Nests September to December concealed under sedges or in dense reeds
Spotless crake	*Zapornia tabuensis*	At Risk, Declining	Freshwater wetlands dominated by dense emergent vegetation, particularly raupō (*Typha orientalis*). May forage on open mud near dense vegetation. Nest August – February in wetland vegetation.
Fernbird / mātātā	*Poodytes punctatus*	At Risk, Declining	Wetlands – in dense vegetation. Nest Nov – Feb in dense vegetation, usually < 1 m above ground or water.
Australasian bittern / matuku-hūrepo	*Botaurus poiciloptilus*	Threatened, Nationally critical	Wetlands. Nest August – May amongst dense wetland vegetation.

Common name	Binomial name	Conservation status	Habitat type
Whio / blue duck	*Hymenolaimus malacorhynchos*	Threatened, Nationally vulnerable	Rivers in forested headwater catchments. Possibly present in the Hikurangi Loop area.
Pied stilt	*Himantopus himantopus*	Not Threatened	Coast, rivers, wetlands. Nest June to February on ground near water usually in colonies.
Banded dotterel	*Charadrius bicinctus*	At Risk, Declining	Coastal and river beds. Nest July to January in riverbeds, herbfields, beaches and farmland. Known to nest in braided rivers along the Ara, such as Waipou River mouth, and in the Te Araroa area (Graeme Atkins, pers. comm.).
Black billed gull	*Chroicocephalus bulleri*	At Risk, Declining	Mostly breed on sparsely-vegetated gravels on inland riverbeds in the South Island, occasionally in the North Island. Nest August to March, usually on bare gravel.
Grey teal / tētē-moroiti	*Anas gracilis*	Not Threatened	Freshwater lakes, lagoons and swamps. Nest June - January in tree hollows and on the ground under tall grasses.
New Zealand scaup / pāpango	*Aythya novaeseelandiae*	Not Threatened	Lakes. Nest October to March on the ground, well concealed, near the water.
New Zealand dabchick / weweia	*Poliocephalus rufopectus*	Threatened, Nationally increasing	Freshwater lakes and ponds. Nest June-March on freshwater lakes and pools, anchoring the nest to aquatic vegetation or building it in a small cave, partially underwater.
Australasian shoveler / kuruwhengi	*Spatula rhynchotis*	Not Threatened	Freshwater wetlands, estuaries, lakes. Nests October – February in long grass near water.
Black swan / kakīānau	*Cygnus atratus*	Not Threatened	Lakes, ponds, estuaries. Nest July - March on water's edge in large mound of vegetation.
Open habitats			
Paradise shelduck / pūtangitangi	*Tadorna variegata*	Not Threatened	Widely distributed on pastoral landscapes. Nest August - February in tree holes or tree bases, rock crevices, under buildings or debris piles.
Spurwinged plover	*Vanellus miles novaehollandiae*	Not Threatened. Not protected under the Wildlife Act.	Variety of open habitats with low vegetation. Nest June-November in a variety of open habitats such as pasture, cropland, parks, wetlands, saltmarsh with a simple scrape on the ground.
New Zealand pipit / pīhoihoi	*Anthus novaeseelandiae*	At risk, declining	Rough open habitats from coast to alpine shrublands. Nest August-February under tussocks and grass clumps within fern, and partly or fully covered with vegetation.

Common name	Binomial name	Conservation status	Habitat type
Forest habitats			
Whitehead / pōpokotea	*Mohoua albicilla*	Not Threatened	Forest and shrubland. Nests September to January in tree forks, hidden in dense canopy vegetation
Fantail / pīwakawaka	*Rhipidura fuliginosa placabilis*	Not Threatened	Forest, scrub, gardens. Nests August - March in trees.
Grey warbler / rironiro	*Gerygone igata*	Not Threatened	Forest, scrub, gardens. Nests August to January in outer branches of trees 2-4m off ground, usually in small leaved trees such as mānuka, kānuka and *Coprosma* spp.
Kererū	*Hemiphaga novaeseelandiae*	Not Threatened	Forest, shelterbelts, urban parks, and rural and suburban gardens. Nests year round, but mainly September – April, in trees.
Morepork / ruru	*Ninox novaeseelandiae*	Not Threatened	Forest and vegetation patches. Nests September – May in cavities of live or dead trees, broken logs, tree forks, epiphytes, holes in earth banks, among tree roots.
Silvereye / tauhou	*Zosterops lateralis lateralis*	Not Threatened	Widespread in most habitats. Nests August to February high in trees, shrubs and tree ferns.
Shining cuckoo / pīpīwharauroa	*Chrysococcyx lucidus*	Not Threatened	Forest and scrub, farmed and urban areas. Lay eggs in grey warbler nests.
Long-tailed cuckoo / koekeoā	*Eudynamys taitensis*	Threatened, Nationally Vulnerable	Native forest or scrub. Migratory. Lays eggs in nests of whitehead, brown creeper and yellowhead.
Tūī	*Prosthemadera novaeseelandiae novaeseelandiae*	Not Threatened	Forest, scrub, gardens. Nesting September to February in nests high in trees in the canopy or subcanopy.
Bellbird / korimako	*Anthornis melanura*	Not Threatened	Forest, scrub, farm shelter belts, urban parks and gardens. Nest September – February in trees under dense cover.
Kaka	*Nestor meridionalis*	At Risk, Recovering	Native forest. Nest November to June high in trees.
North Island Robin / toutouwai	*Petroica longipes*	At Risk, Declining	Mature forest, tall scrub, and exotic plantations. Nest September to March on tree trunks; in trunk forks, at trunk-branch junctions, on epiphytes next to trunks
Tomtit / miromiro	*Petroica macrocephala*	Not threatened	All mature native forest types, regenerating forests, exotic plantations. Nest August to March in thick vegetation or shallow cavities.
Rifleman / tititipounamu	*Acanthisitta chloris*	Not threatened	Found predominantly in mature forest, especially beech, kauri (*Agathis australis*), kāmahi and podocarp forest. Nest August to February in enclosed spherical nests mainly within existing cavities like burrows, hollows, holes in buildings, rocks, trees.

Where the Ara corridor provides habitat for “Threatened” or “At Risk” species, we have conservatively assumed for the purposes of this EcIA that such species will be present. Therefore in those areas, we have assessed the avifauna habitat values to be ‘High’ under the EIANZ guidelines.

Outside of these areas (i.e. where the ara location does not provide appropriate habitat for “Threatened” or “At Risk” species), we have ascribed EIANZ habitat values of:

- ‘Moderate’ where the location includes native forest; and
- ‘Low’ where the site location is managed pasture land.

3.3 Freshwater Ecology

3.3.1 Streams and rivers

Overlaying the NZ River Lines database with the Ara route shows that it will cross many rivers and streams, and in places will run close to their banks. A 4.4 km length of the Hikurangi Loop follows the gravel bed of the Mangatangaruru and Umukōkako Streams. The streams crossed by the ara range from small first order streams to large braided rivers. Some will have been impacted by a history of forest clearance, agriculture, discharges and weather events. Works and activities within and within close proximity to streams and rivers are regulated under the TRMP and the NES-F.

For the purposes of this assessment, we have conservatively assumed that the value of all streams and rivers crossed by or close to Te Ara Tipuna is 'High' under the EIANZ guidelines.

3.3.2 Wetlands

Wetlands[7] have been significantly affected by land use changes in New Zealand over the last 150 years, with approximately 90% of them having been lost through draining, burning and clearing of vegetation for farmland and reclamation for urban and industrial uses. There are a variety of different wetland types across New Zealand, with the main ones being bogs, fens, swamps, marshes and shallow water. Wetlands potentially contain a range of "At Risk" or "Threatened" bird and lizard species, as identified in Section 3.3 above.

For the purposes of this assessment, we have conservatively assumed that the ecological value of all wetlands along Te Ara Tipuna is 'High' value under the EIANZ guidelines. However, the Ara route has been specifically selected to avoid known wetlands and the ability to microsite the ara within the 50m corridor, will support the avoidance of currently unknown wetlands.

3.3.3 Fauna

Amphibians

Hochstetter's frogs (*Leiopelma hochstetteri*, At Risk – Declining (Burns *et al*., 2025) are a semi-aquatic species, typically occurring within the vicinity of small, forested streams and wet seeps, with plentiful rocky/woody debris (NZHS, 2025). They are sensitive and vulnerable to environmental disturbances such as floods and sedimentation (Najera-Hillman, 2009). Hochstetter's frogs have been recorded in a number of locations on the western and northern sides of East Cape and in the Hikurangi area (as shown in Figure 4[8]) and are therefore likely to be present in some streams crossed by the Ara in those areas. There are no records in DoC's herpetological database for Hochstetter's frogs close to the coast south of East Cape. Discussion with Graeme Atkins indicates that this absence is due to the different geology in the eastern part of the cape, with Hochstetter's frogs preferring the geology and substrates present in the northern and western areas (Graeme Atkins, pers. com. Feb 2025). The lack of records in these areas may also be related to the history of vegetation clearance across the East Cape and associated impacts on streams such as sedimentation and reduction in shading and instream woody debris, as most records are from the more extensively forested areas of the East Cape, rather than the eastern side

[7] Wetlands are defined in the RMA as "includes permanently or intermittently wet areas, shallow water, and land water margins that support a natural ecosystem of plants and animals that are adapted to wet conditions".

[8] Other native frog species such as Archey's frogs (*Leiopelma archeyi*) have not been recorded on the East Cape and there are no records for them in DoC's herpetological database.

where pasture is more dominant. Overall, it is less likely that Hochstetter's frogs are present in streams south of East Cape.

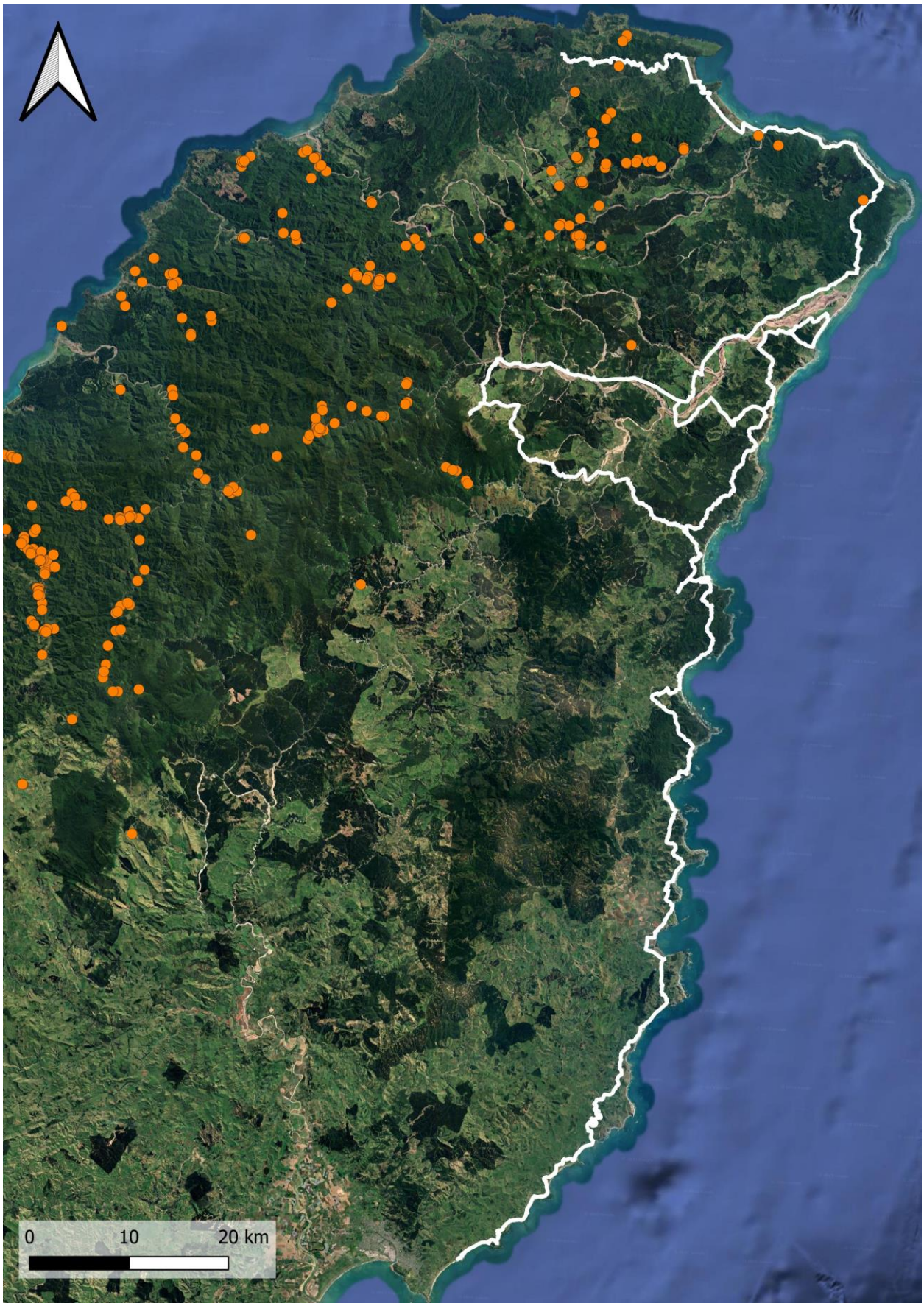

Figure 3. Distribution of Hochstetter's frog records on the East Cape (DoC herpetofauna database, accessed 6 Nov 2024; Te Ara Tipuna route indicated by white line).

Fish

Streams and wetlands in the East Cape area are known to contain a variety of fish species. A review of the NZFFD (accessed 17/4/2025) found a number of native freshwater fish species that have been identified in previous surveys within catchments draining to the proposed ara corridor. This database identified a number of "Threatened" or "At Risk" species potentially present near the route of the Te Ara Tipuna. The species found are summarised in Table 6.

Table 6. Native fish and amphibian fauna found within catchments the Te Ara Tipuna passes through

Common name	Binomial name	Conservation status[9]	Habitat type[10]
Black flounder	*Rhombosolea retiaria*	Not Threatened	Estuaries, lowland lakes and lower reaches of rivers
Common smelt	*Retropinna retropinna*	Not Threatened	Shoals and open water in rivers and streams, mainly at low elevations
Lamprey	*Geotria australis*	Threatened, Nationally Vulnerable	Adults hide in crevices under large rocks, larvae / juveniles bury themselves in sand. Climber.
Long-finned eel	*Anguilla dieffenbachii*	At Risk - Declining	Rivers, lakes and headwaters, rare in swamps. Strongly associated with in-stream cover.
Short-finned eel	*Anguilla australis*	Not Threatened	Lowland swamps, lakes and slower areas of streams and rivers.
Īnanga	*Galaxias maculatus*	At Risk - Declining	Backwaters or gently flowing areas of lowland rivers, lakes and streams. Climber.
Banded kōkopu	*Galaxias fasciatus*	Not Threatened	Small, overgrown, tannin stained streams, often in lowland wetlands or swampy forest. Climber.
Short jawed kōkopu	*Galaxias postvectis*	Threatened, Nationally Vulnerable	Pools in cascading boulder streams with forest cover.
Giant kōkopu	*Galaxias argenteus*	At Risk - Declining	Gently flowing or swampy pools, streams and lake edges with thick riparian vegetation.
Koaro	*Galaxias brevipinnis*	At Risk - Declining	Favours clear, small to medium-sized cobble streams. Moderate to fast flowing, with canopy shading.
Torrentfish	*Cheimarrichthys fosteri*	At Risk - Declining	Riffles during the day, emerging at night to feed in slower water.
Common bully	*Gobiomorphus cotidianus*	Not Threatened	Prefers slower water, common in lakes.
Cran's bully	*Gobiomorphus basalis*	Not Threatened	Inland cobbled streams.
Bluegill bully	*Gobiomorphus hubbsi*	At Risk - Declining	Swift, shallow riffles in large gravels rivers.

[9] Dunn *et al.*, 2017

[10] McQueen, 2013

Common name	Binomial name	Conservation status[9]	Habitat type[10]
Red finned bully	*Gobiomorphus huttoni*	Not Threatened	Typically found near the coast. Can climb and penetrate inland.
Giant bully	*Gobiomorphus gobioides*	At Risk – Naturally Uncommon	Lower reaches of waterways. Hides beneath logs and vegetation during the day.

For the purposes of this assessment, we have conservatively assumed that the ecological value of the fauna habitat found in freshwater environments along Te Ara Tipuna is 'High' under the EIANZ guidelines.

3.4 Coastal Ecology

Habitats present in the coastal areas that the ara corridor traverses include:

- Sand dunes;
- Beaches;
- Foreshore areas;
- Estuaries; and
- Coastal wetlands.

Coastal habitats have generally been significantly modified over time by loss of their natural vegetation cover and development. These habitats support a variety of fauna and flora, including a number of nationally vulnerable and "At Risk" species. Some of these species have been identified and addressed in Section 3.3.2 (lizards, birds) in this report. Others, such as the katipō spider (*Latrodectus katipo*, At Risk - Declining[11,12], protected under the Wildlife Act), which occurs in sand dune systems under drift wood or associated with coastal grasses, and the spawning grounds of īnanga (a whitebait fish species that spawns in the margins of estuarine areas[13]), have not been addressed specifically in other sections. In terms of marine mammals, the New Zealand fur seal / kekeno (*Arctocephalus forsteri*, Not Threatened) is occasionally observed in the coastal areas of Te Tairāwhiti, and the leopard seal, which is a migrant in New Zealand waters, is a very infrequent visitor (iNaturalist, Clement (2009)).

For the purposes of this assessment we have conservatively assessed the values of all coastal habitats traversed by Te Ara Tipuna as 'High' under the EIANZ guidelines.

3.5 Protected Areas of Ecological Significance

Areas of ecological significance identified in the TRMP (i.e. Protected Management Areas (PMAs), Terrestrial Areas of Significant Conservation Value and Marine Areas of Significant Conservation Value), along with Ngā Whenua Rāhui Kawenata covenanted areas and QEII National Trust covenanted areas, have been assumed for the purpose of this assessment to be areas of high ecological value. This is an

[11] Servid *et al.* (2020)

[12] The katipō spider has been recorded historically around the East Cape, however recent searches along a number of beaches did not find any, suggesting low numbers (Graeme Atkins, pers. com., 24/03/2025).

[13] Īnanga lay their eggs in the base of long, dense grasses and other thick vegetation near the high spring tide level around the saltwater wedge in the mouths of rivers and streams.

appropriately conservative assumption given that on-site ecological assessment of the Ara corridor through these areas has not been undertaken. The locations of these areas where they are close to the proposed Ara corridor are shown in Figure 3. Note that other areas not identified in the TRMP or protected by covenants may also be of ecological significance, and this has been taken into account in the identification of ecologically sensitive areas in Section 4.3.4.

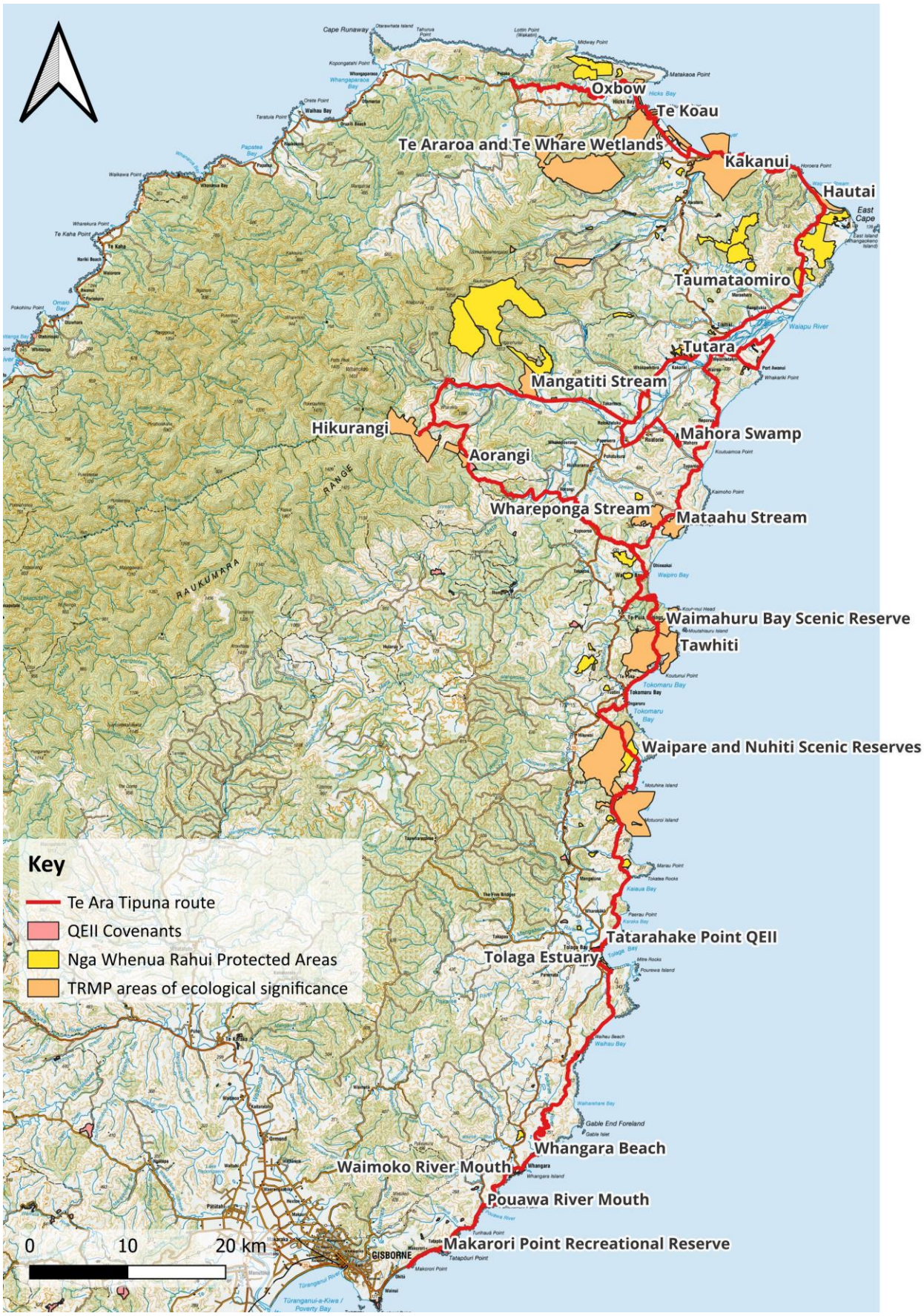

Figure 4. Locations of Protected Areas of Ecological Significance Near to Te Ara Tipuna (map source: LINZ, NZ Topo250).

