

ecoLogical Solutions

Environmental Consultants



water



fauna



flora



land

Scope

This preliminary assessment of ecological effects has been informed by:

- Proof of Concept Scoping Report – Tangihanga Water Storage Scheme (Mitchell Daysh November 2025).
- Desktop interrogations of existing ecological databases (New Zealand Freshwater Fish Database (NZFFD), DOC Bioweb and eBird).
- GIS information (Land Information New Zealand) and Gisborne District Council Geomaps.
- Review of available literature including the Tangihanga Station Integrated Farm Plan (Landvision 2022).
- Wi Pere Mauri Compass Dashboard report (Ruru et al. 2022).
- Instream habitat and flow requirements for the Waipaoa and Te Arai Rivers (NIWA 2010).
- Matawai hydro fish pass inspection and monitoring (Freshwater Solutions Ltd 2022)
- Observations made by Richard Montgomerie during a site visit of the project area on 8 April 2024.
- Pre-Lodgement response by DoC.

Comprehensive field studies, especially with respect to detailed watercourse and water quality surveys, vegetation assessments, wetland identification and mapping, and specific fauna surveys will be undertaken to inform the substantive application.



Effects on Vegetation

- Tangihanga Station is c. 2,036 ha in size including approximately:
 - 1,756 ha effective (mostly exotic pasture)
 - 223 ha of exotic forestry
 - 11 ha indigenous forest
 - 45 ha regenerating shrubland
 - 3.3 ha infrastructure
- The proposed reservoir footprint would occupy up to c. 300 ha, characterised as:
 - Mostly exotic pasture
 - Stands of exotic trees (e.g., poplars, willows)
 - Occasional kānuka
- Further surveys are proposed to inform the substantive application.
- Main adverse effect of the proposal on vegetation would be loss of currently low botanical values due to inundation.
- Positive effects would include planting of reservoir edges.



Effects on Birds

- 53 bird species recorded on eBird within 10 km of the site. Footprint may provide habitat for 'At Risk' and 'Threatened' species including:
 - NZ falcon and grey duck (Threatened – Nationally Vulnerable)
 - Little black shag (At Risk – Naturally Uncommon)
 - Pied shag and black shag (At Risk – Relict)
 - New Zealand dabchick (At Risk – Nationally Increasing)
- Nearby Lake Repongaere is the largest natural lake in the region and provides important waterfowl habitat, including for Australasian bittern (Threatened – Nationally Critical). The Project Area is unlikely to support Australasian bittern due to the lack of wetland habitat with dense cover.
- Further surveys, including for weka, are proposed to inform the substantive application. If Weka or other protected birds need to be handled then a WWA approval will be sought.
- Adverse effects of inundation include the loss of foraging, breeding, roosting, and nesting habitat for common native species and possibly NZ falcon.
- Potential adverse effects on breeding of some waterfowl due to water level changes within the reservoir.
- Positive effects include provision of a substantial amount of new habitat for waterfowl, particularly if planned appropriately.
- Timing and management of vegetation clearance can avoid/minimise adverse effects on birds.



Effects on Lizards

- Indigenous lizards recorded from within the wider Waipaoa catchment include:
 - Barking gecko, ornate skink and copper skink (At Risk – Declining)
 - Raukawa gecko and northern grass skink (Not Threatened).
- Forested and shrubland vegetation, debris and rank grassland are all habitats that may support one or more lizard species. These habitats are all present in the dam footprint.
- Further surveys are required to inform the substantive application.
- The inundation and associated ground disturbance during the dam wall construction would remove lizard habitat and could affect lizards directly via incidental injury or killing if not managed.
- Search, salvage and relocation of lizards in advance of works would minimise effects.
- Wildlife Act Authority will be required to manage lizards.

Effects on Bats

- There are 104 detections of long-tailed bats ('Threatened – Nationally Critical') within 25 km of the Project Area. No short-tailed bats have been detected.
- The Project Area may provide foraging and perhaps roosting habitat for long-tailed bats.
- Further surveys are required to inform the substantive application.
- The inundation could result in indirect adverse effects on long-tailed bats due to vegetation removal resulting in loss of potential roosting habitat and changing bat behaviour if not managed.
- The new dam would provide more diverse, high quality foraging habitat for bats.
- Adverse effects can be managed via monitoring to detect roost trees and avoiding their clearance when occupied.

Effects on Wetlands

- Potentially qualifying NPS-FM highly modified wetlands are present across the property; commonly occur along floodplains of low-gradient streams, alluvial flats and along toe slopes and surrounding hillside seepages.
- Vegetation includes cover dominated by common native and exotic species that is mostly affected by livestock access.
- Additional surveys are proposed to inform the substantive application.
- Up to approximately 30 ha of potentially qualifying NPS-FM, highly modified wetland habitat would be affected by inundation.
- Restoration of wetland habitat nearby would address adverse effects on wetland values.
- The lake comprises a large area of new wetland habitat providing habitat for wetland fauna, including birds and invertebrates.
- Wetland creation, where there is scope to do so, to address loss in wetland extent.



Effects on Stream Habitat

- The proposed dam and reservoir is located in the Pouarua Stream catchment. The Pouarua Stream joins the Repongaere Stream before entering the Waipaoa River.
- The lower Waipaoa River is highly modified by flood protection works and characterised by a high sediment load. The Waipaoa River at the proposed abstraction points is a moderate gradient, gravel bed river. The proposed gallery intake structure and any water supply pipes will be buried beneath the river bed. The construction and operation of the gallery intake or alternative water take structure nor the water take structures associated water distribution via the river or crossings beneath the river bed is not expected to adversely affect instream habitat quality.
- The Pouarua Stream and tributaries within and immediately upstream and downstream of the proposed reservoir are low gradient, highly modified soft-bottomed streams with extensive aquatic plant growth and little stream channel shading.
- It is estimated that up to 16 km of intermittent or permanently flowing stream would be lost within the reservoir footprint. A full survey and classification of all affected streams will be required to fully assess effects on stream habitat and determine suitable mitigations or offsetting/compensation.

Effects on Water Quality

- The potentially affected section of the Waipaoa River is characterised by poor water quality and macroinvertebrate community health.
- The proposed harvesting of sediment laden water during high flows could reduce sediment loads downstream of the take.
- The use of the river to convey water from the reservoir to different parts of the distribution system could affect water quality and will need to be evaluated as part of the detailed assessment of effects.
- There is no water quality data currently available for the Pouarua Stream. The construction and operation of the dam and reservoir could have both positive (e.g., reduced sediment loads and increased water clarity) and negative (e.g. reduced dissolved oxygen and increased water temperature) water quality effects that will need to be considered and evaluated.
- A survey of