4 ASSESSMENT OF ECOLOGICAL EFFECTS

4.1 Description of the Proposed Works and Activities

As noted above, the proposed Ara will be a pedestrian path approximately 345 km long (including additional loop tracks). As indicated in the Tracker, most of the Ara (approximately 75 %) will be wayfinding over terrain such as paddocks and beaches. In these wayfinding areas there will not be a formed ara and walkers will instead traverse the landscape following wayfinding posts and markers that will be installed to guide navigation of users. Gravel will be installed in some sections where there is a functional need to reinforce the ara to provide greater traction for users (e.g. based on the gradient/nature of the ground). These circumstances include bridge approaches, road crossings, structures, steep gradients and unstable ground (CPS, 2025d). Boardwalks may be installed at times where required to protect sensitive environments such as archaeological sites.

The Tokomaru to Ruatoria section of the Ara has been prioritised for an all-weather surface due to its heightened vulnerability during severe weather events, however Te Ara Tipuna as a whole functions as a resilience network. The Ara provides a secondary pedestrian access corridor through areas that are otherwise solely reliant on State Highway 35, offering a level of network redundancy not currently available within the Ngati Porou rohe. In this way, the Ara supports emergency response, civil defence planning, and long-term community connectivity.

In the majority of the Ara that is wayfinding, no or very limited earthworks will be required. However, earthworks will be required in some areas of the Ara, particularly where benching is required to provide a stable ara on steeper terrain, or where a gravel surface is required. Overall, based on the conservative assumptions included in the Tracker, up to 14.4 ha[14] of earthworks is anticipated over the whole length of the Ara. Table 7 summarises the degree of earthworks required to form the Ara and further details can be found in the Tracker (CPS, 2025).

Table 7. Summary of degree of earthworks required to form the Ara and associated infrastructure (summarised from CPS 2025a).

Degree of earthworks per one km section	Number of 1 km sections	% of 1 km sections
None	171	49 %[15]
Limited (0-500 m^2 area per km or <250 m length per km)	67	19 %
Moderate (500 - 1000 m^2 area per km or 250 – 500 m length per km)	37	11 %
High (1000 - 2000 m^2 area per km or 500 – 750 m length per km)	15	4 %
Extensive (>2000 m^2 area per km or 750 - 1000 m length per km)	58	17 %

Infrastructure expected to be installed throughout the Ara route includes:

[14] Based on the sum of the estimated earthworks area per kilometre in the Tracker.

[15] Note that this means that for 171 one kilometre sections (49% of 1 km sections) there are no earthworks at all, not that 49% of the Ara has no earthworks (approximately 75% of the Ara is wayfinding only, which is a better indicator of the overall extent of no earthworks)

- Approximately fifteen bridges (seven timber and eight swing bridges).
- Twelve new toilets.
- Stairs in steep areas.
- Boardwalks where required to protect sensitive environments.

Where topsoil removal is necessary (such as where gravel is to be installed), the draft CMP provides that it will be stockpiled temporarily on site away from overland flow paths, water courses and the road corridor. Where possible it will be reused on site for landscaping or recontoured and re-grassed (CPS, 2025c).

CPS (2025c) details the types of machinery expected to be used in Ara construction.

4.2 Terrestrial Ecology

This section addresses terrestrial ecology effects across the whole ara. The identified areas of protected ecological significance are more specifically addressed in section 4.5 below and Appendix A.

4.2.1 Assumptions

The key assumptions about the proposed works that have been made in this assessment of effects on terrestrial ecology are:

- Much of the Ara is wayfinding in nature, requiring limited vegetation clearance;
- Indigenous vegetation clearance will be restricted to a width of 1 - 1.5 m, except where this is not possible due to terrain (e.g. benching cannot be avoided to create a safe or stable ara) or due to installation of infrastructure such as bridges, toilets or stairs;
- That no trees in contiguous indigenous forest more than 100 years old will be removed;
- There is flexibility for movement of the Ara during detailed design within the 50 m consented corridor, enabling movement of the Ara alignment to avoid features such as groups of trees, individual trees, rare plants or habitat features; and
- That where earthworks and vegetation clearance are required, that vegetation will be required to be cleared from the full width of the Ara (in reality this is likely to be less due to the largely wayfinding and low impact bush track nature of the Ara in these areas).

4.2.2 Construction effects

Potential direct and indirect effects on vegetation due to ara construction include:

- Loss of vegetation extent through clearance;
- Loss of rare plants;
- Increase of habitat edge effects[16] where vegetation has been removed, altering the composition and health of adjacent vegetation, which may affect habitat suitability for flora and fauna;

[16] 'Edge effects' are indirect, typically adverse effects that result from changes to an area of vegetation or habitat as a result of adjacent impacts (e.g., increased light, desiccation). Exposing previously interior vegetation to edges can result in changes in composition, through increased light penetration, damage as a result of change in stressors from wind and other weather, and can result in invasion of weed species.

- Reduced connectivity and habitat fragmentation due to loss and reduction of available habitat types. Connectivity between areas of vegetation is important to facilitate ecological function, and loss of connectivity can impair reproductive function for both flora and fauna communities;
- Effects on vegetation health – e.g. through damage to tree roots during ara construction; and
- Spread of weed species through disturbance and construction equipment e.g. through physical relocation of plant fragments and seeds.

Potential direct and indirect effects on terrestrial fauna due ara construction include:

- Mortality during vegetation clearance or habitat disturbance;
- Injury during physical vegetation clearance works;
- Disturbance, e.g. through noise;
- Loss of habitat;
- Habitat fragmentation.

As noted above, as part of the design of the Ara, Viridis worked with CPS to ensure the proposed ara width (and therefore proposed vegetation clearance) was selected to constrain ecological effects to create a maximum envelope of effects. More specifically, where indigenous vegetation clearance is required to form the Ara, the Ara design includes a maximum clearance width of 1.5 m in all areas. In addition, a more restrictive/narrower indigenous vegetation clearance width of 1 m will apply in identified ecologically sensitive areas (refer Section 5.4.1 for an explanation of their definition). Exclusions from these vegetation clearance width limits will only be possible where:

- benching is required to provide for a safe and stable ara (i.e. due to the ara location having steep terrain) – where vegetation clearance will potentially be up to 7 m wide; or
- installation of infrastructure is proposed, in which case the following maximum widths of disturbance to vegetation will apply (from CPS 2025d):
    - Bridge approach: 3.5m
    - Steps: 3.0m
    - Toilet: 4.0m
    - Low bench: 7.0m
    - Swing bridge or timber bridge: 8.0m
    - Road crossing: up to 20 m; or

No toilets are proposed in ecologically sensitive areas along the Ara route.

Based on these limitations, the Tracker estimates that up to 12.5 ha of indigenous vegetation[17] will be cleared to form the 345 km Ara. However, we note that this vegetation clearance is an over-estimation as it assumes that if indigenous vegetation is identified within a specific kilometre reach, that all vegetation clearance in that kilometre will be indigenous, and that vegetation will be cleared from the

[17] This is the total of the ”other indigenous” and “PMA etc” vegetation removal in the Tracker spreadsheet. Indigenous vegetation has been defined based on land cover categories relating to indigenous forest in the LCDB (CPS, 2025a)

full maximum width of the Ara (using the width as per the above assumptions). In practice that is unlikely to occur and accordingly, the actual amount of indigenous vegetation required to be cleared is expected to be less.

Any vegetation clearance for the Ara will also be linear in nature (excepting the limited areas cleared around structures such as toilets, which are subject to limits above). The adverse ecological effects of clearance of a long narrow strip of up to 12.5 ha over 345 km are less than the effects of clearance of a compact area of the same size. Edge communities are heavily influenced by increased exposure to sunlight, wind and competition from pest plants. These factors restrict establishment of some native flora and fauna to forest interiors. Fragmentation of indigenous vegetation increases the edge effect and decreases the availability of habitat for species that would normally occur in the interior of vegetated areas. Connectivity between areas of vegetation is important to facilitate ecological function, and loss of connectivity can impair reproductive function for both flora and fauna communities. The long, narrow strip of clearance that will occur as a result of ara construction through indigenous vegetation is unlikely to result in significant edge effects or loss of habitat connectivity because the distance between either side of the cleared area will generally be 1 - 1.5 m (subject to the exclusions identified above) and it is anticipated that this limitation will largely result in the canopy cover of vegetation being maintained above the Ara, and thereby maintaining connectivity and minimising fragmentation and edge effects.

To compare the magnitude of vegetation clearance proposed to the extent of indigenous vegetation along the Ara, we calculated the amount of indigenous vegetation present within 5 km of the Ara. This was calculated using QGIS to overly a 5 km buffer on either side of the Ara with the LCDB data for indigenous forest vegetation (broadleaved indigenous hardwoods, indigenous forest and mānuka and/or kānuka categories). A 5 km distance from the Ara was chosen as the contiguous indigenous vegetation stands through which the Ara passes generally extend to around 5 – 6 km from the Ara. This analysis indicated that there is around 68,000 ha of indigenous vegetation in these classes within 5 km of the Ara. Therefore the conservative estimate of up to 12.5 ha of indigenous vegetation clearance represents around 0.018 % of indigenous forest within 5 km of the Ara.

Overall, we consider that the potential magnitude of effect of the Ara construction on ecological values associated with vegetation prior to implementing mitigation measures and the effects management framework of Section 5 will be low-moderate. Further, we consider that the potential magnitude of effect of the Ara construction on terrestrial avifauna, herpetofauna and bats would be moderate – high before mitigation, if suitable habitat was present and affected.

4.2.3 Operational effects

Potential direct and indirect effects on vegetation due to ara operation include:

- Ongoing damage to vegetation associated with ara maintenance (e.g. pruning), although this is likely to be negligible given the context of the wider environment; and
- Spread of plant pathogens and weed species through carrying soil, seeds or plant fragments on footwear, clothing or packs.

Potential direct and indirect effects on terrestrial fauna due ara operation include:

- Increased movements and / or abundance of mammalian predators such as rats, particularly if additional food sources such as food waste are present;

- Increased human activity along the Ara, which could generate noise and result in physical disturbance of indigenous fauna such as nesting birds; and
- Increased dog activity along the Ara which could result in physical disturbance and sometimes mortality of indigenous fauna.

Human disturbance will likely be negligible in the wider context as the effects will be limited in extent due to the narrow ara, and fauna such as birds can move away as there is a relatively abundant amount of alternative habitat available.

The magnitude of operational effects of the Ara on terrestrial vegetation and fauna is considered to be low-moderate prior to mitigation measures.

4.2.4 Recommended Mitigation Measures

In light of the construction-related ecological effects assessed above, we recommend that the Project's construction methodology and consent conditions include the following mitigation measures:

- Imposition of a limit on the size/maturity of vegetation to be removed to minimise the potential effects on the canopy (and hence connectivity and edge effects) and on fauna such as bats. A highly conservative limit to achieve this outcome would be to impose conditions requiring:
    - the avoidance of any removal of any mature indigenous trees that have a 30 cm or greater dbh (outside of the road corridor), and
    - the avoidance of any removal of indigenous trees of 15 cm dbh or greater, unless there is no practicable alternative ara location within the consented corridor that would avoid such removal;
- An on the ground confirmatory ecological survey prior to each stage of construction works in areas identified as 'red', and where necessary to confirm effects those identified as 'orange', in the traffic light system of high or moderate ecological values (as discussed in greater detail in section 5.2 below, and in accordance with the draft ESMPP that has been prepared for such surveys) to:
    - confirm the findings of the desktop assessments in this EcIA in relation to values and ecological effects;
    - identify any additional ecologically sensitive areas beyond those included in this EcIA, where the more constrained 1.0m ara width should apply;
    - note the presence of rare plant species and avoid rare plant removal by adjusting ara route within the consented corridor. Where this is not possible, replanting at a ratio of 3:1 to mitigate the effects of removal;
    - assess potential fauna habitat features that may be affected;
    - assist the trail engineers to refine the location of the path within the Ara corridor to minimise the ecological effects.
- An Ecological Management Plan prepared by a suitably qualified ecologist for each construction stage to:
    - summarise the findings of the confirmatory ecological survey;

- set out the mitigation measures (see below) that will be applied to the works in that section; and
- confirm that the Project's ecological effects, after imposition of the stated mitigation measures, will be no greater that the level assessed in this EcIA (utilising the EcIAG methodology applied in this EcIA);

- The mitigation measures to be included in the stage-specific Ecological Management Plan should include:
  - Where rare plant species are identified in the confirmatory surveys, identifying how the final ara location within the 50 m corridor has avoided effects on such species or, where avoidance has not been possible, illustrate measures to achieve a replacing of that species in proximate areas at a ratio of 3:1 to mitigate the effects of any unavoided removal;
  - Reinstatement of indigenous vegetation removed from ecologically sensitive areas where greater vegetation removal than the 1.0 m maximum ara width is required for construction, but is not necessary to be maintained for operational purposes (e.g. where a greater width that the Ara is required to be cleared for benching);
  - Fauna management during vegetation clearance (i.e. avoiding disturbance to bats and nesting birds through pre-clearance surveys, undertaking lizard relocation where lizard habitat is affected and there is a risk of lizard mortality); and
  - Those additional mitigation measures set out in section 5.4.2 as they relate to terrestrial ecology (including, for example, limitations or works affecting native bird nesting).
- The CMP providing for the use of hand held tools (such as chain saws) for vegetation removal in ecologically sensitive areas to reduce impacts on fauna such as lizards.

In light of the operational ecological effects assessed above, we recommend that the Project's operational methodology and consents conditions include the following mitigation measures (in accordance with the additional detail provided in section 5.7 below):

- Manage dog access along the Ara, particularly in ecologically sensitive areas;
- Ensuring that rubbish and food waste along the Ara are avoided to minimise effects on mammalian pests;
- Animal and pest control around structures such as toilets where people are more likely to leave food waste;
- Education of Ara users regarding the wildlife along the Ara, the importance of biosecurity measures such as cleaning footwear and to stay on the Ara route; and
- Installing boot cleaning stations at entry and exit points of major areas of contiguous indigenous forest.

4.2.5 Overall magnitude of effects on terrestrial ecology

If the above recommended mitigation measures are implemented, the overall magnitude of effect on the ecological values associated with terrestrial vegetation and fauna is expected to be low.

4.3 Freshwater Ecology

This section addresses freshwater ecology effects across the whole Ara. The identified areas of protected ecological significance are more specifically addressed in section 4.5 below and Appendix A.

4.3.1 Assumptions

The key assumptions about the proposed works that have been made in this assessment of effects on terrestrial ecology are:

- That instream works will be avoided as much as practicable by using wayfinding to cross smaller streams and rivers and existing bridges or new bridges (constructed outside of the stream bed) will be used to cross larger streams and rivers;
- That where the Ara follows the gravel bed of a stream (i.e. on the Hikurangi Loop), that wayfinding will be used and no works or vegetation clearance will be undertaken within the gravel bed;
- That culvert installation on streams and rivers will be avoided as much as practicable;
- That all works within riparian zones and waterbodies will meet the permitted activity standards included in the TRMP and NES-F;
- That no earthworks or vegetation clearance will be undertaken within, or within 10 m of, wetlands;
- That there will be no changes to the hydrology of streams, rivers or wetlands as a result of the construction of the Ara (CPS 2025c indicates that where ara construction works are required stormwater will be managed to ensure that natural drainage channels and flows are preserved);
- That where toilets are installed they shall not produce any liquid or solid discharge to the surrounding environment, they will be installed away from drainage channels and watercourses and they will be maintained regularly (CPS, 2025c);
- That best practice erosion and sediment control methodologies will be implemented and maintained and that site rehabilitation will be undertaken to prevent erosion and sediment generation following completion to avoid sediment discharges to freshwater environments (as per CPS, 2025c); and
- That discharges from construction equipment or refuelling will be avoided (as per CPS, 2025c).

4.3.2 Construction effects

Potential direct and indirect effects on freshwater habitats associated with construction of Te Ara Tipuna include:

- Loss of riparian vegetation;
- Disturbance to instream fauna such as fish and Hochstetter's frogs if any culverts are required to be installed;
- Discharge of sediment or other contaminants;
- Creation of fish passage barriers if culverts are required; and
- Disturbance of fauna species (e.g. birds) close to wetland areas.

Installation of infrastructure for watercourse crossings has been minimised, using wayfinding posts on either side of the watercourse to mark crossing points by foot or directions where the Ara follows

streams wherever practicable, or utilising existing infrastructure and road crossings. Seven timber footbridges and eight swing bridges are proposed to be constructed as part of this application. Typical design details are provided in the draft CMP. These designs have been selected to minimise the vegetation clearance and footprint required at either end of the bridge and to avoid instream works.

If instream works are required to install culverts, for example, then there is potential for disturbance or mortality of instream fauna such as Hochstetter's frogs or fish.

Elevated levels of suspended sediment can have detrimental effects on aquatic receiving environments including reducing light penetration, smothering food and interstitial spaces, and clogging of fish and invertebrate gills. Construction work and vegetation removal near streams, rivers and wetlands has the potential to generate sediment that if not properly managed could enter and detrimentally affect the freshwater and coastal environments. There is also potential for other contaminants to be discharged which are harmful to aquatic environments (e.g. fuel from machinery). As discussed above, CPS (2025c) outlines how erosion, sediment and other potential contaminants will be managed to avoid sediment and contaminants entering waterways.

No works are proposed to be undertaken within wetlands. Morphum undertook a desktop based mapping assessment of Tairāwhiti wetlands for Gisborne District Council between 2021 and 2022 using aerial imagery, LiDAR elevation and existing wetland databases to determine indicative wetland sites (Morphum 2024). A review of the Ara using this data indicates that the Ara avoids most indicative wetland areas. On the few occasions where the Ara is shown close to an indicative wetland, or other wetlands are identified in pre-construction surveys, we consider that if any earthworks or vegetation removal is required, that the Ara can be re-routed within the 50 m consented corridor to avoid adverse effects on any wetland that may be present.

Whilst in general any works or vegetation clearance within 10 m of wetlands will be avoided, installation of road safety fencing / barriers may be required in some circumstances within 10 m of wetlands to manage pedestrian safety where the Ara is located in the road berm close to the road edge (Figure 5). Installation of such barriers would involve installation of poles, would have a limited effect on vegetation and involve only a small amount of earthworks. The ecological effects on wetlands associated with installation of road barriers in the road corridor within 10 m of wetlands is expected to be low.

Figure 5. An example of where road safety fencing would be required to be installed within 10 m of a wetland to keep pedestrians safe on the road berm (213 – 214 km).

Overall, we consider that the potential magnitude of effect of the Ara's construction on ecological values associated with freshwater environments prior to implementing mitigation measures would be low as long as no instream works are required. If instream works are required, the potential effect on instream fauna could be moderate - high before mitigation where there is suitable habitat for aquatic species within the footprint or upstream fish habitat.

4.3.3 Operational effects

Potential direct and indirect adverse effects on freshwater habitats associated with operation of Te Ara Tipuna include:

- Disturbance to instream fauna through foot traffic through or along streams and rivers;
- Creation of fish passage barriers through culvert installation.

Many of our native fish species are diadromous, having to travel between marine and freshwater environments to complete their life-cycle. The majority of the most widespread native fish species that occur in New Zealand's waterways have larvae that develop in the sea and then migrate back into freshwater as juveniles. Their adult populations are, therefore, dependent on the success of the annual upstream migrations of juveniles. Culverts installed on streams have the potential to restrict migration of freshwater fish if they are not installed appropriately. While the Project's general approach to culverts is that they will be avoided, it is possible that culverts may be required in some instances. In the event that any culverts are required on streams they will be installed to meet the permitted activity standards of the NES-F and TRMP.

Given the narrow nature of the Ara and use by pedestrian traffic only, once it is established little sediment is expected to be discharged from the ara.

Where watercourses are to be crossed on foot through wayfinding, as long as this occurs at marked crossing points (and therefore the footprint of the activity is minimised), foot traffic is not expected to have a significant effect on stream habitat and instream fauna.

For the portion of the Hikurangi Loop that follows the beds of the Mangatangaruru and Umukōkako Streams, there is a risk of disturbance to fauna through human activity (through noise or physical disturbance), including potential disruption to birds nesting in the gravel beds. Increased dog activity here could also result in physical disturbance and potential mortality of indigenous fauna.

The narrow nature of the Ara and the proposed approach to managing water runoff in CPS (2025c) means that changes to hydrology that would affect streams, rivers and wetlands are highly unlikely.

Overall, we expect the magnitude of operational effects on freshwater habitats and fauna to be low-moderate prior to mitigation measures.

4.3.4 Recommended mitigation measures

In light of the construction-related freshwater ecology effects assessed above, we recommend that the Project's construction methodology and consent conditions include the following measures:

- Imposition of the same stage-specific confirmatory survey and ecological management plan approach set out above for terrestrial ecology, adapted to relate to freshwater ecology;
- With respect to the confirmatory surveys, if culvert installation (or other stream works) is unable to be avoided, the stage-specific confirmatory ecological survey should be required to:
    - assess the specific stream crossing for fish and Hochstetter's frog habitat; and
    - if potential Hochstetter's frog habitat is affected by instream works, then a pre-works survey will be undertaken by a suitably qualified ecologist / herpetologist to confirm whether they are present.
- The ecological management plan for each stage should:
    - summarise the findings of the confirmatory ecological survey;
    - set out the mitigation measures (see below) that will be applied to the works in that section; and
    - confirm that the Project's freshwater ecological effects, after imposition of the stated mitigation measures, will be no greater that the level assessed in this EcIA (utilising the EcIAG methodology applied in this EcIA);
- The mitigation measures to be included in the stage-specific Ecological Management Plan should include:
    - If any culvert installation (or other stream work) will affect potential fish habitat then a fish management plan will be prepared and implemented to provide for fish relocation and exclusion from the works footprint;
    - If Hochstetter's frogs are present, confirmation that no instream works will occur;
    - If culverts are required to be installed, in addition to meeting the relevant permitted activity standards, they should be designed in line with the New Zealand Fish Passage Guidelines (Franklin *et al.,* 2024) to avoid any effects on fish passage;
    - Where the Ara corridor follows a stream or river (and is located outside of the stream or river bed), the final ara path should be located as far away as practicable from the edge of the stream or river (within the 50 m corridor);

- Pre-construction bird surveys prior to works within 30 m of wetland areas to identify any nesting birds present if works are to be undertaken within the bird nesting season; and
- Those additional mitigation measures set out in section 5.5.1 as they relate to aquatic ecology.

In light of the operational freshwater ecology effects assessed above, we recommend that the Project's OMPP and consents conditions include the following mitigation measures:

- That wayfinding markers are installed on either side of a stream or river crossing point to concentrate foot traffic in one location;
- Manage dog access to the portion of the Hikurangi Loop that traverses the Mangatangaruru and Umukōkako Streams;
- Education of Ara users regarding the wildlife along the Ara and the risk of disturbance to nesting birds along the Mangatangaruru and Umukōkako Streams;
- Any other measures related to freshwater ecology operational effects specified in section 5.7 below.

4.3.5 Overall magnitude of effects on freshwater ecology

If the recommended mitigation measures are implemented, the overall magnitude of effect on the ecological values associated with freshwater ecology is expected to be low.

4.4 Coastal Ecology

This section addresses coastal ecology effects across the whole Ara. The identified areas of protected ecological significance are more specifically addressed in section 4.5 below and Appendix A.

4.4.1 Assumptions

The key assumptions about the proposed works that have been made in this assessment of effects on coastal ecology are:

- That there will be no earthworks or vegetation clearance within the Coastal Marine Area;
- That wayfinding will be the method of traversing coastal environments;
- That where bridges are required their piles / infrastructure will be located outside of stream/river beds and the Coastal Marine Area;
- That as much as possible existing crossings are used to cross sand dunes, and where any new dune crossings are established they will minimise the extent of any vegetation clearance, for example by running perpendicular to the coastline;
- That where toilets are installed they shall not produce any liquid or solid discharge to the surrounding environment, they will be installed away from drainage channels, watercourses and the Coastal Marine Area (CMA) (CPS, 2025c) and they will be maintained regularly;
- That best practice erosion and sediment control methodologies will be implemented and maintained and that site rehabilitation will be undertaken to prevent erosion and sediment generation following completion to avoid sediment discharges to coastal environments (as per CPS, 2025c); and

- That discharges from construction equipment or refuelling to coastal environments will be avoided (as per CPS, 2025c).

4.4.2 Construction effects

Potential direct and indirect effects on coastal habitats associated with construction of Te Ara Tipuna include:

- Mortality or injury of coastal fauna during construction or vegetation clearance works;
- Loss of habitat (e.g. sand dune vegetation, driftwood, īnanga spawning areas); and
- Disturbance of fauna species (e.g. birds, lizards, katipō) through construction activities, vibration and noise.

In order to assess the magnitude of effects of the Ara on coastal environments, an assessment of the estimated works required in coastal environments provided in the Tracker (CPS, 2025a) in conjunction with overlaying the route of the ara on aerial photos in QGIS, was undertaken. The findings are presented in Table 9. In summary:

- There are fourteen sections of the Ara where the route goes along or immediately adjacent to the CMA (beaches);
- Where the Ara passes along beaches, wayfinding is used and no ara construction is required;
- Where the ara transitions from the terrestrial environment onto the coastal marine area, in the majority of situations an existing crossing is present and will be utilised; and
- There are only two beaches where there is a potential need for new crossings to be established through dune or coastal vegetation (being Te Wharau Beach and Anaura Bay, Waioue Stream).

Therefore, in most cases the effects of construction of the Ara on coastal ecology is expected to be negligible to low because there are very limited works proposed in the coastal area. Where works are proposed to establish new dune crossings, the magnitude of potential construction effects (such as disturbance to dune vegetation and effects on fauna) would be low-moderate prior to mitigation.

Table 8. Summary of sections of the Ara in the CMA or sand dunes.

Beach traversed	Location (km markers)	Transition onto coastal marine area	Transition off coastal marine area	Degree of potential impact associated with construction without proposed ecological restrictions and mitigation measures
Makarori	1-4 km	Existing accessways can be utilised		Negligible
Turihau	9-10 km	Existing accessways can be utilised		Negligible
Pouawa	11-12 km	Existing accessways and paths can be utilised		Negligible
Whangara	21-23 km	Existing accessways can be utilised		Negligible
Waihau Beach	39-42 km	Existing accessways can be utilised	Existing accessways and wayfinding can be utilised	Negligible
Tolaga Bay	51-52 km	Follows existing road and paths		Negligible
Karaka Bay	55-56 km	Passes around back of beach on farmland, no transition to beach required		Low
Kaiaua Bay	60-61 km	Follows existing road		Negligible
Anaura Bay		Existing accessways can be utilised		Negligible
Anaura Bay, Waioue Stream	79 km	Potential here for grass / dune vegetation to be disturbed where wayfinding route crosses dunes		Moderate
Tokomaru Bay	93-96 km	Existing accessways can likely be utilised		Negligible
Te Wharau Beach	17-20 km Port Awanui Loop	Ara corridor potentially crosses 80 m of dune vegetation, however there may be potential for re-routing to an existing accessway	Existing accessways can be utilised	Low – Moderate (over an approximately 80m length of dune vegetation crossing) if new dune crossing required, low if existing accessways are utilised.
Hautai Beach sand dunes	191-194 km	Ara passes through dunes on existing road and farm track		Negligible
Te Araroa	206-208 km	Existing accessways and paths can be utilised		Negligible

Notes: 1. Ecological values conservatively assessed to be high for each beach and sand dune area.

4.4.3 Operational effects

Potential direct and indirect effects on coastal habitats associated with operation of the Ara include:

- Increased human activity which could generate noise and result in physical disturbance of indigenous fauna such as nesting birds; and
- Increased dog activity in coastal areas which could result in physical disturbance and potential mortality of indigenous fauna.

The magnitude of effect of operational effects of the Ara on coastal ecology is considered to be low-moderate prior to mitigation measures.

4.4.4 Recommended mitigation measures

We recommend the following mitigation measures are implemented in the construction stage with respect to coastal ecology effects:

- Imposition of the same stage specific ecological survey and ecological management plan approach set out above for terrestrial ecology, adapted to relate to coastal ecology to confirm and minimise the ecological effects, particularly where new CMA accessways need to be formed;
- The stage specific ecological survey should include:
  - Identification of the presence of any rare plant species affected by the finalised ara route; and
  - Identification of any fauna habitat (such as birds, lizards or invertebrates) potentially affected by the proposed works.
- The stage-specific Ecological Management Plan prepared by a suitably qualified ecologist for each stage should:
  - summarise the findings of the confirmatory ecological surveys
  - set out the mitigation measures (see below) that will be applied to the works in that section; and
  - confirm that the Project's coastal ecological effects, after imposition of the stated mitigation measures, will be no greater than the level assessed in this EcIA (utilising the EcIAG methodology applied in this EcIA); and
- The mitigation measures to be included in the stage-specific Ecological Management Plan should include:
  - Confirmation of how the Ara route has been adjusted within the consented corridor to avoid any impacts on rare plant species identified in the confirmatory survey; and
  - Where avoidance of any impacts on identified rare plant species is not possible through adjustments to the Ara route, a proposal and methodology to provide for the replanting of rare plant species at a ratio of 3:1 to mitigate the effects of removal;
  - Fauna management measures to be utilised during coastal vegetation clearance, including measures to:
    - avoid disturbance to bats and nesting birds;
    - provide for the translocation of katipō spiders, where dune vegetation clearance is required,
    - undertaking lizard relocation where lizard habitat is affected and there is a risk of lizard mortality.
  - Measures to minimise any noise or vibration effects on fauna associated with piling for bridges;
  - Those additional mitigation measures set out in section 5.6 as they relate to coastal ecology.

We recommend the following mitigation measures are implemented in the Ara's operational stage with respect to coastal ecology effects (in accordance with the greater detail provided in section 5.7 below):

- Manage dog access along the Ara, particularly in ecologically sensitive areas; and
- Education of Ara users regarding the wildlife along the Ara, the risk of disturbance to nesting birds and dune vegetation and to stay on the Ara route.

4.4.5 Overall magnitude of effects on coastal ecology

If the recommended mitigation measures are implemented, the overall magnitude of effect on the ecological values associated with coastal ecology is expected to be low.

4.5 Effects on Protected Areas of Ecological Significance

4.5.1 Assumptions

The key assumptions about the proposed works that have been made in this assessment of effects on areas of ecological significance are:

- Much of the ara is wayfaring in nature, requiring limited vegetation clearance;
- That where there are existing tracks or roads through protected areas that they will be utilised as much as possible and vegetation clearance will be minimised;
- That indigenous vegetation clearance will be restricted to a width of 1 - 1.5 m, except where this is not possible due to terrain (e.g. benching cannot be avoided to create a safe or stable ara) or due to installation of infrastructure such as bridges, toilets or stairs;
- That there is flexibility for movement of the Ara within a 50 m consented corridor, enabling movement of the Ara alignment to avoid features such as groups of trees, rare plants or habitat features during detailed design; and
- That where earthworks and vegetation clearance are required that vegetation will be required to be cleared from the full width of the Ara (in reality this is likely to be less due to the largely wayfinding and low impact bush track nature of the Ara in these areas).

4.5.2 Construction effects

An assessment of the potential effects of Ara construction on all protected areas of ecological significance within or adjacent to the Ara route is provided in Appendix A. These areas include a mix of habitat types such as forest, beach, wetland, river mouth and estuary. Most of the identified protected areas will have a magnitude of effects associated with the Ara construction that are assessed to be 'Negligible' or 'Low' based on the EIANZ framework. The areas that may have a higher ('Moderate' or High' magnitude of effect prior to mitigation are identified in Table 8 below.

Table 9. Protected Areas of Ecological Significance that may have a 'Moderate' to High' EIANZ level of ecological effect prior to application of the effects management framework.

Name	Classification	Location (km)	Environment type (descriptions from TRMP schedules)	Nature of ara and construction (based on CPS 2025a)	Magnitude of ecological effect associated with construction prior to mitigation
Tatarahaka Point QEII WP12	Terrestrial Area of Significant Conservation QEII covenant	51-53 km	No information available	Up to 650 m^2 vegetation clearance required based on the Tracker, this likely to be an over-estimate given presence of the existing Earnest Reed Walkway.	Low – Moderate, depending on the degree of vegetation clearance required.
Waipare and Nuhiti Scenic Reserves WP7 Nuhiti Q Ngā Whenua Rāhui	Terrestrial Area of Significant Conservation Ngā Whenua Rāhui	82-87 km	Secondary forest and scrub, with small primary forest remnants dominated by species such as kohekohe (*Didymocheton spectabilis*), tawa, pukatea (*Laurelia novae-zelandiae*), and nīkau remaining in some of the deeper gullies. Kānuka, rewarewa (*Knightia excelsa*), and kāmahi are dominant over large areas, but black beech is locally dominant on dry ridges.	Ara follows ridgeline through approximately 4.7 km of these areas. No apparent existing track. Moderate to extensive levels of earthworks potentially required based on the Tracker. Initial assessment indicates that the extent of vegetation clearance can meet the 1 m width restriction. Up to 6000 m^2 vegetation clearance in protected area.	Low – Moderate depending on the degree of vegetation clearance required.
Tawhiti WR19	Protection Management Area and Terrestrial Area of Significant Conservation	98 – 102 km	This 1741 ha area is of high significance. Most of the area is occupied by quality secondary forest dominated by kanuka. Highly modified remnants of the original forest, mainly tawa, kohekohe, and pūriri. There are some rare plants present in this area and a range of native fish	Ara follows unformed legal road. Based on the Tracker more extensive levels of earthworks potentially required to form a gravelled surface. Up to 5000 m^2 vegetation clearance in protected area. There are remnants of previous tracks here (Graeme Atkins, pers. com. 24/03/25), which	Low – Moderate depending on the degree of vegetation clearance required.

Name	Classification	Location (km)	Environment type (descriptions from TRMP schedules)	Nature of ara and construction (based on CPS 2025a)	Magnitude of ecological effect associated with construction prior to mitigation
			species in the streams (Graeme Atkins, pers. com. 24/03/2025).	may assist in minimising the extent of works.	
Mataahu Stream WR16	PMA and Terrestrial Area of Significant Conservation	125-126 km	This highly significant 376 ha area is predominantly secondary scrub and forest where kānuka is dominant. Also consists of an advanced regeneration of forest species such as rewarewa, tree ferns, and wildling pines.	Cuts through western end for approximately 380 m. Up to 3000 m^2 vegetation clearance required in protected area.	Low
Port Awanui WR6	PMA and Terrestrial Area of Significant Conservation	16-17 km Port Awanui Te Wharau Beach Track	This 16 ha highly significant area is separated into 3 units. It consists of small remnants of pōhutukawa treeland. Other species include Pinus radiata, ngaio (*Myoporum laetum*), cabbage tree (*Cordyline australis*), mānuka, kānuka, tauhinu (*Ozothamnus leptophyllus*), whararikī (*Phormium colensoi*), and taupata (*tawa*).	Cuts through centre of small protected area for approximately 100 m. Passes near to two other units (no ara construction proposed within them as ara follows beach). It is considered that greater restrictions on ara width within the protected area are possible. Up to 930 m2 vegetation clearance required in protected area.	Low – moderate depending on the amount and nature of vegetation clearance required.
Tutara WR5 Wharau A1 & A1B Ext Kawaneta	PMA Ngā Whenua Rāhui	163-164 km	This 181 ha area contains a mixture of primary and secondary forest. Primary forest remnants dominated by tawa, pūriri, rimu, and kohekohe. Both kānuka and mānuka occur within the secondary forest.	Ara passes through 190m of the PMA. Construction of some stairs will be required here given the terrain. Up to 750 m^2 vegetation clearance required. Unable to be avoided due to insufficient room / safe passage in the road corridor and river nearby.	Low-moderate depending on amount of vegetation clearance required

Name	Classification	Location (km)	Environment type (descriptions from TRMP schedules)	Nature of ara and construction (based on CPS 2025a)	Magnitude of ecological effect associated with construction prior to mitigation
Te Koau (PR1)	PMA Terrestrial Area of Significant Conservation	215-217 km	Provides the only continuous latitudinal sequence from coastal and lowland to lower-montane and upper-montane vegetation types in the District. Best representative examples of tawa-pūriri and pūriri-pōhutukawa-tawa forests in the District. This 1250 ha area is of high significance.	Moderate to extensive levels of earthworks and vegetation clearance potentially required due to formation of new ara in steep terrain. Existing road not suitable to be used for safety concerns. Vegetation clearance within protected area up to 9300 m^2 based on the Tracker.	Moderate
Aorangi (WR 122)	PMA QEII Open Space Covenant	33-35 km Hikurangi Loop	A 384 ha area separated into two units. Both units contain tawa dominant forest.	Ara passes through or adjacent to protected area for approximately 1500 m. Extensive earthworks potentially required here due to steepness of terrain. Up to 1,500 m^2 vegetation clearance proposed within protected area.	Low - moderate

4.5.3 Operational effects

The potential operational effects on the protected areas of ecological significance are the same as those outlined in Section 4.2.3 (terrestrial ecology), Section 4.3.3 (freshwater ecology), and Section 4.4.3 (coastal ecology) depending on the environment type.

The magnitude of effect of operational effects of the Ara on the above protected areas is considered to be low-moderate prior to mitigation measures.

4.5.4 Recommended mitigation measures

The recommended construction and operational mitigation measures are outlined in Sections 4.2.4 (terrestrial ecology), 4.3.4 (Freshwater ecology) and 4.4.4 (coastal ecology).

4.5.5 Overall magnitude of effects on protected areas of ecological significance

If the recommended mitigation measures are implemented, the overall magnitude of effect on the ecological values associated with the protected areas of ecological significance is expected to be low.

5 EFFECTS MANAGEMENT FRAMEWORK

5.1 Overview

Given the scale of the Ara, it is anticipated that the Project will involve a staged approach to ara construction, with development of the Ara expected to be completed over an approximate 10-year time frame. Consent is being applied for a 50 m wide consented corridor around the proposed Ara route, to allow for minor variations to the Ara alignment to account for on site features and limitations. Detailed design of each Ara stage will be undertaken to confirm specifics of the Ara design, the extent of works, infrastructure, vegetation clearance and mitigation requirements.

Section 4 above has assessed the potential ecological effects of the construction and operation of the Ara on the broad environment types it passes through and recommended confirmatory surveys, stage-specific environmental management plans and a number of specific mitigation measures to be included in those environmental management plans. This section outlines an effects management framework that is proposed to inform the detailed design stage, set out the recommended mitigation measures in more detail and guide the development of appropriate consent conditions.

The proposed management and mitigation measures (outlined below) and associated consent conditions will be designed to achieve an outcome where the overall ecological effects of the Ara is no greater than 'low' (assessment under the EcIAG methodology concluded in this EcIA), irrespective of the location of the final alignment of the Ara within the consented corridor.

As no site-based work has been undertaken for this EcIA (with the exception of the on-site local knowledge from Graeme Atkins which has helped inform this assessment), we recommended the effects management measures outlined below are adopted to manage the effects of the Project.

This effects management framework reflects a conservative approach to effects management, in light of the largely desktop nature of our assessment. As noted above, we are satisfied that, subject to complying with the requirements and controls within this framework, the Ara will have a 'Low' overall level of ecological effects. This framework includes:

- Creation of an ecological traffic light system to identify areas where ecological values are such that ecological surveys are necessary during the detailed design phase to confirm ecological values prior to construction; and
- Stage-specific confirmatory ecological surveys and ecological management plans that will be developed in accordance with the draft ESMPP and will specify the mitigation measures recommended in this EcIA (and any additional measures that may be necessary) to ensure an overall 'Low' level of ecological effects, in light of the confirmed ecological values in that area;
- Various specific recommended mitigation measures outlined below.

5.2 Ecology Traffic Light System

We developed a traffic light system to identify areas along the Ara where anticipated ecological values have been assessed as 'Moderate' or 'High' utilising the EcIAG and where further ecological surveys are necessary prior to construction to confirm the ecological values of the area identified for the Ara and inform the detailed design. We developed this traffic light system by overlaying the proposed Ara route with land cover data from the LCDB, aerial imagery, TRMP protected areas and wetland layers and the Tracker. Table 10 summarises the ecological traffic light categories, and:

- What categories areas of the Ara have been assigned to (red, orange and green), based on the environment or land cover within each area of the Ara and the anticipated works in those areas; and
- The recommended approach for confirmatory ecological surveys during the detailed design phase.

Appendix B contains maps showing the Ara with the traffic light categories assigned to each km of the Ara (and a shape file and kml file can be made available on request).

Table 10. Summary of the ecology traffic light categories

Category (% of the Ara)	Land cover types included within category[18]	Approach recommended during detailed design
Red (8%)	• Protected Areas of Ecological Significance with no existing track or road • Indigenous forest and broadleaved indigenous hardwoods where there are no existing tracks • Sand dunes where a new crossing may need to be formed • Large river crossings (bed width > 20 m) with new bridge • The ara crosses a potential wetland identified by Morphum (2024)	A pre-construction survey by an ecologist is required to confirm the ecological values in an area in accordance with the draft ESMPP. The stage-specific ecological management plan is required to be prepared by an ecologist to set out mitigation measures consistent with the EcIA and ESMPP, and enabling the ecologist confirm the post-mitigation effects are 'low' i.e. consistent with the effect assessment in this EcIA.
Orange (27%)	• Areas protected for ecological values with an existing track or road • Indigenous forest and broadleaved indigenous hardwoods where there are existing tracks or roads • Kānuka and / or mānuka dominated forest where there is no existing track or road • Stream and river crossings (< 20m width) using new bridges • Stream and river crossings using wayfinding • Close to a water body scheduled in the TRMP • Where there is an existing road or path, but aerials or databases indicate there is potentially adjacent wetland that may be affected by constructing path along road edge • Where the ara follows along a beach • Shrubland	The ecologist is required to consider the detailed design of the Ara in 'orange' locations (including extent of works and vegetation clearance proposed) and determine whether a pre-construction survey is required to ensure effects are mitigated to the 'low' level identified in this EcIA. Such surveys and mitigation measures to be reflected in the stage-specific ecological management plan prepared by the ecologist.

[18] Note that the LCDB provides broad land cover categories using satellite data. In some cases where aerial imagery has indicated a different land cover type along the proposed track, these categories have been amended

Category (% of the Ara)	Land cover types included within category[18]	Approach recommended during detailed design
Green (65%)	• Built up areas (settlements) • Grassland and cropland • Urban parkland / open space • Kānuka and / or mānuka dominated forest where there is an existing track or road • Exotic forest and deciduous hardwood • River crossings using existing bridges	Ecological effects of ara construction assessed as low and an on-site ecological survey is not necessary during the detailed design phase, unless the confirmatory desktop assessment during detailed design identifies potential ecological values or effects that need to be confirmed on site (e.g. trees >15 cm dbh to be removed will need to be assessed for bat habitat features, bird nesting or bat surveys or lizard relocation may be required prior to clearance).

5.3 Stage-Specific Pre-Construction Ecological Surveys and Management Plans

A draft Ecological Survey and Management Plan Protocol (ESMPP, Viridis 2025) has been prepared that sets out a general methodology for undertaking pre-construction ecological surveys and preparation of stage specific Ecological Management Plans (EMPs). This draft ESMPP is intended to integrate with the ecological effects management framework proposed in this EcIA and is included in Appendix C.

During the detailed design phase of each stage of the Ara and prior to construction, we recommend that an ecological survey be undertaken by a suitably qualified ecologist[19] in line with the draft ESMPP to confirm the ecological values in any 'Red' area or 'Yellow' area where the ecologist considers that the Ara effects will require confirmation to be considered to be 'low'.

We also recommend that an EMP is prepared for each ara stage and that these should be required to be certified by Council prior to works commencing for that stage[20]. The EMPs will summarise the methodology and findings of the ecological surveys undertaken, and, outline the mitigation measures proposed to manage effects on those values in accordance with this EcIA and the ESMPP to ensure that the overall ecological effects are low – i.e. consistent with this EcIA.

More specifically, the EMPs for each ara stage will:

- Outline the ecological survey methodology undertaken for that stage;
- Confirm the ecological values present within that ara stage;

[19] Where appropriate, more than one EMP may be prepared for a trail stage, for example where the trail passes through a specific area of very high ecological value

[20] Note that in the previous draft ESMPP (Viridis, 2024), EMPs were proposed to only be prepared for "Confirmed Ecological or Biodiversity Areas", however requiring an EMP for each trail stage ensures the findings of the ESMPP assessment are reviewed and certified by Council prior to construction, even when potential effects are low, ensuring a robust approach is adopted.

- Explain how the Ara's detailed design has taken into account and minimised the potential magnitude and level of ecological effects for that stage;
- Detail the mitigation measures required to ensure that that stage will have an overall 'Low' level of ecological effect utilising the EIANZ assessment guidelines; and
- Detail ongoing management measures required to address operational effects of the Project (for inclusion in the OMPP) and/or ensure the ongoing effectiveness of mitigation measures.

5.4 Terrestrial vegetation removal

5.4.1 Ecologically Sensitive Areas

As noted above, we recommend that tighter vegetation clearance restrictions are applied to any ecologically sensitive area identified in the maps included in Appendix B. These ecologically sensitive areas have been identified on a conservative basis, and include areas where the trail passes through:

- Protected areas of ecological significance with no existing track or road;
- Large contiguous areas of indigenous hardwood or broadleaved forest (which are land cover categories in the LCDB) with no existing track or road; and
- Where an existing road/track goes through or immediately adjacent to wetland or potential wetland areas.

Sections that are not included in the ecologically sensitive areas are where the Ara passes through:

- Protected areas of ecological significance or areas of contiguous indigenous vegetation where there is an existing track or road and/or no or limited earthworks or vegetation clearance is proposed in the Tracker; and
- Areas of mānuka / kānuka (unless part of a protected area or interspersed with other indigenous forest), as this is a common habitat type in the landscape, is of generally lower ecological value and less likely to contain rare flora or fauna (Graeme Atkins, pers. com, 24/03/2025).

A shape file and kml file of Appendix B can be made available on request.

5.4.2 Recommended mitigation measures

Table 11. Recommended controls on vegetation clearance and ongoing management

Recommended controls	Reasoning
General vegetation removal requirements	
Where vegetation clearance is proposed during the main native bird nesting season (1 September to 28 February) and potential native bird nesting habitat is affected, then native bird nesting surveys must be undertaken by a suitably qualified and experienced ecologist / ornithologist within 48 hours prior to vegetation removal.	To minimise the risk that nesting native birds will be affected by vegetation clearance. Most native birds are protected under the Wildlife Act.
Where active native bird nesting sites are identified during a native bird nesting survey, a buffer between the works or vegetation clearance and the nest must be established and clearly demarcated with temporary fencing. For "At Risk" or "Threatened" bird species the buffer is to be 30 m and 10 m for other native bird species. No works shall be undertaken within the buffer exclusion zone until such time as	

Recommended controls	Reasoning
the suitably qualified and experienced ecologist / ornithologist has confirmed that the chicks have fledged or the vegetation no longer contains an active nest(s). Results of these surveys to be reported to Council.	
Any trees to be removed greater than 15 cm dbh[21] will be surveyed for potential bat habitat features within six months prior to vegetation clearance in accordance with the DoC (2024) Protocols for Minimising the Risk of Felling Occupied Bat Roosts (Bat Roost Protocols) Version 4 October 2024 and if features are present they will not be removed unless there is no alternative within the consented ara corridor and the bat roost protocols are followed prior to felling.	This requirement will minimise the risk of bat disturbance during vegetation clearance. This restriction is in line with the Bat Roost Protocols. As discussed in Section 3.2.2, bat roosts have been found in trees as small as 15.5 cm dbh (Dekrout, 2009). Bats are protected under the Wildlife Act.
If the stage specific ecological survey confirms the potential for native lizards to inhabit the works or vegetation clearance area and the effects on lizards are determined to be moderate or higher under the EIANZ Guidelines (Roper-Lindsay *et al*., 2018): • a stage-specific Lizard Management Plan shall be prepared by a suitably qualified and experienced herpetologist in accordance with best practice measures and the requirements of the Wildlife Act 1953; • If capture, salvage, and relocation of native lizards are required during vegetation clearance, they must be undertaken by a suitably qualified and experienced herpetologist in accordance with the DoC protocols (DoC, 2024); and • Live capture of native lizards during vegetation clearance must be recorded into the Amphibian and Reptile Data Scheme.	Native lizards are protected under the Wildlife Act and this requirement will ensure that mitigation measures are put in place to address the potential impact of the Ara on them.
The avoidance of any of the regionally and nationally rare or threatened plants listed in Schedule G7B of the Tairāwhiti Resource Management Plan that are identified within an area of proposed vegetation removal, unless there is no alternative route to locate the ara within the consented ara corridor. If removal of rare plant species is undertaken and relocation of the plant(s) is not possible, they will be replanted at a ratio of 3:1 close to the area of removal, from eco-sourced stock from the same ecological district.	Rare plant removal should be avoided where possible. If any are removed this replanting requirement will mitigate for their loss.
Where indigenous vegetation is required to be removed from contiguous areas of indigenous forest where greater vegetation than the maximum ara width is required to form the Ara (e.g. for benching or infrastructure such as stairs) and is able to be reinstated following construction, the area to be reinstated should be replanted with eco-sourced	Requires rehabilitation planting in areas where greater clearance was required to form an ara, but the cleared area is not needed to be retained. Minimises edge and connectivity effects.

[21] Dbh means diameter at breast height – i.e. the width of the tree at 1.4 m above ground

Recommended controls	Reasoning
species suitable for the environment and ecological district, at a minimum density of 1.4 metre centres.	Minimises effects on vegetation canopy. Reduces risk of weed invasion.
Areas of rehabilitation planting will be subject to monitoring and maintenance during the establishment phase (5 years following planting) with any identified dead or diseased trees during that period being required to be replaced.	Ensures successful establishment of planted areas.
Any rehabilitation planting shall be completed within the first full planting season (April – September) following completion of ara construction within the identified ecologically sensitive area.	Ensures rehabilitation planting is undertaken as soon as practicable following works completion.
Vegetation removal in a road corridor	
No limit on the size of trees able to be removed	There is limited flexibility in the road corridor to avoid larger trees. Trees in the road corridor will typically have low ecological values due to high edge effects. The magnitude of effect of removal of trees in the road corridor is expected to be low and the overall effect low. Effects on fauna will be mitigated by the other requirements such as bird and bat surveys.
Vegetation removal outside of a road corridor	
The width of vegetation clearance through indigenous vegetation will not exceed 1.5 m, except where: • benching is required to provide for a safe and stable ara (i.e. due to the ara location having steep terrain) – where vegetation clearance will potentially be up to 7 m wide; or • installation of infrastructure such as stairs and toilets is proposed. The maximum width of disturbance to vegetation in other areas will be (from CPS 2025d): ○ Bridge approach: 3.5m ○ Steps: 3.0m ○ Toilet: 4.0m ○ Low bench: 7.0m ○ Swing bridge or new timber bridge: 8.0m	• Maintains habitat connectivity (particularly through the canopy, but also in the subcanopy due to the minimal width). • Minimises overall vegetation loss • Minimises edge effects
No indigenous trees > 30 cm dbh will be removed, and removal of indigenous trees > 15 cm dbh will only be undertaken where there is no practicable alternative within the consented corridor that would avoid removal.	• Removal mainly limited to low stature tree species, trees < 100 years old, understory vegetation and shrubs, thereby minimising effects on the vegetation canopy and epiphyte communities.

Recommended controls	Reasoning
	• The 15 cm dbh threshold directly relates to the DoC Bat Roost Protocols and the minimum tree size which may support a bat roost. • Minimises effects on bats, lizards and nesting birds.
No machine mulching of vegetation outside of the road corridor.	• This restriction will help to protect lizard species • If vegetation in the road corridor provides lizard habitat, the required mitigation measures will be specified in a lizard management as required above
Additional requirements for Ecologically Sensitive Areas	
The width of vegetation clearance through indigenous vegetation in ecologically sensitive areas will not exceed 1 m (or 1.5m along gravel sections), except where: • benching is required to provide for a safe and stable ara (i.e. due to the ara location having steep terrain) • it is required for installation of infrastructure such as bridges or stairs.	• Ensures vegetation clearance minimised as much as possible through ecologically sensitive areas. • Where a graveled ara surface is required to ensure the Ara is usable during / following severe weather events, clearance of 1.5 m is necessary • No toilets are proposed within ecologically sensitive areas
All vegetation clearance in ecologically sensitive areas to be undertaken by hand and felled vegetation (except pest plants identified in the Gisborne District Council's Regional Pest Management Plan 2027) and placed to the sides of the ara, except within a road corridor, a flood plain, or adjacent to a stream or river.	Hand felling minimises the ecological impact of vegetation clearance by reducing the machinery required and enabling more careful selection of trees to be felled. It also enables felled trees and branches to be placed in surrounding area to minimise lizard and invertebrate mortality and provide potential habitat for lizards, invertebrates and other fauna. Leaving felled vegetation in areas potentially subject to flooding can increase flood risks. Felled vegetation left in the road corridor can cause safety issues.

5.5 Streams and rivers

5.5.1 Recommended mitigation measures

Where the ara crosses or follows along streams or rivers, the measures outlined in Table 13 are recommended to mitigate ecological effects.

Table 12. Recommended controls for stream and river crossings and riparian margins.

Recommended control	Reasoning
Stream works will be avoided wherever practicable.	Avoid instream works and associated effects on instream fauna and hydrology.
Culverts must be designed and installed to meet the permitted activity standards of the TRMP and the NES-F and in line with the New Zealand Fish Passage Guidelines (Franklin *et al.,* 2024)	To avoid any effects on fish passage.
Where the installation of a culvert will affect potential fish habitat (including spawning habitat), a fish management plan will prepared by a suitably qualified ecologist and implemented.	To ensure that any impacts on fish fauna are mitigated.
Where the installation will affect potential Hochstetter's frog habitat, a suitably qualified and experienced herpetologist or ecologist will undertake pre-works surveys of the works area to confirm whether native frogs are present.	To determine whether Hochstetter's frogs may be affected.
No instream works will occur within an area identified as being inhabited by Hochstetter's frogs.	Avoids effects on Hochstetter's frogs.
Where the ara corridor follows a stream or river, if the ara will be located outside of the bed of the stream or river bed it should be located at least 10 m from the edge of the stream or river.	To protect the vegetation of the riparian margins. To reduce the potential for increasing erosion of stream banks or affecting stream hydrology.

Where the ara is located close to wetlands, the controls outlined in Table 14 are recommended to minimise ecological effects.

Table 13. Recommended mitigation measures for wetlands.

Recommended controls	Reasoning
No works or vegetation clearance within wetlands	Avoids direct effects on wetlands.
No works or vegetation clearance within 10 m of wetlands	Avoids direct effects on wetlands.
Where works or vegetation clearance are proposed within 30 m of wetlands, and are proposed within the native bird nesting season (1 September to 28 February), then a native bird nesting survey should be undertaken by a suitably qualified and experienced ecologist / ornithologist within 48 hours prior to works / vegetation clearance and a buffer established as outlined in (Table 12).	Avoids disturbance of wetland birds nesting within or immediately adjacent to wetlands.

5.6 Coastal areas

Note that many coastal birds nest on the ground outside of the CMA, and sand dunes are often located above Mean High Water Springs, and therefore this is intended to apply to coastal ecology within and beyond the CMA.

Table 14. Recommended mitigation measures for coastal areas.

Recommended controls	Reasoning
Minimise vegetation clearance and works in sand dunes where practicable by using existing accessways.	To minimise effects on the fauna and flora of sand dunes and other effects such as erosion
Where works and / or vegetation clearance cannot be avoided within sand dunes, any beach accessways formed across sand dunes should minimise the footprint by careful location selection and forming them perpendicular to the coastline.	
Where works or vegetation clearance within coastal areas are proposed within the coastal bird nesting season (August to February inclusive, extending to end March for little blue penguin moulting season) and may affect native coastal ground nesting bird habitat, then a native bird nesting survey should be undertaken by a suitably qualified and experienced ecologist / ornithologist within 48 hours prior to works or vegetation clearance that pose a risk to indigenous bird species.	To minimise effects on nesting coastal birds.
Where active native bird nesting sites are identified during a native bird nesting survey, a buffer between the works or vegetation clearance and the nest must be established and clearly demarcated with temporary fencing. For “At Risk” or “Threatened” bird species the buffer is to be 30 m and 10 m for other native bird species. No works shall be undertaken within the buffer exclusion zone until such time as the suitably qualified and experienced ecologist / ornithologist has confirmed that the chicks have fledged or the vegetation no longer contains an active nest(s). Results of these surveys to be reported to Council.	
Where piling for bridge construction is proposed in coastal areas, that measures be implemented to minimise the effects of noise and vibration on fauna, such as reducing noise volume, timing, use of soft start measures, noise screening and ceasing works if penguins or marine mammals are observed in the vicinity during works.	To minimize effects of noise and vibration on coastal fauna such as penguins and marine mammals.
Where vegetation clearance is to be undertaken within sand dunes, a suitably qualified and Wildlife Act permitted fauna specialist must relocate any katipō spiders present within the works footprint to adjacent suitable habitat within 48 hours prior to the proposed vegetation clearance.	Ensures effects on Katipō spiders are minimised. Katipō spiders are protected under the Wildlife Act.

5.7 Operation and maintenance

Table 15. Recommended mitigation measures for ongoing operation and maintenance of the Ara.

Recommended controls or provisions	Reasoning
In sensitive ecological areas not already subject to dog control restrictions, and along the Mangatangaruru and Umukōkako Streams, dog access should be managed.	Minimise potential adverse effects of dogs. There will be restrictions already in place in some areas (e.g. on beaches, reserve land) and private property owners are likely to require controls on dogs accessing their lands.
Boot cleaning stations are to be installed and maintained at ara entry and exit points either side of areas of contiguous indigenous forest.	Reduces the risk of spreading plant pathogens and pests.
Weed and pest control: • Animal pest control should be undertaken around structures such as toilets at minimum. • Bring in and bag out policy regarding rubbish and food waste – rubbish requirements to be detailed in passport system. • Weed and pest control required in planted areas (as outlined below).	Pests more likely to be attracted to areas where people congregate and there is a greater chance of food waste being left. Effects on plant and animal pests will be minimised through the narrow ara corridor proposed, the requirement to take all rubbish away, boot cleaning and education.
Maintenance of newly planted areas must occur until 80% canopy closure has occurred and a minimum survival rate of the plants (being 90% of the original density through the entire planting area(s)) has been achieved. The maintenance period must be a minimum of five years and must commence when planting has been completed in each location. Plant maintenance includes the ongoing replacement of plants that do not survive and the control of invasive pest plants and pest animals.	To ensure that planted areas successfully establish.
Vegetation trimming - should be kept to a minimum and undertaken with care, in particular to avoid damaging any indigenous trees over 30 cm dbh, unless this is required for safety reasons.	Minimises effects on flora and fauna due to vegetation trimming.
Ongoing monitoring and maintenance of structures such as toilets that have the potential to result in discharges of contaminants.	To protect water quality in receiving environments
Education of Ara users through the passport system and / or signage about: • The wildlife along the Ara and its sensitivity to disturbance by people and dogs (especially ground nesting birds); • Biosecurity and the importance of making sure equipment and footwear used on the Ara is free from seeds, plant fragments, pest animals and soil; • The need to stay on the formed route; • The importance of taking all litter and food waste away from the Ara to be disposed of appropriately;	To minimise the effect of ara users on fauna and flora

• How users can get involved in improving the ecological values along the ara (e.g. through weed and pest control and local planting initiatives).	

5.8 Provision of additional voluntary ecological benefits

5.8.1 Terrestrial ecology

The proposed restrictions on indigenous vegetation clearance relating to tree size and the width of cleared area will minimise the degree of ecological effects on indigenous forest by restricting clearance largely to the smaller understory trees and minimise effects on canopy cover. Together with the other mitigation measures proposed, this will result in an overall low level of ecological effect due to vegetation clearance (see Table 17 below). As noted in section 5.9 below this low level of effects does not trigger the need for further mitigation including ecological offset or compensation under the EcIAG or the NPS-IB.

Notwithstanding this low level of effect assessment, the Trust has elected to voluntarily propose an additional ecological enhancement measure involving replacement planting of certain cleared areas at a ratio of 2:1 (i.e. two times the cleared area will be replaced by indigenous enhancement replanting). This proposal has been offered on an *Augier* basis given it is not directly connected to mitigation required for an adverse effect of the activity on the environment.

More specifically, the Trust proposes that where indigenous vegetation is removed to form the Ara from an Ecologically Sensitive Area and is unable to be reinstated following construction, replant an area equivalent to 2:1 (replanting area : vegetation removal area), noting that the proposed enhancement planting areas are additional to any areas replanted under other mitigation measures expressed above (e.g. related to rare plants or areas of clearance outside the Ara width in contiguous indigenous vegetation). The proposed measures to support the achievement of positive effects intended to result from this enhancement measure are set out in Table 17 below.

Table 16. Recommended measures to support Trust's voluntary proposal for positive enhancement of terrestrial ecology

Recommended control	Reasoning
Where indigenous vegetation is required to be permanently removed from Ecologically Sensitive Areas and is not otherwise reinstated or replanted as a result of other mitigation measures set out in this EcIA, an area equivalent to two times the area of permanent clearance shall be identified for replanting with eco-sourced species suitable for the environment and ecological district, at a minimum density of 1.4 metre centres. Planting should occur as close as practicable to the area of vegetation removal and within the same ED.	With the proposed restrictions and mitigation measures, the level of ecological effects of the Ara are low and do not require ecological offset or compensation (refer section 5.9). The proposed planting is to ensure that the Ara results in an overall positive level of ecological effect.
Planted areas will be subject to monitoring and maintenance during the establishment phase (5 years following planting) with any identified dead or diseased trees during that period being required to be replaced.	Ensures successful establishment of planted areas.
Any planting shall be completed as soon as practicable after the completion of construction and as a minimum within the three	Ensures planting is undertaken promptly, noting the practicable

planting seasons (April – September) following completion of ara construction within the identified ecologically sensitive area.	limitations of voluntary planting (land access, seedling availability, planting labour etc.).

This is proposed so that Ara construction results in an overall ecological benefit. Overall, with the low level of effects associated with construction of the Ara and the proposed planting outlined in Table 16 (which will result in areas of land currently in exotic dominated vegetation such as pasture being planted with indigenous vegetation), there will be an overall increase in the extent of indigenous vegetation cover in the area of the East Cape in the vicinity of the Ara and therefore an overall positive ecological effect on indigenous vegetation, as per the EcIAG effects assessment methodology (refer section 5.9).

5.8.2 Ara operation

Operation of the Ara also has the potential to result in positive ecological benefits such as:

- Improved access for people undertaking pest plant and pest animal control;
- Improved public awareness and appreciation of the natural environment, leading to stronger conservation efforts;
- Concentrating foot traffic onto a designated path. This will reduce trampling and disturbance in sensitive areas by users such as hunters and walkers already accessing them, prevent informal tracks and erosion caused by uncontrolled access, and allow for better monitoring of the human impact on the environment.

5.9 Assessment of Ecological Effects Post Application of the Recommended Effects Management Framework

Table 18 below sets out the overall level of effect on ecological values following application of the recommended mitigation measures comprised in the effects management framework, taking into account the value and expected magnitude of the effect on that value, and the voluntary additional enhancement planting proposed by the Trust set out above at section 5.8. The level of effects has been assessed in accordance with the EcIAG methodology.

Further mitigation (for example additional restrictions or ecological offset or compensation) is not considered necessary given the overall low – positive level of effect. Biodiversity compensation or offsetting is only required under the NPS-IB when the level of residual adverse effect on indigenous biodiversity is “more than minor”. The EcIAG framework indicates that offsetting or compensation is only necessary if the expected level of effect is moderate or higher.

Table18. Summary of the level of effects following application of the recommended effects management framework

Ecological component	Value[1]	Magnitude of effect before mitigation	Magnitude of effect after mitigation	Overall Level of effect
Vegetation	Low - high	Low – moderate	Low	Positive[2]
Indigenous herpetofauna	High	Moderate - high	Low	Low
Bats	High	Moderate – high	Low	Low
Indigenous avifauna	Low – high	Moderate - high	Low	Low
Freshwater habitats (streams, rivers, wetlands)	High	Low - high	Low	Low
Freshwater fauna	High	Low – high	Low	Low
Coastal habitats and fauna	High	Low – moderate	Low	Low
Protected areas of ecological significance	High	Low - moderate	Low	Low

Notes: 1: Conservative assumptions of value have been applied

2: Following establishment of the planting proposed in Section 5.4.3

6 SUMMARY AND CONCLUSION

A range of “Threatened” and “At Risk” indigenous plants and fauna species are known to occur within the vicinity of the proposed Ara. The ecological effects of the proposed Ara will be avoided or minimised by using wayfinding as the dominant track type, avoiding the clearance of larger indigenous trees as much as possible, minimising the ara width through ecologically sensitive areas and avoiding the disturbance of wetland habitats.

Given the nature of the Project and its expected construction timeframes (given necessary negotiations with landowners) this EcIA report presents the results of a largely desktop assessment, informed by on-site knowledge, of the ecological values across the Ara and the types of effects on those values that are anticipated. A set of conservative mitigation measures and restrictions have been proposed for Ara construction. An ecology traffic light system has been developed to highlight the areas of the proposed Ara that will require on the ground confirmatory surveying by an ecologist prior to construction and during the detailed design phase of the Project. Potential ecologically sensitive areas have been identified and tighter restrictions on vegetation clearance will be applied in those areas to further minimise the potential ecological effects.

Ecological Management Plans are proposed to be prepared for each ara stage during detailed design, and these will outline the results of the confirmatory ecological surveys and detail mitigation measures (including those identified in this EcIA and the ESMPP) required to ensure the overall level of ecological effects of the Ara remain low.

We have also proposed range of mitigation measure to manage the operational effects of the Project, which we suggest are reflected in the Ara’s OMPP.

Finally, we note that, although not required to address any residual adverse ecological effect (given our conclusion of overall ‘Low’ effects after mitigation), the Applicant is proposing to undertake ecological restoration planting of any permanently removed indigenous vegetation from ecologically sensitive areas resulting from the Project, at a ratio of 2:1. We consider that this, together with the effects management framework proposed, is likely to mean that the Project has an overall positive effect with respect to terrestrial ecology.

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Appendix A Assessment of Potential Impacts on Protected Areas of Ecological Significance

Name	Classification	Location (km)	Environment type	Nature of ara and construction (based on CMP's design tracker July 2025)	Degree of potential impact associated with construction without proposed ecological restrictions and mitigation measures
Makarori Point Recreational Reserve WP20	Terrestrial Area of Significant Conservation	3-4 km	No information available	Ara passes adjacent to protected area through indigenous vegetation. No existing trail.	Low
	QEII covenant	12-13 km	No information available	Wayfaring using existing trails in part and along road. Limited works or vegetation clearance required.	Low
Pouawa River Mouth WR58	Protection Management Area Terrestrial Area of Significant Conservation Adjacent to wetland	13-14 km	This 13 ha area contains spinifex, marram, harakeke, and a wide range of introduced species	Mainly wayfaring. Follows existing road, potentially a small amount of vegetation clearance required where it transitions through pasture.	Low
Pukehapopo	Ngā Whenua Rāhui	21-21 km	No information available	Ara passes adjacent along roadside.	Negligible
Whangara Beach WR55	Protection Management Area Terrestrial Area of Significant Conservation	21-23 km	The vegetation over most of the area (22 ha) consists of spinifex and/or marram.	Wayfaring along beach.	Low
Waihau Road Wetland WR49	Protection Management Area Terrestrial Area of Significant Conservation	36-37 km	The vegetation in this 8 ha area is dominated by raupō, mānuka, and harakeke.	Passes alongside on existing track / road	Low

Name	Classification	Location (km)	Environment type	Nature of ara and construction (based on CMP's design tracker July 2025)	Degree of potential impact associated with construction <u>without</u> proposed ecological restrictions and mitigation measures
	Scheduled Water Body				
Waiomoko River Mouth WR56	Protection Management Area Terrestrial Area of Significant Conservation	48-49 km	This 16 ha area is of high significance. The vegetation is most notable for the dominance by native grasses and sedges.	Passes alongside, wayfaring through pasture	Low
Tolaga Estuary WR36	Protection Management Area Terrestrial Area of Significant Conservation	48-49 km	This 42.86 ha estuary area is of high significance. Vegetation includes spinifex, marram, and a range of woody weeds	Track has been redirected to avoid the protected areas. A new river crossing will be required nearby.	Low
Tatarahaka Point QEII WP12	Terrestrial Area of Significant Conservation QEII covenant	51-53 km	No information available	Up to 650 m^2 vegetation clearance required based on the Tracker, this likely to be an over-estimate given the presence of the existing Earnest Reed Walkway.	Low – moderate depending on the degree of vegetation clearance required
Kaiaua Bush WR35 Anaura Ngā Whenua Rāhui Kawaneta	Protection Management Area Terrestrial Area of Significant Conservation Ngā Whenua Rāhui	64 km	This 62 ha area is highly significant. The canopy is dominated by tawa, pūriri, and kohekohe, with rewarewa, northern rātā , kahikatea, tītoki , hinau, lacebark, and ngaio also common.	Track runs adjacent to protected area along existing track.	Low

Name	Classification	Location (km)	Environment type	Nature of ara and construction (based on CMP's design tracker July 2025)	Degree of potential impact associated with construction without proposed ecological restrictions and mitigation measures
Raponga Stream WR34	Protection Management Area Terrestrial Area of Significant Conservation	65 km	The vegetation in this 5 ha area consists predominantly of raupō reedland, cabbage trees are scattered throughout.	Track runs adjacent to protected area and potential wetlands along existing track.	Low
Anaura Bay Scenic Reserve WP6	Terrestrial Area of Significant Conservation	73-75 km	No information available	Track passes through on existing road / track	Low
Anaura Bay Scenic Reserve	Terrestrial Area of Significant Conservation	73 – 76 km	No information available	Existing tracks / roads present, no works proposed	Negligible
Waipare and Nuhiti Scenic Reserves WP7 Nuhiti Q Ngā Whenua Rāhui	Terrestrial Area of Significant Conservation Ngā Whenua Rāhui	82-87 km	Secondary forest and scrub, with small primary forest remnants dominated by species such as kohekohe, tawa, pukatea, and nīkau remaining in some of the deeper gullies. Kānuka, rewarewa (*Knightia excelsa*), and kāmahi are dominant over large areas, but black beech is locally dominant on dry ridges.	Track follows ridgeline through approximately 4.7 km of these areas. No apparent existing track. Moderate to extensive levels of earthworks potentially required. Initial assessment indicates that the extent of vegetation clearance can be reduced to 1 m in width. Up to 6000 m^2 vegetation clearance in protected area.	Low – moderate depending on the degree of vegetation clearance required
Tawhiti WR19	Protection Management	98 – 102 km	This 1741 ha area is of high significance. Most	Track follows unformed legal road.	Low – Moderate

Name	Classification	Location (km)	Environment type	Nature of ara and construction (based on CMP's design tracker July 2025)	Degree of potential impact associated with construction <u>without</u> proposed ecological restrictions and mitigation measures
	Area and Terrestrial Area of Significant Conservation		of the area is occupied by quality secondary forest dominated by kanuka. Highly modified remnants of the original forest, mainly tawa, kohekohe, and pūriri. There are some rare plants present in this area and a range of native fish species in the streams (Graeme Atkins, pers. com. 24/03/2025).	Based on the Tracker more extensive levels of earthworks potentially required to form a gravelled surface. Up to 5000 m^2 vegetation clearance in protected area. There are remnants of previous tracks here (Graeme Atkins, pers. com. 24/03/25), which may assist in minimising the extent of works.	depending on the degree of vegetation clearance required
Waimahuru Bay Scenic Reserve	Terrestrial Area of Significant Conservation	102 – 103 km	Mix of broadleaved indigenous hardwood vegetation and exotic forest.	Passes along edge of protected area for approximately 290 m.	Low
Hakurenga Kawaneta	Ngā Whenua Rāhui	118 – 119 km	No information available.	Passes along edge on road.	Low
Whareponga Stream WR15	Protection Management Area	125 km	This is a 432 ha area. The area consists of primary forest dominated by tawa, pukatea (*Laurelia novae-zelandiae*), and kohekohe (*Didymocheton spectabilis*). Secondary kānuka scrub and forest also containing rewarewa and mamaku (*Sphaeropteris medullaris*).	Cuts through eastern end for approximately 190 m.	Low

Name	Classification	Location (km)	Environment type	Nature of ara and construction (based on CMP's design tracker July 2025)	Degree of potential impact associated with construction without proposed ecological restrictions and mitigation measures
Mataahu Stream WR16	PMA and Terrestrial Area of Significant Conservation	125-126 km	This highly significant 376 ha area is predominantly secondary scrub and forest where kānuka is dominant. Also consists of an advanced regeneration of forest species such as rewarewa, tree ferns, and wildling pines.	Cuts through western end for approximately 380 m. Up to 3000 m^2 vegetation clearance required in protected area.	Low
Port Awanui WR6	PMA and Terrestrial Area of Significant Conservation	16-17 km Port Awanui Te Wharau Beach Track	This 16 ha highly significant area is separated into 3 units. It consists of small remnants of pōhutukawa treeland. Other species include *Pinus radiata*, ngaio (*Myoporum laetum*), cabbage tree (*Cordyline australis*), mānuka, kānuka, tauhinu (*Ozothamnus leptophyllus*), whararikī (*Phormium colensoi*), and taupata (*Coprosma repens*).	Cuts through centre of small protected area for approximately 100 m. Passes near to two other units (no track construction proposed within them as ara follows beach). It is considered that greater restrictions on track width within the protected area are possible. Up to 930 m^2 vegetation clearance required in protected area.	Low – moderate depending on the amount and nature of vegetation clearance required.
Tutara WR5 Wharau A1 & A1B Ext Kawaneta	PMA Ngā Whenua Rāhui	163-164 km	This 181 ha area contains a mixture of primary and secondary forest. Primary forest remnants dominated by tawa, pūriri, rimu, and kohekohe. Both kānuka and mānuka occur	Track passes through 190m of the PMA. Construction of stairs will be required here given the terrain. Up to 750 m^2 vegetation clearance required. Unable to be avoided due to insufficient	Low-moderate depending on amount of vegetation clearance required

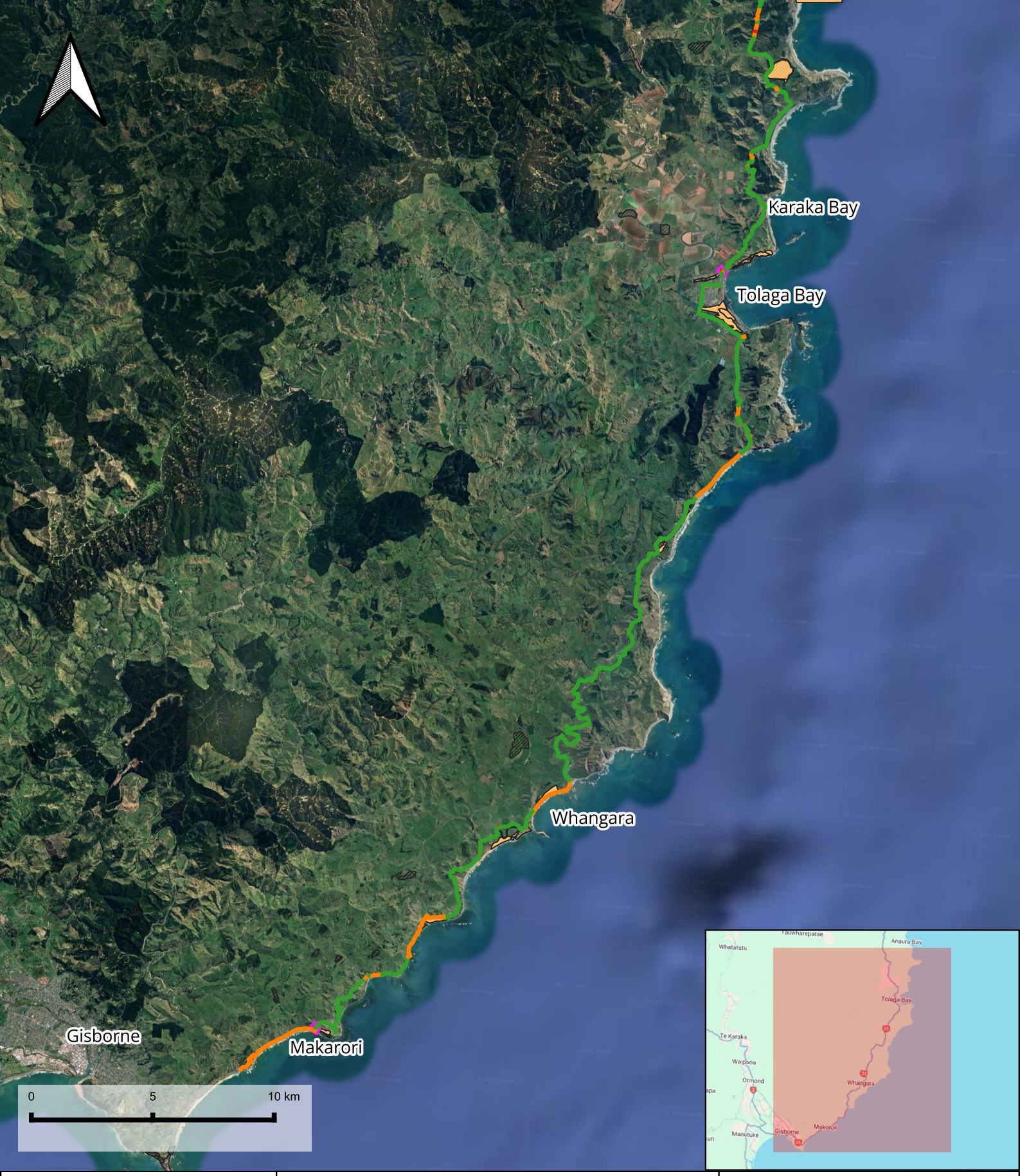
Name	Classification	Location (km)	Environment type	Nature of ara and construction (based on CMP's design tracker July 2025)	Degree of potential impact associated with construction without proposed ecological restrictions and mitigation measures
			within the secondary forest	room / safe passage in the road corridor.	
Taumataomiro PR26 Te Kautuku Station Kawaneta	PMA Ngā Whenua Rāhui	180-181 km	This 140 ha area is very representative of the original vegetation cover (hard beech, black beech, tawa and tawa-pūriri) of the East cape Land System	Passes along existing road/track so limited earthworks or vegetation clearance	Negligible
Haha PR11 Haha Trust Kawaneta	PMA Ngā Whenua Rāhui	183 km	This 13 ha area is of high significance as it provides the largest stand of dense kahikatea forest remaining in the Pukeamaru Ecological District.	Passes along existing road/track so no need for earthworks or vegetation clearance	Negligible
Haha Trust Ext Kawaneta	Ngā Whenua Rāhui	185 – 188 km	No information available	Passes along existing road/track so no need for earthworks or vegetation clearance	Negligible
Hautai PR19	PMA and Terrestrial Area of Significant Conservation	192-194 km	The protected area is an area of 225 ha. *Austrofestuca littoralis* is scattered along the base of the grassland covered foredune. The area also contains *Mazus pumilio* throughout pasture turf, sandfield, and kānuka forest with an understorey of ongaonga (*Urtica ferox*). A rare fern (*Thelypteris confluens*) also occurs in this area (Graeme	Follows existing tracks and pasture. Limited earthworks or vegetation clearance required based on the Tracker.	Low

Name	Classification	Location (km)	Environment type	Nature of ara and construction (based on CMP's design tracker July 2025)	Degree of potential impact associated with construction without proposed ecological restrictions and mitigation measures
			Atkins, pers. com., 24/03/2025)		
Kakanui (PR2)	PMA		This highly significant area covers 1733.85 ha and is the most extensive marine terrace system in the Pukeamaru Ecological District. Contains two unique vegetation types to the District - a monodominant stand of Pūriri forest and a hard beech forest.	Ara comes close to protected area in places. Ara follows existing road / path. No to moderate earthworks required, limited vegetation removal.	Low
Te Whare Wetlands and Te Araroa (PR6, G17)	PMA Terrestrial Area of Significant Conservation Scheduled water body	211-214 km	Within this 210 ha area – mānuka scrub, flaxland, raupō reedlands and Kahikatea tree-sedgeland contribute to the areas high significance. Also rare coastal herbs.	Follows existing road. Moderate levels of earthworks would be required and wetland habitat potentially affected if ara was to be formed alongside road.	Low assuming no wetland habitat disturbed.
Te Koau (PR1)	PMA Terrestrial Area of Significant Conservation	215-217 km	Provides the only continuous latitudinal sequence from coastal and lowland to lower-montane and upper-montane vegetation types in the District. Best representative examples of Tawa-pūriri and pūriri-pōhutukawa-tawa forests in the District. This 1250 ha area is of high significance.	Moderate to extensive levels of earthworks and vegetation clearance potentially required due to formation of new track in steep terrain. Existing road not suitable to be used for safety concerns. Vegetation clearance within protected area up to 9300 m^2.	Moderate

Name	Classification	Location (km)	Environment type	Nature of ara and construction (based on CMP's design tracker July 2025)	Degree of potential impact associated with construction without proposed ecological restrictions and mitigation measures
Hicks Bay Dunes (PR10)	PMA Terrestrial Area of Significant Conservation	218-220 km	This highly significant 125 ha area contains a high diversity of representative vegetation including the largest colonies of pīngao (*Ficinia spiralis*) (rare) in the region, amongst grass-sandland and edge-sandfield.	Follows existing road / track close to protected area, no vegetation clearance in protected area required.	Low
Oxbow (PR30)	PMA	228 km	An oxbow lake surrounded by alluvial forests of young kahikatea and tawa.	Limited to moderate levels of earthworks and vegetation clearance (up to 700 m^2) potentially required	Low
Mangatiti Stream WR120	PMA	10-12 km Hikurangi Loop	A 464 ha area of high significance containing primary forest dominated by tawa, tarata, māhoe (*Melicytus ramiflorus*), rewarewa, pigeonwood (*Hedycarya arborea*), heketara (*Olearia rani*), and black beech. Kānuka and mānuka dominate secondary forest.	Moderate to extensive levels of earthworks and up to 1400 m^2 loss of vegetation in protected area indicated in tracker. This can be minimised within the protected area to a 1 m width. Track should be formed here on southern side of road if possible to avoid vegetation loss (Graeme Atkins, pers. com., 24/03/2025). Site visit found that there is room on the road berm to accommodate the	Low due to small scale of vegetation clearance proposed along existing road on edge of protected area and large size of protected area

Name	Classification	Location (km)	Environment type	Nature of ara and construction (based on CMP's design tracker July 2025)	Degree of potential impact associated with construction without proposed ecological restrictions and mitigation measures
				track and clearance of vegetation other than grass is unlikely.	
Hikurangi (WR125)	PMA	29 & 32 km Hikurangi Loop	This is a 1128 ha area is separated into two units, both units are of high significance. Tawa-dominant forest at low altitudes. At mid-altitudes rimu/tawa/red beech dominate Beech forest dominates at treeline. Alpine herbfield and fellfield congregate around the summit.	No vegetation clearance proposed within the protected area, track follows existing tracks.	Negligible - Low
Aorangi (WR 122)	PMA QEII Open Space Covenant	33-35 km Hikurangi Loop	A 384 ha area separated into two units. Both units contain tawa dominant forest.	Track passes through or adjacent to protected area for approximately 1500 m. Extensive earthworks potentially required here due to steepness of terrain. Up to 1,500 m^2 vegetation clearance proposed within protected area.	Low - moderate

Appendix B Maps showing Ecology Traffic Lights and Ecologically Sensitive Areas



Results of Ecological Assessment - Map 1

Te Ara Tipuna

Te Ara Tipuna Charitable Trust

PROJECT NO.	10196
DRAWN BY:	A.T.
DATE:	31 July 2025
SCALE	**1:200,000** @ A4

Legend

- QEII Covenants
- Nga Whenua Rahui Protected Areas
- TRMP areas of ecological significance

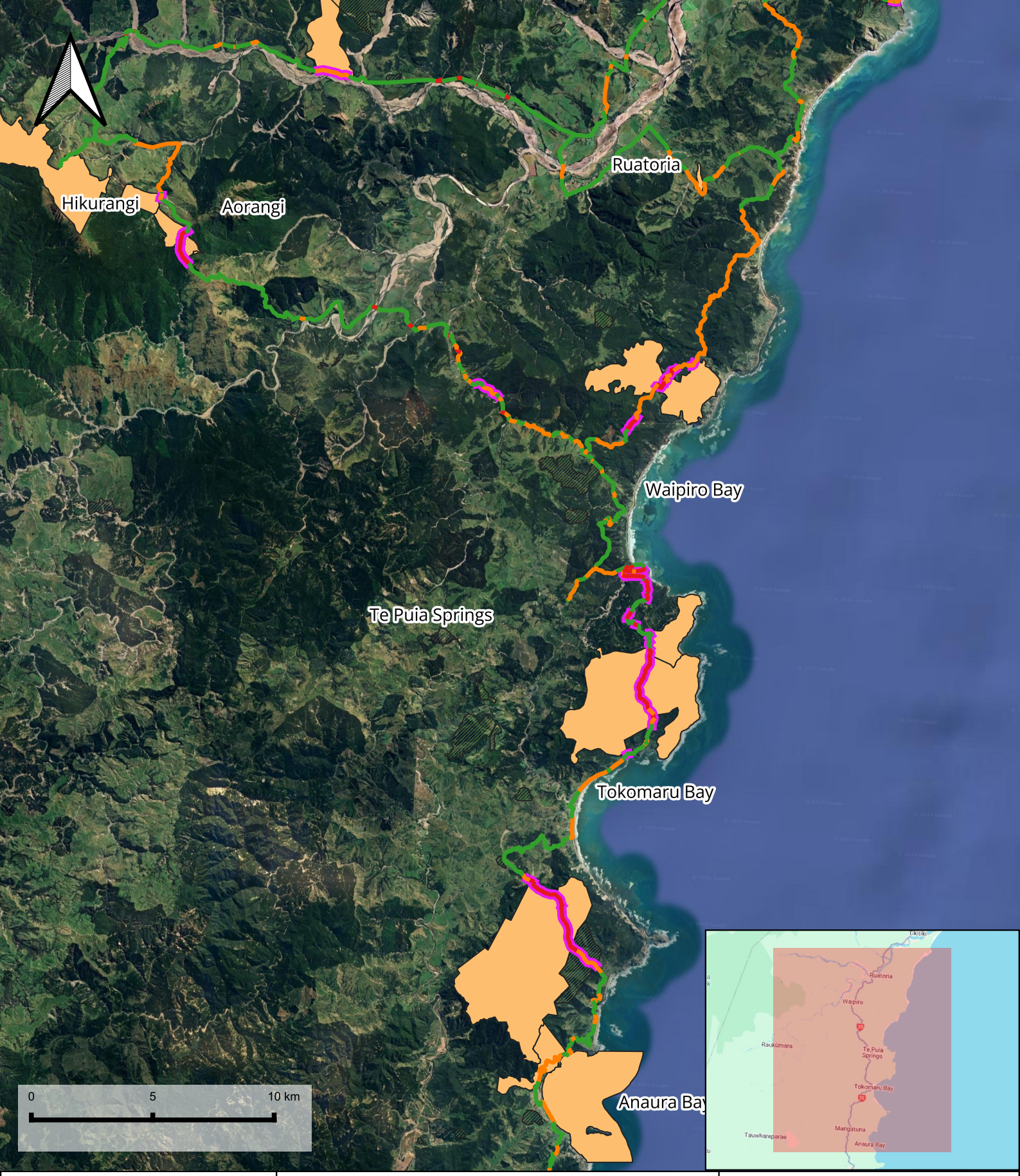
Ecology traffic lights for Te Ara Tipuna

- Green
- Orange
- Red
- Ecologically sensitive areas potentially affected by track

VIRIDIS Environmental Consultants

SOURCES

Aerial source: Google Satellite



Results of Ecological Assessment - Map 2

Te Ara Tipuna

Te Ara Tipuna Charitable Trust

PROJECT NO.	10196
DRAWN BY:	A.T.
DATE:	31 July 2025

SCALE **1:200,000** **@ A4**

Legend

- QEII Covenants
- Nga Whenua Rahui Protected Areas
- TRMP areas of ecological significance

Ecology traffic lights for Te Ara Tipuna

- Green
- Orange
- Red
- Ecologically sensitive areas potentially affected by track

VIRIDIS Environmental Consultants

SOURCES

Aerial source: Google Satellite

Results of Ecological Assessment - Map 3

Te Ara Tipuna

Te Ara Tipuna Charitable Trust

PROJECT NO.	10196
DRAWN BY:	A.T.
DATE:	31 July 2025

SCALE **1:200,000** **@ A4**

Legend

- Nga Whenua Rahui Protected Areas
- TRMP areas of ecological significance

Ecology traffic lights for Te Ara Tipuna

- Green
- Orange
- Red
- Ecologically sensitive areas potentially affected by track

VIRIDIS Environmental Consultants

SOURCES

Aerial source: Google Satellite

Appendix C Draft Ecological Survey and Management Plan Protocol

VIRIDIS
Environmental Consultants

Te Ara Tipuna

Draft Ecological Survey and Management Plan Protocol

Prepared for: Te Ara Tipuna Charitable Trust

DOCUMENT CONTROL AND REVISION HISTORY

Document title	Te Ara Tipuna
	Draft Ecological Survey and Management Plan Protocol
Prepared for	Te Ara Tipuna Charitable Trust
Version	Draft F
Date	15 July 2025
Document number	10196-002-F

Version	Issue date	Document number
Draft F	15 July 2025	10196-002-F

Author(s)	
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Reference: Viridis 2025. Te Ara Tipuna Draft Ecological Survey and Management Plan Protocol – Draft C. A report prepared for Te Ara Tipuna Charitable Trust by Viridis Limited. July 2025.

Cover photo: Te Araroa and ranges towards East Cape, photo by James Shook 2004, CC BY 2.5, https://en.wikipedia.org/w/index.php?curid=2938587.

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1 INTRODUCTION

Te Ara Tipuna Charitable Trust engaged Viridis Limited (Viridis) to prepare a draft Ecological Survey and Management Plan Protocol (ESMPP) for the proposed Te Ara Tipuna trailway (also referred to below as the "Project" or Ara). Te Ara Tipuna will involve establishing and maintaining an approximately 345 km trail for pedestrians around the coast of Te Tairāwhiti, or the East Cape, Potikirua ki Te Toka a Taiau (between Gisborne and Potaka), with an inland loop to Hikurangi Maunga. The location of the proposed Te Ara Tipuna is shown in Figure 1.

The Ara corridor has been designed to align, where possible, with existing recreation tracks, beaches, farm tracks and unformed legal (paper) roads. In other areas it will be located alongside SH35 and formed local roads. The proposed route crosses public land, whenua Māori and private land. Much of the proposed Ara will be based on 'wayfinding', meaning there is not a formed track or works necessary to establish the Ara and walkers find their way between ara markers. In other locations, depending on local conditions and where there is a functional need, the Ara construction will involve the use of gravel, boardwalks and stairs. The Tokomaru to Ruatoria section of the Ara has been prioritised for an all-weather surface due to its heightened vulnerability during severe weather events. Therefore, gravel will be used more extensively along this section. There will also be establishment of toilets throughout the Ara route to provide amenities for users.

Due to the extensive length of the ara and the multitude of areas and landscapes it covers, the initial design prepared for the consent application was at a high level. More detailed design is to be undertaken on a staged basis.

The Ara is located within Gisborne District. Resource consent for the proposed Ara is required from the Gisborne District Council under the Tairāwhiti Resource Management Plan 2023 (TRMP). The requirements of national environmental standards (e.g. the National Environmental Standard for Freshwater 2020 (NES-F) and the National Policy Statement for Indigenous Biodiversity 2023 (NPS-IB)) and legislation (such as the Wildlife Act 1953 (Wildlife Act)) will also apply to development activities.

Resource consent has been applied for under the relevant planning documents. An Ecological Impact Assessment (EcIA) was originally undertaken by TEC and Atkins (2023). Since submission of the resource consent application, a second EcIA report has been prepared by Viridis (Viridis, 2025), which reflects modification to the nature of the proposed Ara, provides a detailed desktop assessment of the ecological values and effects and proposes a framework for minimising and mitigating the ecological effects of the Ara to ensure the overall ecological effects of the project are low and the outcomes specified in the EcIA are achieved.

The intention of this draft ESMPP is to:

- Set out a general methodology for pre-construction confirmatory ecological surveys; and
- Inform the preparation of stage specific Ecological Management Plans (EMPs), including templates for fauna and habitat management plans and guidance on how to minimise and mitigate ecological effects to ensure the objectives and outcomes in the EcIA are achieved.

This plan has been prepared using a desktop assessment and a review of background information available on the proposal and region and builds on the previous EcIAs (TEC & Atkins (2023) and Viridis (2025)).

Figure 1. Route of Te Ara Tipuna as indicated by red line (map source: LINZ, NZ Topo250)

2 ECOLOGICAL EFFECTS MANAGEMENT FRAMEWORK

The ecological context and values of the areas the Ara traverses and the potential ecological effects associated with the Ara are described in the EcIA (Viridis, 2025). The EcIA also recommends an effects management framework for the Ara. In summary, the effects management framework outlined in the EcIA includes:

- An ecological traffic light system (Table 1), which highlights areas where ecological surveys are necessary during the detailed design phase to confirm ecological values;
- Stage specific EMPs that will be developed to outline the mitigation measures required to ensure an overall low level of ecological effects, in light of the confirmed ecological values in those areas;
- Recommended mitigation measures to be implemented to ensure an overall low level of ecological effects; and
- Restrictions on vegetation clearance through indigenous vegetation and identified Ecologically Sensitive Areas.

Table 1. Summary of the ecology traffic light categories.

Category (% of the ara)	Land cover types included within category[1]	Approach recommended during detailed design
Red (8%)	• Protected Areas of Ecological Significance with no existing track or road • Indigenous forest and broadleaved indigenous hardwoods where there are no existing tracks • Sand dunes where a new crossing may need to be formed • Large river crossings (bed width > 20 m) with no existing bridge • The ara crosses a potential wetland identified by Morphum (2024)	A pre-construction survey by an ecologist is required to confirm the ecological values in an area, and appropriate mitigation to be implemented to ensure an overall low level of effects in accordance with the EcIA and draft ESMPP.
Orange (27%)	• Areas protected for ecological values with an existing track or road • Indigenous forest and broadleaved indigenous hardwoods where there are existing tracks or roads • Kānuka and / or mānuka dominated forest where there is no existing track or road • Stream and river crossings (< 20m width) using new bridges • Stream and river crossings using wayfinding • Close to a water body scheduled in the TRMP	A pre-construction survey by an ecologist may be required to confirm the ecological values in an area, and appropriate mitigate to be implemented to ensure an overall low level of effects, depending on the extent of works and vegetation clearance proposed through the detailed design.

[1] Note that the LCDB provides broad land cover categories using satellite data. In some cases where aerial imagery has indicated a different land cover type along the proposed track, these categories have been amended

	• Where there is an existing road or path, but aerials or databases indicate there is potentially adjacent wetland that may be affected by constructing path along road edge • Where the ara follows along a beach • Shrubland	
Green (65%)	• Built up areas (settlements) • Grassland and cropland • Urban parkland / open space • Kānuka and / or mānuka dominated forest where there is an existing track or road • Exotic forest and deciduous hardwood • River crossings using existing bridges	Ecological effects of Ara construction assessed as low and an on-site ecological survey is not necessary during the detailed design phase, unless the confirmatory desktop assessment during detailed design identifies potential ecological values or effects that need to be confirmed on site (e.g. trees >15 cm dbh to be removed will need to be assessed for bat habitat features, bird nesting or bat surveys or lizard relocation may be required prior to clearance).

The purpose of the EMPs for each trail stage will be to:

- Outline the ecological survey methodology undertaken for that stage;
- Confirm the ecological values present within that ara stage;
- Explain how detailed design has taken into account and avoided, remedied or minimised the potential magnitude and level of ecological effects on the ecological values for that stage;
- Detail any mitigation measures required to ensure an overall 'Low' level of ecological effect for that stage utilising the EIANZ assessment methodology ; and
- Detail ongoing management measures required to address operational effects of the Project (for inclusion in the Ara's Operational Maintenance and Management Plan) and/or ensure the ongoing effectiveness of mitigation measures.

3 PRE-CONSTRUCTION ECOLOGICAL SURVEY

This section sets out a general methodology for pre-construction ecological surveys for each detailed design stage to be undertaken to confirm the ecological values present in an area and confirm the measures required to minimise and mitigate the ecological effects to achieve an overall low level of effect. These mitigation measures will feed into the preparation of the EMPs for each stage.

Initially, a desktop review of the proposed stage and route should be undertaken, including a review of the EcIA. Site visits to the relevant stage of the proposed route will then be undertaken, focusing on:

- the identified Ecologically Sensitive Areas in Appendix B of the EcIA;
- areas identified as red on the ecological traffic light system; and
- any areas of orange or green where the desktop assessment indicates a site visit is necessary to confirm the ecological values in that area.

The ecological values of the ecological features across the entirety of the Ara have already been conservatively assessed in the EcIA (Viridis, 2025). Where the pre-construction review of the desktop ecological survey in the EcIA indicates that the values and level of ecological effects on an area require an on-site survey to confirm the assessment in the EcIA, the ranking framework provided by the Environment Institute of Australia and New Zealand (EIANZ) "Ecological Impact Assessment guidelines (EcIAG) for use in New Zealand: terrestrial and freshwater ecosystems" (Roper-Lindsay et. al. 2018)[2] will be used, as outlined in Section 2.3 of Viridis (2025).

The methodology for undertaking pre-construction confirmatory ecological surveys at the detailed design stage is outlined in Table 2.

Table 2. Methodology for undertaking confirmatory pre-construction ecological surveys at the detailed design stage (note that further detail on assessing potential effects is provided in Chapters 4 – 10).

Step	Checklist	Decision
1. Review of desktop assessment to identify potential ecological features affected		
Review the EcIA (Viridis 2025), including the ecological traffic light maps and identified Ecologically Sensitive Areas layers alongside the proposed construction plans, erosion and sediment control plans, aerial imagery and GIS data to confirm where site visits and surveys are required to confirm the ecological values.	• Review the relevant sections of the EcIA, the ecology traffic light layer and the identified Ecologically Sensitive Areas (Viridis, 2025); • Review the construction plans for the stage; • Review the Provisional Regional Wetland Assessment 2022 (Morphum, 2024), which shows where potential wetlands are located; • Check whether any culverts or stream bed disturbance is proposed in the plans; • Consider proposed micro-siting of toilet locations in relation to freshwater features so as to ensure discharge risks are minimised ;	Site visits and surveys will be required for: • any area identified as "red" in the EcIA traffic light system • identified Ecologically Sensitive Areas • where the ara may pass within 10 m of a potential wetland • where any works are proposed within a stream or river

[2] If an updated version of the EcIAG is published, the updated version should take precedence.

Step	Checklist	Decision
	• Check for areas of earthworks within 100 m of streams, waterways or wetlands; • Check whether potential habitat for indigenous fauna such as bats, lizards and birds will be affected (see Sections 5 – 7 below for more details on fauna habitat assessment).	Site visits may also be required for areas identified as "orange" in the EcIA traffic light system, depending on the level of vegetation clearance and works proposed. In most cases site visits for areas identified as "green" will not be required as the overall level of effect is expected to be low, however it may be necessary where the desktop assessment identifies potential ecological values or effects that need to be confirmed on site (e.g. potential fauna habitat is present or fauna surveys or relocation are required prior to works). Where trees > 15 cm dbh are proposed to be removed, and where assessment of available imagery is insufficient to determine whether they provide potential bat habitat, then a site visit will be required within 6 months of clearance to determine whether potential bat habitat is present. Where earthworks are proposed within 100 m of freshwater or marine features, review erosion and sediment control plans.
Review aerial imagery and plans to identify whether construction or works are required within or close to dune, beach, foreshore or coastal wetland areas	• Are any works or new accessways proposed across sand dunes? • Are works proposed within the Coastal Marine Area? • Does the ara pass within 10 m of a potential coastal wetland? • Are works proposed within the riparian margins of estuary or river mouths where there may be saltwater influence (i.e. could īnanga spawning habitat be affected)?	If yes, undertake site visit to assess potentially affected features.

Step	Checklist	Decision
2. Site assessment of identified potential ecological features, ecological values and level of effect[3]		
Undertake site assessment, ideally in conjunction with engineering staff so that the degree of works is understood and so that approaches to minimise ecological effects can be discussed on site	• Confirm the ecological values, the magnitude of effects and the overall level of effect in line with the EcIAG methodology and conclusion as set out in Chapters 4 to 10. • Identify and mark the presence of rare plants within the works footprint that are required to be avoided. • Identify whether any trees > 15 cm dbh are to be removed and assess for bat habitat features. • For any proposed instream works, confirm whether any potential Hochstetter's frog habitat is present. • Assess whether any potential bird, bat or lizard habitat is potentially affected in line with Chapters 4 – 7 . • Document the assessment undertaken.	
3. Work alongside ara engineers during detailed design to ensure ara design avoids, remedies or minimises the ecological effects of the ara.		
4. Prepare ecological management plan(s) in accordance with Chapters 4 – 7 below to outline the results of the pre-construction ecological survey, confirm the ecological values, steps taken in ara design to avoid, remedy or minimise effects, detail the proposed mitigation measures to ensure that overall effects as assessed in accordance with EIANZ (and as set out in the EcIA) will be 'Low'. These EMPs must be reviewed and certified by Council prior to ara construction works.		

[3] In cases where recent high quality drone footage or other imagery of the proposed route is available, this may provide enough information to assess ecological features without need for an ecology site visit to some areas.

4 VEGETATION MANAGEMENT PLAN

4.1 Introduction

The purpose of this Vegetation Management Plan (VMP) is to outline the proposed mitigation measures to be implemented for indigenous vegetation clearance during construction of Te Ara Tipuna and guide the preparation of planting plans to ensure a no more than low level of effect. The broad vegetation types that may be present along the route, the potential effects of route construction and the effects management framework for vegetation removal are described in Viridis (2025).

Identified fauna that may be affected by vegetation removal such as herpetofauna, bats and birds are addressed in the specific fauna management plans.

4.2 Effects Management

4.2.1 Avoidance and minimisation

During the initial design stage, efforts were made to reduce the amount of vegetation clearance through route selection. The degree of vegetation clearance is also proposed to be minimised at the detailed design stage and during construction through:

- Utilising wayfaring as much as possible;
- Restricting clearance of indigenous trees to those ≤ 30 dbh and where-ever possible avoiding clearance of indigenous trees > 15 cm dbh (outside of the road corridor);
- Providing flexibility for movement of the proposed ara to avoid larger trees, rare plants or other vegetation of high value within the consented corridor;
- Restricting the width of indigenous vegetation clearance to 1.5 m; and
- Restricting the width of vegetation clearance through identified Ecologically Sensitive Areas to 1 m.

The only exceptions to the width clearance restrictions in indigenous vegetation and Ecologically Sensitive Areas will be in the following scenarios:

- where benching is required to provide for a safe and stable ara (i.e. due to the ara location having steep terrain) – where vegetation clearance will potentially be up to 7 m wide; or
- where installation of infrastructure such as stairs and toilets is proposed. The maximum width of disturbance to vegetation in other areas will be (from CPS 2025d):
    - Bridge approach: 3.5 m
    - Steps: 3.0 m
    - Toilet: 4.0 m
    - Low bench: 7.0 m
    - Swing bridge or new timber bridge: 8.0 m
- along the gravel sections (where the vegetation clearance restriction will be 1.5m).

4.2.2 Remediation and mitigation

Where avoidance of vegetation loss is not possible, remediation and/or mitigation are required to ensure that the overall level of ecological effect is no more than low. Suitable mitigation measures will be confirmed on a site-by-site basis but could include:

- Replanting of any rare plant species identified in Schedule G7B of the Tairāwhiti Resource Management Plan removed, and unable to be successfully relocated, at a ratio of 3:1 close to the area of removal, from eco-sourced stock from the same ecological district;
- Reinstatement planting of vegetation removed where vegetation removal greater than the ara width is required (e.g. for benching), to mitigate the effects of vegetation loss and provide erosion control;
- Consideration of clearance and felling methodologies to minimise the clearance footprint, damage to vegetation immediately adjacent to the cleared area and impacts on fauna such as lizards. For example, in Ecologically Sensitive Areas only hand tools are to be used during vegetation clearance;
- Leaving large fallen and decaying logs and a proportion of cleared, vegetation in-situ (except pest plants identified in the Gisborne District Council's Regional Pest Management Plan 2027), where outside of the road corridor, flood plains and riparian margins, to provide habitat for invertebrates and other fauna and minimise effects on herpetofauna – this is a requirement in Ecologically Sensitive Areas and recommended in other areas of indigenous vegetation;
- Seeking and implementing arboricultural advice where earthworks are proposed close to large indigenous trees on how to minimise tree damage and accommodate the works.

4.2.3 Ecological Benefits

Where indigenous vegetation is removed within identified Ecologically Sensitive Areas and is unable to be reinstated following construction, planting of an area equivalent to 2:1 (replanting area : vegetation removal area) with eco-sourced species suitable for the environment and ecological district will be undertaken. This replanting will occur as close as possible to the area of vegetation removed, and within the same ecological district. This will result in areas of land currently in exotic dominated vegetation such as pasture being planted with indigenous vegetation and an overall increase in the extent of indigenous vegetation cover in the East Cape in the vicinity of the Ara and an overall ecological benefit.

4.3 Planting Plans

Any planting proposed (either for reinstatement planting, relocation or replacement of rare plants, or for ecological benefits) will need to be detailed in a planting plan. Planting plans should include the following minimum details:

- The area proposed to be planted, including ownership and rights to plant.
- The purpose of the planting (e.g. habitat restoration, buffer planting).
- Location and extent of planting illustrated on a plan.
- Site preparation required – e.g. fencing from stock, weed and animal pest control.
- Appropriate species to the ecological region and habitat.
- Use of eco-sourced plants where possible.

- Density of planting (minimum overall density should be 1.4 metre centres).
- Size of plants.
- Where any Myrtaceae species are to be planted (e.g. mānuka, kānuka, pōhutukawa), how spread of myrtle rust (*Austropuccinia psidii*) will be avoided.
- Time of planting – planting should be undertaken in the first planting season (April – September) following vegetation removal, late autumn or winter is usually best, although in some areas this may increase exposure to frost.
- Maintenance of planted areas:
    - must occur until 80% canopy closure has occurred and a minimum survival rate of the plants (being 90% of the original density through the entire planting area(s)) has been achieved.
    - the maintenance period should be a minimum of five years following planting
    - includes fertiliser, releasing plants, weed and pest control, monitoring, replacement planting.
- Any recommended long term protection measures e.g. fencing or covenant.

5 LIZARD MANAGEMENT PLAN

5.1 Introduction

The purpose of this Lizard Management Plan (LMP) is to outline the mitigation methods to be implemented to minimise and mitigate the ecological effects of construction of Te Ara Tipuna on herpetofauna to ensure a no more than low level of effect. This outcome will be achieved through:

- Minimising adverse effects on lizards associated with vegetation or site clearance activities;
- Using current best practice methodologies to capture indigenous lizards from vegetation in the project footprint immediately prior to and during vegetation clearance; and
- Relocating captured individuals to suitable habitats (avoid and minimise mortality of wildlife protected by the Wildlife Act).

This LMP also provides a template for lizard management for preparation of the stage specific EMPs.

5.2 Statutory Context

All indigenous lizards are legally protected under the Wildlife Act, and vegetation and landscape features that provide significant habitat for native lizards are protected by the Resource Management Act 1991 (RMA) (Section 6(c)). This includes ostensibly low value exotic vegetation that can support populations of native lizards. Statutory obligations require management of resident lizard populations if they are threatened by a disturbance.

A Wildlife Act Authority (WAA) is required to capture, handle, and relocate indigenous lizards.

5.3 Species Potentially Present

There are currently 135 endemic herpetofauna taxa recognised in New Zealand (Hitchmough *et al.*, 2021), 85.9% of which are considered ”Threatened” or ”At-Risk”. A review of the Department of Conservation’s (DoC) Herpetofauna database (accessed 6/11/2024), iNaturalist records, Purdie (2022) and the New Zealand Herpetofauna Society website (undated) was undertaken to identify the terrestrial herpetofauna species that may potentially be found along Te Ara Tipuna. This review found there may be ten indigenous skink and gecko species present, seven of which have an ‘At Risk – Declining’ conservation status. The species and their habitat types that may be present along the route, the potential effects of route construction and the effects management framework for vegetation removal are described in Viridis (2025).

The introduced plague skink (*Lampropholis delicata*) is also potentially present along the proposed Ara but is not protected by legislation, and therefore not subject to this LMP.

5.4 Confirmation of Lizard Habitat Values

The majority of the trial will go through managed pasture and this habitat type is considered of negligible or low ecological value to herpetofauna. Habitat types where lizard fauna may be found along the route of Te Ara Tipuna include:

- Forested areas including mature forest, regenerating forest and scrubland;
- Wetland vegetation;
- Dense low lying vegetation and ground cover;

- Rank grass and weedy areas;
- In rock piles and under rocks, logs and other vegetation; and
- Coastal areas, including dunelands, sandy or rocky coastlines, pebble/boulder beaches, driftwood.

A review of available imagery (aerials plus drone footage and photos where available), topography, and works plans for each stage should be undertaken by an ecologist to confirm the outcomes of the EcIA assessment and identify whether potential herpetofauna habitat may be disturbed by the proposed work. Site visits may be required to confirm the ecological values, magnitude of potential effect and mitigation measures required. Where the overall level of effect is confirmed using the EcIAG methodology to be moderate or higher prior to mitigation, measures need to be introduced to avoid effects through design (e.g. re-routing within the consented corridor), or appropriate mitigation needs to be provided and incorporated into the stage specific EMP to ensure an overall low level of effects.

5.5 Lizard Management

5.5.1 Habitat avoidance

During the initial design stage, the amount of vegetation clearance and habitat modification required was reduced through route selection and minimising the footprint of the Ara. The detailed design for each section of ara will be staged, and this provides another opportunity to identify potential lizard habitat and avoid habitat clearance as much as possible.

Any areas to be avoided are to be clearly delineated (with flagging tape or fencing) to reduce the chance of accidental clearance or works outside of the designated footprint.

5.5.2 Salvage

Where it is not possible to avoid clearance of potential lizard habitat, salvage and lizard relocation will be undertaken immediately prior to and during work. Salvage will be conducted under the supervision of a suitably qualified, experienced and permitted ecologist or herpetologist. Alternative methods can be used to those detailed below (e.g. use of Artificial Cover Objects, ACOs). Any use of alternative methods will need to be detailed in the finalised EMP for each stage.

Timing

Work in potential lizard habitats should occur between September and April (inclusive). Lizard salvage activities are confined to warmer months when lizards are the most active and likely to be detected if present.

All lizard management activities are required to be undertaken during fine, calm, and dry weather.

Trapping, day searches and spotlighting are to be undertaken in the week leading up to vegetation removal, and destructive searches immediately prior to and during vegetation clearance.

Trapping

Baited pitfall traps and "Gee's minnow" funnel traps will be installed in an approximate 10 m x 10 m grid[4] across all areas of potential habitat[5]:

- Pitfall traps will be used where terrestrial species like skinks are being targeted. They will be covered with Onduline ACOs installed for one week before opening, to settle into the environment.
- Gee's minnow traps will be installed in areas where substrate/terrain do not allow for pitfall trapping, or where geckos are potentially present (geckos can escape from pitfall traps and funnel traps can be installed in trees and scrub to catch arboreal species).
- Each trap will be baited with fruit and will contain a wetted sponge to reduce risk of desiccation.
- Traps are to be placed in shaded areas away from potential inundation with water, and checked daily, to limit adverse effects on lizards (stress, desiccation, drowning etc.).
- Funnel traps set on the ground are generally set a little into the substrate. For example, on the forest floor the leaf litter may be cleared away to provide a small indent and then pushed up around the trap. For traps set within rocky areas, the trap opening is generally set so that it is below some rocks. Funnel traps may also be set high-up on vegetation to capture arboreal species, and in this case need to be secured firmly so they do not fall or get blown out of the bush/tree.

Trapping will discontinue after:

a) a minimum of five days of trapping overall; and

b) a minimum of three consecutive, fine-weather days with no captures or observations.

Active searches

During trap checks, manual diurnal (day) searches will be undertaken for lizards across all potential lizard habitat types within the works footprint. Diurnal searching is a proven technique for detecting both diurnal and lizards in New Zealand (Whitaker 1994; Lettink and Hare, 2016).

Diurnal searches would involve systematically lifting debris (e.g., logs, rocks, and organic and inorganic material), searching through vegetation foliage, thickets, and log piles by hand or with the assistance of tools (e.g., rakes; Bell, 2017), and searching beneath flaking tree bark or within tree cavities to reveal lizards. Where possible, dense vegetation thickets or log piles would be dismantled in a piecemeal fashion down to ground level to ensure all potential retreat sites have been searched.

Where large immovable structures (e.g., logs) are identified in the footprint, but cannot be effectively searched, these would be marked (e.g., dazzled, painted) and re-inspected during the supervised vegetation clearance and machine-assisted search stage of the salvage operation.

[4] As the potential habitats present within and around the site are typically small and fragmented, a standard 10x10 m grid for pitfall/gee minnow trapping may not be feasible at all sites (e.g. some of the sites are smaller than 10x10 m, in which case only a single pitfall/gee minnow would be installed). So, to ensure sufficient salvage effort, a minimum of four pitfalls/gee minnows will be installed at each potential habitat.

[5] Note that alternative methods can be utilised (e.g. ACOs). Any use of alternative methods will need to be detailed in the finalised EMP for each stage.

Where arboreal geckos are potentially present, nocturnal (night) searches must also be undertaken on at least two nights.

Destructive habitat searches

After trapping is complete, destructive habitat searches will be carried out in conjunction with the vegetation clearance or works contractor[6]. Destructive searches will include the sensitive dismantling of any rock or debris piles, the overturning of any larger debris, and the hand searching of any vegetation. Where practicable, rocks and debris will be removed from the site following dismantling, to reduce the likelihood of recolonization prior to works. The project ecologist or herpetologist would work alongside vegetation clearance contractors and machine operators during the vegetation removal process to recover lizards from difficult to access locations.

At no stage should areas identified as potential lizard habitat be mulched *in situ* by lowering a mulch-head directly onto standing vegetation. Mulching standing vegetation is highly destructive and eliminates all opportunities to recover individuals or for the lizards to vacate the vegetation of their own accord before the vegetation is destroyed.

Lizard handling and containment

Native lizards would be captured and handled by the DoC-authorised project ecologist or herpetologist only. Lizards will be held individually in cloth bags in a secure, vented container or in temporary containment box(es), filled with vegetation matter and leaf litter and misted with water out of the sun. Lizards will be held temporarily for the period of the active searches or trap inspections and then transported to the release site as soon as possible.

Release site selection

All captured lizards are required to be released into suitable habitat, as defined by the following criteria:

1. **Habitat size and complexity** – ensure the relocation habitat is representative (equal quality) or of better quality, than the original capture site(s).
2. **Vicinity to original population** – limit the distance that lizards are relocated from their original capture site(s). Distances up to 1.5 km would meet this criterion.
3. **Habitat that has long-term security** from further development or modification, such as DoC or Council-managed reserves, or legal protection through covenanting or local plan rule provisions.
4. **Habitat that is enhanced**, using accepted techniques such as provision of extra refuges suitable for the species or long-term predator control.

Habitat enhancement of release site

Introducing new individuals into an already occupied environment could lead to competition and/ or resource availability issues. To mitigate these potential risks, management measures to enhance the relocation site, and its immediate surrounds, to increase the overall carrying capacity of the area are recommended where the number of relocated lizards is greater than ten.

[6] Where pre-construction trapping and searches have not found native lizards to be present, the project ecologist or herpetologist may decide that the area is unlikely to support lizard populations and that destructive searches during vegetation clearance are not necessary.

Enhancement measures could include revegetation planting, provision of supplementary refuges (e.g., logs), or long-term predator control.

5.6 Accidental discovery, injury or mortality

Should incidental finds of lizards occur during project construction outside of the proposed salvage programme, the project herpetologist should be notified as soon as possible. If the lizards are not at immediate risk, works in the area will halt until the herpetologist can arrive and salvage the lizard. If the lizard is at immediate risk of injury or death due to on-site activities, it will be salvaged by the construction team and placed in a container (with air holes, vegetation and food) until the herpetologist can arrive. Guidance will be provided to the construction team on this process by the herpetologist.

The following steps will be implemented if any injured or dead native lizards are found during the salvage operation:

- The project herpetologist would report any injured or dead lizard found during implementation of the LMP;
- Any lizard death of ”Threatened”, ”At Risk” species shall be sent to Massey University Wildlife post-mortem service for necropsy (the body would need to be chilled if it can be delivered within 48 hours, frozen if longer than 24 hours to deliver);
- Appropriate measures shall be undertaken to minimise further lizard deaths;
- Injured lizards found during salvage would be taken to a suitably qualified vet as soon as possible for assessment and treatment. Injured lizards would be kept in an appropriate portable enclosure (as described above) under the direction of the project herpetologist to ensure the animal is handled appropriately until the lizard(s) can be assessed and treated;
- Lizards assessed by the vet or alternative specialist as uninjured, or otherwise in suitable condition for release, would be transported to the relocation site in the portable enclosure and released; and
- Euthanasia of injured lizards shall only be undertaken under direction from DoC.

5.7 Reporting

A works-completion report should be prepared by the project ecologist following completion of vegetation removal / works for submission as per resource consent and WAA permit requirements and an ARDS report (Amphibian Reptile Distribution Scheme, DoC) completed for submission to DoC.

6 BAT MANAGEMENT PLAN

6.1 Introduction

The purpose of this bat / pekapeka management plan (BMP) is to outline the measures to be implemented during the detailed design phase to minimise and mitigate the ecological effects on native bats associated with the construction of Te Ara Tipuna. It specifies the management measures required to minimise and mitigate anticipated adverse effects to ensure overall effects will be low, which will be achieved through minimising clearance of potential bat roost trees and where such trees will be felled, using current best practice methodologies to confirm whether bats are present prior to felling.

This BMP also provides a template for bat management for preparation of the stage specific EMPs.

Two species of bats are known to occur on the East Cape – the long-tailed bat (*Chalinolobus tuberculatus*, Threatened – nationally critical) and the rarer central lesser short-tailed bat (*Mystacina tuberculata rhyacobia,* At-risk – declining). More details on the species and habitat types of indigenous bat species that may be present along the route, the potential effects of route construction and the effects management framework are described in Viridis (2025).

6.2 Statutory Context

New Zealand bats are absolutely protected species under the Wildlife Act. It is an offence to catch alive or kill, hunt, possess, molest, or disturb bats under the Act. Any projects where tree or vegetation removal overlaps with the occurrence of bats, there is a risk of killing or injuring any bats that may be present.

6.3 Potential Effects on Bats

Removal or modification of trees that provide bat habitat in the footprint of Te Ara Tipuna has the potential to cause mortality or injury during felling, habitat loss or disturbance.

The highest risk of injuring or killing bats or trapping them within their roosts is when they are heavily pregnant, when young are still dependent on the roost (late November – February) and when bats are more likely to be in torpor (May – September). During winter bats use torpor (a type of hibernation) more often than during other times of year, so if trees are cut down in winter, bats may be unable to rouse from torpor and to fly away in time to escape. Additionally, it is significantly harder, sometimes impossible, to detect bats roosting in trees during torpor. For these reasons, trees with potential bat roost features must not be cut down in winter. Bats also use torpor for short periods during summer, for example, if the weather gets cold, so the risk of killing or injuring bats that cannot escape falling trees exists at any time of the year.

6.4 Managing Effects on Bats

6.4.1 Assessment of trees for bat roost potential

Where trees greater than 15 cm Diameter at Breast Height (DBH) are proposed to be removed, a suitably qualified ecologist will inspect the trees within six months prior to vegetation clearance to determine whether they have potential bat habitat. The steps for assessment are outlined in Table 3 below. Note that bats can roost in native or exotic vegetation – therefore it should not be presumed that exotic species such as pine trees will not support bats. Roosts have been found in many exotic species including, but not limited to, pine (*Pinus* spp.), poplar (*Populus* spp.), oak (*Quercus* spp.), acacia (*Acacia* spp.), black locust (*Robinia pseudoacacia*), willow (*Salix* spp.) and eucalyptus (*Eucalyptus* spp.).

If, following inspection, it is determined that there is potential bat habitat within a tree, then where possible the route should be altered to avoid removal or disturbance of that tree. Where vegetation clearance or earthworks is proposed close to a tree that contains potential bat habitat, the tree should be clearly marked by flagging tape, spray paint or fencing to avoid inadvertent clearance. If the tree is required to be felled or modified, then further assessment of the habitat or monitoring with Automatic Bat Detectors (ABMs) between October - April is required (see Table 3 for details).

Table 3. Does the vegetation proposed to be removed have potential bat roost characteristics? (adapted from DoC, 2024)

Step	Decision
1. Is the tree ≥ 15 cm DBH?	If yes, further assessment is required (step 2) If no, the tree is unsuitable bat roost habitat.
2. On visual inspection, does the tree (dead or alive) have features that indicate roost potential? These features include: • Hollows • Cavities • Knot holes • Cracks • Flaking, peeling and decorticating bark • Epiphytes • Broken or dead branches or trunk • Cavities / hollows / shelter formed by double leaders. This may require climbing the tree if you can't see all of it from the ground.	If yes, go to step 3. If unsure, further assessment is required. Use an approved person at Competency Level 3.3. If no potential roost features are present, the tree is unlikely to be suitable bat roost habitat, but if upon felling you find a bat, follow Section 6.4.3.
3. Does the tree have to be removed entirely?	If yes, continue to Step 4 to find out whether bats are currently roosting in the tree. If no, consider leaving the tree in place, cutting off specific limbs only or relocating the tree. If any felling or partial felling or tree relocation takes place you must proceed to Step 4.
4. Are bats currently roosting in the tree? (follow a, b or c or a combination)[7]	
a) are potential features being used by roosting bats? *(an approved person at Competency Level 3.3 or a tree climber working with an approved person at this level is to inspect these features)*	If yes, the tree MUST NOT BE FELLED until bats have vacated it. If no, the tree can be removed on the day of the tree inspection (following step 5). If bats continue to use the roost, then the tree must not be cut down until the bats leave the roost. Re-consider

[7] Refer to DoC (2024) for more detailed methodologies for each of these steps.

Step	Decision
	whether this tree must be felled and seek advice from DoC. *Note: this assessment can only be undertaken October 1st to April 30th when the temperature is 8 °C or greater.*
b) Is bat activity recorded using an Automated Bat Monitoring unit (ABM) at any time during two consecutive, valid survey nights preceding tree felling? At least two nights are required as it is possible for bats to enter or leave a roost without echolocating, or to not leave the roost for a night (*an approved person at Competency Level 3.1 should undertake this assessment)*	If yes (bats are detected), survey must continue on subsequent nights until no bat activity is recorded for two consecutive nights (to indicate bats have left the area) prior to felling. OR roost features of each tree must be visually assessed via climbing as in 4 a). If bat activity is consistent in the area and 2 nights with zero bat passes cannot be obtained, Go to 4c or 4a. If no bats are detected for two consecutive nights, the vegetation can be removed on the day immediately following the survey nights using the method in 5. Note: this assessment can only be undertaken October 1st to April 30th and when conditions meet the requirements for standard ABM weather.
c) Are bats observed entering the vegetation? This involves watching vegetation to identify bats returning to or exiting roosts. It should only be used in combination with previous ABM monitoring (4b). At least two nights are required as it is possible for bats to enter or leave a roost without being detected, or to not leave the roost for a night. (*an approved person at Competency Level 3.2 should undertake this assessment)*	If yes (bats are seen at either watch), it is a confirmed roost. Removal of a roost should be avoided to minimise effects of vegetation removal on bats. Techniques used previously to ensure previously active roosts are no longer active have included the following: Watches must continue on subsequent nights until no bats are observed entering or exiting the roost for two consecutive nights (to indicate the roost is no longer active) prior to felling. If no bats are observed entering or exiting for two consecutive nights, the vegetation can be removed on the day immediately following the survey nights using the method in 5. Note: this assessment can only be undertaken October 1st and April 30th only AND when weather parameters are met.
Notes: Bat Competencies: 2.1 Bagging storage, handling, measuring, weighing, sexing, aging, temporary marking and releasing appropriately: For long-tailed bats: 50 individuals For short-tailed bats: 50 individuals 3. High risk activities – Roost felling: 3.1 Assessing roost tree use using Automatic Bat Monitors - Demonstrate correct timing, placement, and interpretation of data for 10+ times according to DOC's Tree Felling Protocols. 3.2 Undertake roost watches/emergence counts at 10+ occupied roosts where the entrance is visible. 3.3 In at least two different forest/habitat types, including the forest/habitat type where trees are going to be assessed: evaluate 10+ potential roost features in trees (e.g., cavities, peeling bark, epiphytes).	

6.4.2 Confirmed roost trees

If bats are confirmed within a tree via any of the methods in Step 4 above, it must not be felled and the following actions will be taken:

- The tree will be clearly marked, and the immediate area cordoned off with safety fencing and signage erected in a 10 m radius around the roost, alerting any person approaching the area that a bat roost is present and to stay clear.
- All relevant project staff will be briefed to ensure that the tree is not removed. The ecologist will determine whether all tree clearance works should be suspended or whether inspections and clearance can continue away from the roost.
- The project methodology will be reviewed to confirm whether removal or alteration of the tree can be avoided.
- If removal or alteration of the tree is required, further monitoring must continue using the methodologies in Step 4 of Table 4, until the ecologist can confirm that no bats are roosting within the tree.
- If the tree is a maternity roost tree removal works shall be scheduled to only occur within the period 1 March to 31 April inclusive.

6.4.3 Accidental discovery or mortality

If a bat is found during tree removal, the following procedures will be implemented:

- Felling of the tree must stop immediately if safe to do so, and DoC and an approved bat ecologist at Competency Level 2.1 must be consulted;
- If any bats are found on the ground or in the tree once felled, they should be placed in a cloth bag in a dark, quiet place at ambient (or slightly warmer) temperature and be taken to a veterinarian for assessment as soon as possible. A maximum of two bats should be kept in one bag. After delivering the bat to the vet, contact an approved bat ecologist at Competency Level 2.1 in consultation with the vet and DoC (0800 DOC HOT, 0800 362 468).
- If the bat is dead or has been euthanised by the veterinarian, it will be taken to the local DoC office as soon as practicable (required under the Wildlife Act).

Further details on these protocols can be found in DoC (2024).

6.4.4 Reporting requirements

A works-completion report would be prepared by the ecologist following completion of vegetation removal / works for submission as per resource consent requirements and bat records submitted to DoC for inclusion in the bat database.

7 AVIFAUNA (BIRDS) MANAGEMENT PLAN

7.1 Introduction

The purpose of this avifauna management plan (AMP) is to outline the methods to minimise and mitigate the ecological effects on native birds associated with the construction of Te Ara Tipuna. It specifies the management measures required to minimise and mitigate anticipated potential adverse effects to ensure an overall low level of effect, which will be achieved through minimising clearance of potential bird nesting habitat, and where such habitat will be affected, using current best practice methodologies to avoid nesting birds.

This AMP also provides a template for avifauna management for preparation of the stage specific EMPs.

The species and habitat types of indigenous bird species that may be present along the route, the potential effects of route construction and the effects management framework are described in Viridis (2025).

7.2 Statutory Context

The provision of management to avoid, minimise and mitigate adverse effects on native wildlife and associated habitat is a requirement under the RMA and almost all native birds are legally protected under the Wildlife Act

7.3 Managing Effects on Avifauna

7.3.1 Terrestrial vegetation clearance

For all bird species, the most sensitive time of year (in regard to disturbance) is the nesting season. Therefore, as much as possible vegetation clearance should occur outside of the main bird breeding (September to March inclusive for non-coastal areas) to minimise any disturbance risk that vegetation removal would have on nesting birds.

If vegetation clearance is unavoidable during the main native bird nesting season, an experienced ecologist or ornithologist must visually inspect all trees and shrubs proposed for removal before, and no more than 48 hours prior to, felling or removal, to identify any active nests of indigenous birds. This includes checking cavities and hollows for nesting birds (e.g. morepork, kingfisher).

Where active native bird nesting sites are identified during a native bird nesting survey, a buffer between the works or vegetation clearance and the nest must be established and clearly demarcated with temporary fencing. For “At Risk” or “Threatened” bird species the buffer is to be 30 m, and 10 m for other native bird species. No works shall be undertaken within the buffer exclusion zone until such time as the suitably qualified and experienced ecologist / ornithologist has confirmed that the chicks have fledged or that the nest has failed or the chicks have hatched and naturally left the nest site.

7.3.2 Coastal areas

Some coastal birds nest as early as July (e.g. Little blue penguin, *Eudyptula minor*) and some coastal birds nest in inconspicuous scrapes in sand, gravel or grass. Where works are proposed in coastal habitats such as dunes and foreshore areas that will disturb these areas (e.g. earthworks, vegetation clearance, construction of structures) from July to March inclusive, an experienced ecologist or ornithologist shall visually inspect the area prior to the proposed work to identify any active nests of indigenous birds. If bird nests are observed near to the proposed work, the ecologist or ornithologist will

set up temporary fencing around the nest (at least 30 m from the nest)[8] and no works are to occur within the 30 m exclusion zone. The ecologist or ornithologist will continue to monitor the nest weekly and works can commence within the exclusion zone when either the nest has failed or the chicks have fledged.

The little blue penguin breeding season generally commences in July when adults begin searching for nest locations. Egg laying and chick rearing follow, with adults coming and going from nest sites until approximately late February. This is then followed by a moulting period, where individuals must remain dry on land while they complete their moult. Peak moulting is generally between January and March, but it can extend into April. As a result, there are few time periods where penguins are likely to be absent from coastal areas. Little blue penguin nests are situated close to the sea in burrows excavated by the birds or other species, or in caves, rock crevices, under logs or in or under a variety of man-made structures including nest boxes, pipes, stacks of wood or timber, and buildings. Therefore, where ara construction activities are likely to disturb such areas of habitat, immediately prior to works commencing, a penguin survey is to be conducted by an ecologist or ornithologist of the area within 30 m of the proposed works. If no penguins are found, a penguin exclusion fence should be erected around the perimeter of the works area and this should be checked daily and repaired where necessary. If penguins are found, in addition to erecting a penguin exclusion fence[9] around the perimeter of the works area, an area of at least 5 m radius around the nest or moulting penguin should be established, and fenced, providing direct unimpeded access for the penguins to reach the sea. The fence should remain in place, and the nest or moulting penguin undisturbed until the penguins have vacated. If a penguin should appear within the works site once works have begun, works within a 5 m radius of the penguin should cease immediately. The area should be fenced off while still providing direct unimpeded access for the penguins to reach the sea and all workers should be notified. DoC should then be notified.

7.3.3 Wetland and lake areas

The route of the Ara has been designed to avoid any works (including clearing vegetation or undertaking earthworks or land disturbance) within or within 10 m of a natural inland wetland. Therefore, the potential for disturbance of birds associated with wetlands will be minimised, as most wetland birds nest within wetlands.

However, as 'Threatened' or 'At Risk' bird species (such as Australasian bittern, *Botaurus poiciloptilus*) may nest in wetlands, if works or vegetation clearance is to occur within 30 m of a wetland within the nesting season, a nesting survey will be required as per Section 7.3.1 above.

7.3.4 Open areas

The New Zealand pipit has an "At Risk-Declining" conservation status and nests in rough open areas, such as under tussocks and grass clumps within fern, and partly or fully covered with vegetation from August-February. The majority of the ara through such habitat will be wayfaring in nature with limited construction works. However, the ecological assessment for each stage should assess the potential for

[8] Exclusion fencing for nesting birds like dotterel and oystercatchers is to ensure people and machinery do not enter the exclusion zone and should be constructed from materials that do not make the nest more conspicuous to avian predators or move in the wind, not obstruct the ability for birds or chicks to access the beach and water to forage.

[9] Penguin exclusion fencing is to keep penguins out of potentially suitable habitat that does not contain active nests or moulting birds during the works and should be constructed of materials suitable for excluding penguins

such habitat to be affected by construction work or vegetation clearance using aerial images (or on the ground assessment if aerials do not provide sufficient information), and if works are to be undertaken within the breeding season then an ecologist must inspect the area immediately prior to works commencing. If a pipit nest is identified close to the area of the proposed works, then a 30 m exclusion fence will be installed to exclude people and machinery. The ecologist or ornithologist will continue to monitor the nest weekly, and works can commence within the exclusion zone when either the nest has failed, or the chicks have fledged.

7.3.5 Accidental discovery or mortality

Where a bird nest is identified during works within 30 m of the works area, works will stop until an ecologist has inspected the nest to determine whether it is active and of a native species. See section 7.3.2 for the protocol where little blue penguins are found within the works area.

Where an injured bird is observed during works:

- Works within the vicinity of the injured bird will stop until an ecologist can assess the injured bird;
- The local DoC office or DoC hotline (0800 362 468, if after hours) will be contacted no longer than two hours after the injured or dead bird is found;
- Injured native birds will be taken immediately to a vet approved by DoC for assessment; and
- Birds will be placed in a cool, dark, material-lined box/bag by or under the direction of a project ecologist to ensure the bird is handled appropriately.

7.4 Reporting

Where avifauna management is required through a stage specific EMP, a completion report would be prepared by the project ecologist following completion of works as per resource consent requirements.

8 FRESHWATER ECOLOGY MANAGEMENT PLAN

8.1 Introduction

The purpose of this Freshwater Ecology Management Plan (FEMP) is to outline the methods to be implemented to minimise and mitigate the ecological effects of the construction and operation of Te Ara Tipuna on freshwater habitats such as streams, rivers, lakes and wetlands to ensure a no more than low level of effect. The fauna that may be present in freshwater habitats, the potential effects of route construction and the effects management framework are described in Viridis (2025). Mitigation of effects on birds associated with freshwater habitats is addressed in Section 7 above.

8.2 Statutory Context

Legislation affords protection to native freshwater fish. The Freshwater Fisheries Regulations 1983 and the Resource Management (National Environmental Standards for Freshwater) Regulations 2020 requires fish passage to be provided past structures like culverts.

Native freshwater fauna salvage requires a Ministry for Primary Industries (MPI) Special Permit under Section 97 of the Fisheries Act 1996. An authorisation from Fisheries New Zealand is required under section 26ZM (2) (a) of the Conservation Act 1987 to transfer any freshwater aquatic life to an appropriate freshwater waterbody in the same catchment. DoC approvals are also required to transfer fish to public conservation land and for electric fishing.

A WAA is required to capture, handle, and relocate Hochstetter's frogs.

The relevant regional plans also contain rules and standards relating to structures and works within watercourses and wetlands.

8.3 Habitats and Species Potentially Present

Over the approximately 345 km path, there will be many stream and river crossings and potentially wetlands present close to the ara. Whilst the initial design of the Ara has been designed to avoid wetland ecosystems, utilise many existing stream and river crossing structures, and aims to avoid instream works where new stream and river crossings are required, it is possible that there are smaller wetlands that have not yet been identified and in some circumstances culvert installation may be required on streams. Modification of the route to avoid these issues will need to be considered at the detailed design phase.

Streams and wetlands in the East Cape area are known to contain a variety of freshwater species including 'At Risk' and 'Threatened' fish and frog species. The species and habitat types of indigenous fish and amphibian species that may be present along the route, the potential effects of route construction and the effects management framework are described in Viridis (2025).

8.4 Managing Effects on Freshwater Environments

8.4.1 Identification and assessment of freshwater environments that may be affected

Streams

During the detailed design stage for each section of the path, it is important that all potential stream and river crossings are reviewed alongside the engineering plans by an ecologist to assess for potential disturbance to instream habitat[10].

Wetlands

While significant wetland areas have been identified through the desktop assessment and EcIA and avoided during the initial design phase, it is possible that other wetlands are present close to the Ara path. These wetlands need to be identified by the project ecologist in the detailed design stages so that the route can be modified to avoid them. It may also be necessary to delineate and mark on site wetland edges to ensure that no construction occurs within them and that a 10 m buffer is maintained.

Indicative wetland areas throughout Tairāwhiti have been identified by Morphum (2024). Where they are potentially located close to the Ara, these indicative wetland areas should be assessed during the detailed design phase in accordance with wetland delineation protocols (Ministry for the Environment (MfE 2022, Clarkson 2014), to determine whether they met the regulatory definition of 'natural inland wetland' (NPS-FM 2020). Potential wetland areas are assessed based on the prevalence of certain vegetation species and their indicator status ratings, as defined in Clarkson *et. al*. (2021):

- Obligate wetland (OBL) vegetation, which almost always is a hydrophyte (a plant which only grows in wet environments), rarely found in uplands (non-wetland areas).
- Facultative wetland (FACW) vegetation, which usually is a hydrophyte but can occasionally be found in uplands.
- Facultative (FAC) vegetation, which is commonly either a hydrophyte or non-hydrophyte.
- Facultative upland (FACU) vegetation, which is occasionally a hydrophyte but is usually found in uplands.
- Upland (UPL) vegetation, which is rarely a hydrophyte and is almost always found in uplands.

Where the dominance or prevalence tests show unclear results, hydric soils and hydrology tests should be undertaken in accordance with methodology outlined in MfE (2022) and Clarkson (2014).

Wetland assessments should also include identifying native and exotic vegetation species, examining the structural tiers within wetland areas, and assessing the quality and abundance of aquatic habitats. Signs of wetland degradation such as pugging and grazing from stock access, structures such as culverts impeding hydrological function, and weed infestation should also be noted.

8.4.2 Stream crossings

Avoidance of instream habitat disturbance

Construction near stream beds and rivers should be minimised as much possible. Note that the approach to Ara design has been to avoid instream works as much as possible by using wayfaring to cross smaller streams, and bridges constructed outside of the stream bed to cross larger watercourses

[10] Streams are to be classified in accordance with the relevant council plan definitions.

where there is no existing crossing. This approach will minimise the need for any works within watercourses.

Hochstetter's frog habitat

The potential habitat for Hochstetter's frog must also be assessed if instream works are proposed. If there is potential Hochstetter's frog habitat present, a suitably qualified and experienced herpetologist / ecologist with the required DoC permits will undertake a pre-works survey of the works area to confirm whether Hochstetter's frogs are present. No instream works are to occur within an area identified as being inhabited by Hochstetter's frogs.

Culvert design for fish passage

Many of our native fish species have to travel between marine and freshwater environments to complete their life-cycle, i.e., they are diadromous. The majority of the most widespread native fish species that occur in New Zealand's waterways have larvae that rear in the sea and then migrate back into freshwater as juveniles. Their adult populations are, therefore, dependent on the success of the annual upstream migrations of juveniles.

Swimming is the primary mode of movement, however, some species have developed additional modes to help them overcome natural obstructions such as waterfalls and rapids. In New Zealand, several of our native fish species, e.g., eel, banded kōkopu (*Galaxias fasciatus*) and kōaro (*Galaxias brevipinnis*), are excellent climbers as juveniles. This allows them to negotiate some obstacles, such as waterfalls, as long as a continuous wetted margin is available for them to climb and access habitats far inland and at relatively high elevations.

While generally culvert installation is proposed to be avoided through detailed design, it is possible that there may be some circumstances where culvert installation is required. In this situation culvert design needs to take into account instream fauna. Culverts have the potential to restrict fish passage to upstream habitats if constructed poorly. If culverts are required to be installed on streams with potential fish habitat, they should be constructed to be 'fish-friendly' and in accordance with the New Zealand Fish Passage Guidelines (Franklin *et al*., 2024) and to meet the permitted activity standards of the Tairāwhiti Resource Management Plan 2023 and the National Environmental Standard for Freshwater 2020.

Figure 2 gives a basic description of fish friendly culvert design. Where culverts (or any other structure within watercourses) are proposed, a freshwater ecologist will need to assess the potential for fish habitat within the footprint and upstream to assess whether fish passage provision and fish rescue is required and be involved in culvert design to ensure that passage is provided where appropriate.

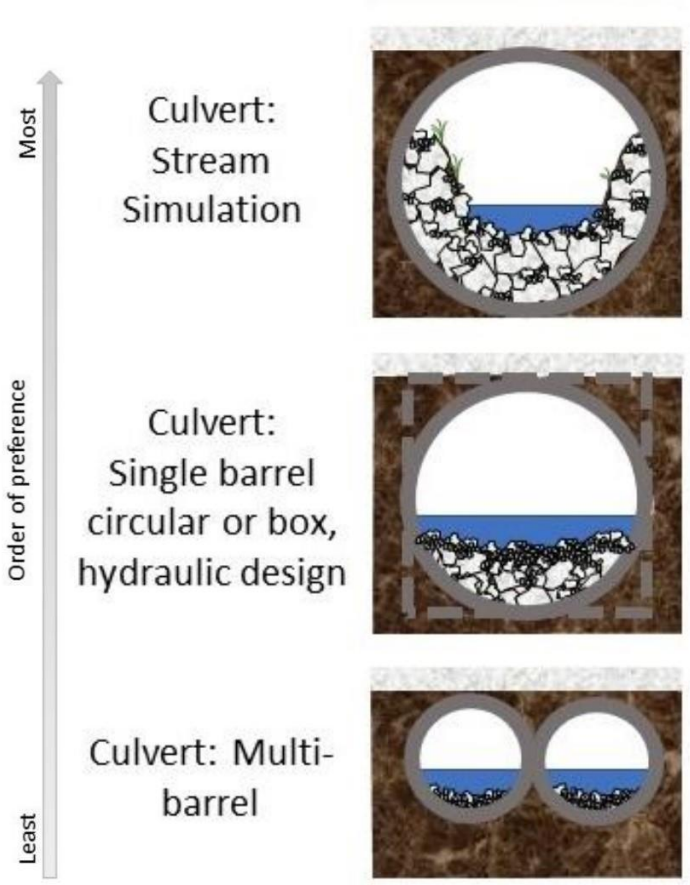

Figure 2. Order of preference for culvert design, based on the degree of connectivity for native fish each design facilitates (modified from Franklin et al., 2018).

8.4.3 Wetlands

The route of Te Ara Tipuna has been designed to avoid any works within, or within 10 m of natural inland wetlands. During detail design, the Ara will be modified to avoid natural inland wetlands that are identified during pre-construction surveys (as outlined above).

8.4.4 Fish relocation

Where it is not possible to avoid disturbance to potential fish habitat (e.g. if a culvert is proposed to be installed), fish salvage and relocation will be required. Salvage will be conducted by a suitably qualified and experienced freshwater ecologist and the required permits will be put in place. Alternative methods can be used to those detailed below. Any use of alternative methods will need to be detailed in the finalised EMP for each stage.

Timing

Fish salvage and relocation will be undertaken immediately prior (within 2-3 days) to the commencement of any instream works.

Fish are generally easier to capture when temperatures are warm, and therefore salvage is best undertaken between December and April inclusive (Joy *et al*., 2013). Additionally, for intermittent streams, stream works undertaken in summer when the streams may be dry would reduce potential effects on fish.

Fish recovery and stream works should be undertaken during a fine weather window. This makes capture of fish easier and reduces the risk of exclusion devices and nets being compromised by periods of high stream flow.

Exclusion devices

Prior to commencing fish salvage, temporary barrier/s will be installed to prevent fish moving into the area of works. The locations of the exclusion screens will be agreed with the earthworks contractor and project freshwater ecologist.

Exclusion devices will be constructed from steel warratahs and shade cloth, or similar. Shade cloth, or a similar material, allows water to continue to flow downstream while preventing fish passage. The exclusion screen will extend at least one metre past the wetted widths of the aquatic habitat and will be embedded into the dry ground or the banks (Figure 3).

Warratahs will be securely hammered into the ground and evenly spaced across the stream to support the shade cloth. Where extra support is necessary, i.e. if the flow is very swift, wire will be threaded horizontally across through the warratahs. Shade cloth will be fastened to the warratahs and wire supports (where applicable) using zip ties. The shade cloth will extend approximately 0.5 m above the water level. Along the stream bed the shade cloth will either be embedded and pinned or securely weighted down, or an apron of the shade cloth will be formed and pinned. This creates a pocket, preventing fish from passing under the barrier.

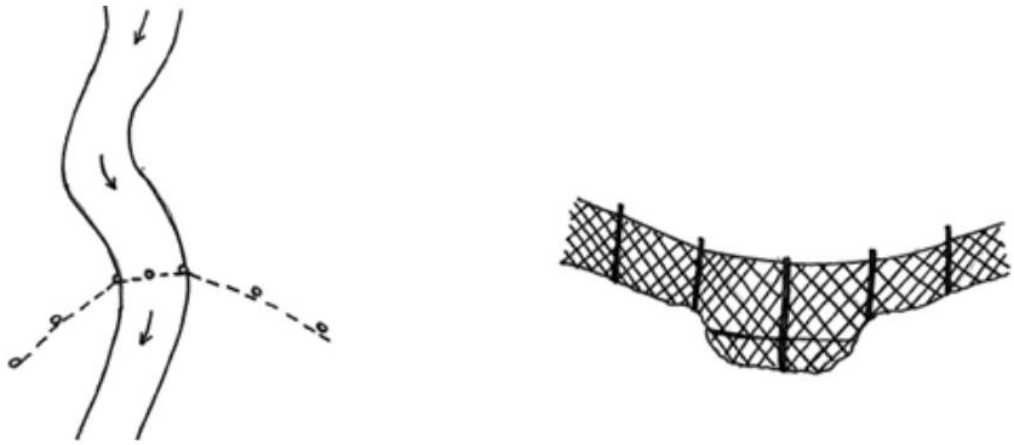

Figure 3. Sketch showing fish barrier installed in a stream to prevent passage into or out of an area.

Ongoing maintenance of the temporary fish barriers by the contractors will be undertaken until stream works are complete.

Fish capture

Fish capture methodologies will depend on the water depth and area of wetted habitat. The *New Zealand Freshwater Fish Sampling Protocols* (Joy *et al*. 2013) will be followed unless specified within this plan.

Baited Gee's-minnow traps and fyke nets will be placed at intervals over the stream works area and left in place overnight. Fine meshed fykes with a separator grill will be used. All nets and traps will be set with an airspace to provide trapped fish access to atmospheric oxygen and will be set in general accordance with the New Zealand Freshwater Fish Sampling Protocols (Joy *et al.* 2013). Floats placed in

the fyke nets if required to ensure an airspace is available. The traps will be checked the following morning, with any captured fish recovered.

Trapping densities will be set, at minimum, one fyke net and two Gee's-minnow traps over 25 m as per Joy *et al.* (2013). However, if sufficient length and depth of water is present, the densities of traps and nets should be increased as the purpose of the trapping is fish recovery. If native fish with a conservation status of "Threatened" or "At Risk" are captured, trapping will continue until no further "Threatened" or "At Risk" individuals are captured.

Where water depth prevents fykes being set, the densities of Gee-minnow traps will be increased and hand-netting of any aquatic habitat (e.g. pools, overhanging vegetation, woody debris) will be undertaken. Hand netting will occur moving up the impact reach to sweep for any fish present within the channel which may not be able to move into the traps due to the shallow water depth. Hand netting will cease when less than two indigenous fish are captured. If water depths are not suitable for Gee's-minnow traps, hand netting will still occur.

A minimum of two electric fishing passes/runs within the target area will be carried out over the trapping period, where stream conditions are suitable for this method. Electric fishing shall be undertaken using an electric fishing machine (EFM 300). When used correctly, the EFM 300 temporarily stuns the fish, allowing them to be caught without damage. At least one electric fishing pass will be undertaken prior to setting any traps or nets and at least one other electric fishing pass will be undertaken following the clearing the traps/nets for the final time. If native fish with a conservation status of "Threatened" or "At Risk" are captured, electric fishing will continue until no further "Threatened" or "At Risk" individuals are captured.

If more than ten native fish are caught during a single trapping effort within the target area, trapping will continue until numbers are depleted to the satisfaction of the ecologist completing the fish salvage and relocation (using an 80% removal rate as a target, based on the Hayne's (1949) regression method). A single trapping effort is considered to be one night of trapping.

Dewatering and muck out

Dewatering will commence provided that the electric fishing minimum performance standards have been met. All pumps used for dewatering will be appropriately screened to prevent fish being entrained in the pump. Screens will have gaps no larger than 3 mm. Native fish, such as eels (*Anguilla* spp.), will burrow into silt substrates when they are disturbed or as water levels decrease. As a result of this, during the dewatering stage, a freshwater ecologist will be present to search through drained habitat, rocks/debris, remaining pools or thick sediment for any remaining fish. Once dewatering is completed an excavator will be used to carefully scrape out any thick layers of sediment, if necessary. Any sediment removed from aquatic habitat will also be manually checked by the freshwater ecologist.

Handling of fish

Fish handling will be in accordance with Section 3.9 of the *New Zealand Freshwater Fish Sampling Protocols* (Joy *et al.* 2013) and the relevant permits.

All fish captured in traps/nets or via electric fishing, will be immediately transferred to waterfilled, lidded containers of an appropriate volume for the number of fish captured. Multiple containers will be used if necessary. Containers will be stored in the shade. Fish will be stored in the containers for no more than one hour. If storage for longer is required, water will be changed at least once per hour

and/or a battery powered air pump will be placed in each container to ensure oxygen levels are sufficient. A water conditioner, such as API stress coat may be added to the water to reduce fish stress. Water conditioner will be added as per manufacturer instructions.

If any individual captured fish shows signs of stress (loss of righting response, exuding excessive mucus, gulping air, and or mouth gaping) the water will be changed to provide more oxygen, or the fish will be moved to the relocation site immediately.

Fish will be visually examined for general health (visual skin lesions or heavy fungal burdens) and if considered unhealthy by an appropriately qualified freshwater ecologist, they will be humanely euthanized in accordance with the conditions of the relevant permits.

Large eels (> 500 mm) will be contained individually to avoid injury to other smaller captured fish. Kōura, if present, will also be separated into their own containers.

Captured fish will be securely transported to the relocation site and gently transferred into the stream within two hours of being captured. If large numbers of fish are captured, they will be distributed across multiple release points in the general area to avoid short term overstocking and predation risks.

Relocation sites

All native fish captured will be relocated on the day of capture to suitable alternative habitat. Fish will ideally be relocated to the same waterway into habitat judged suitable by the freshwater ecologist, either up or downstream of the site. If necessary, relocation could be to another stream within the same catchment, as long as the conditions of the permits are met.

Biosecurity

All equipment will be thoroughly cleaned and dried prior to their use. Equipment includes but not limited to; electric fishing machine, waders, fykes nets, Gee minnow traps and transfer buckets. Any pest fish caught will be humanely euthanized and all euthanized pest fish will be disposed of in accordance with the conditions of the relevant permits.

Adaptive management

Due to the high level of intrinsic variability in any fish recovery and relocation, this plan may be slightly modified by an appropriately qualified freshwater ecologist to ensure fish are recovered in a safe and professional manner, as well as in accordance with the New Zealand Freshwater Fish Sampling Protocols (Joy *et al*. 2013).

Records and reporting

For all native freshwater fauna the following information will be recorded:

- Date and time of capture and release;
- Capture method;
- Capture and release locations (GPS coordinates); and
- Number and size of individuals of each species released.

Reporting requirements for any Ministry for Primary Industries Special Permits, Fisheries New Zealand authorisations, DoC approvals or resource consents held will be adhered to. Details of those reporting

requirements, such as who to report to and reporting frequency, are permit-specific and can be found in each relevant permit or consent.

All records of native fish captured will also be sent to NIWA for inclusion in the NZFFD.

9 COASTAL ECOLOGY MANAGEMENT PLAN

9.1 Introduction

The purpose of this Coastal Ecology Management Plan (CEMP) is to outline the methods to be implemented to minimise and mitigate the ecological effects of the construction and operation of Te Ara Tipuna on coastal habitats such as sand dunes, beaches, foreshore areas, estuaries and coastal wetlands to ensure an overall low level of effect.

Coastal habitats have generally been significantly modified over time by loss of their natural vegetation cover and development. These habitats support a variety of fauna and flora, including a number of nationally vulnerable and "At Risk" species. The species and habitat types of indigenous species that may be present along the route, the potential effects of route construction and the effects management framework are described in Viridis (2025), including for katipō (*Latrodectus katipo*, At Risk – Declining,[11]) which occurs in sand dune systems under drift wood or associated with coastal grasses, and the spawning grounds of īnanga (*Galaxias maculatus*, a whitebait fish species that spawns in the margins of estuarine areas[12]). Mitigation of effects on coastal birds is addressed in Section 7 above.

9.2 Managing Effects on Coastal Environments

9.2.1 Avoid and minimise works within the coastal environment

Works and construction within or near to important coastal habitat such as sand dunes, coastal wetlands, and the riparian margins of rivers and estuaries are to be minimised as much as practicable by utilising existing accessways and paths, routing the path around ecological features and revising proposed works where ecological effects are likely to occur. No earthworks or vegetation clearance are proposed within the Coastal Marine Area (below Mean High Water Springs).

9.2.2 Mitigate potential effects

Where works are required within coastal environments, a variety of mitigation measures will be used to ensure overall effects are low, including:

- Measures to control erosion and sediment and other discharges;
- Avoiding works within potential īnanga spawning habitat;
- Marking areas that must be avoided on site prior to construction with appropriate setbacks (e.g. nesting birds or blue penguin burrows (Section 7), lizard habitat (Section 5), or rare plants);
- Where vegetation is to be removed from sand dunes, relocation of any katipō spiders present within the works footprint to adjacent suitable habitat within 48 hours prior to the proposed vegetation clearance by a suitably qualified and Wildlife Act permitted fauna specialist;
- Where piling for bridge construction is proposed in coastal areas, that the effects of noise and vibration on fauna are minimised by:
    - use of soft start measures to deter fauna

[11] Servid *et al.* (2020)

[12] Inanga lay their eggs in the base of long, dense grasses and other thick vegetation near the high spring tide level around the saltwater wedge in the mouths of rivers and streams

- minimising noise volume (e.g. with the use of dollies atop piles)
- pre-start surveys to avoid works close to nesting native birds or moulting blue penguins (see Section 7 above)
- use of appropriate noise screening around e.g. a penguin burrow, as guided by an ecologist
- ceasing piling works if penguins or marine mammals are observed within 100 m of the works.

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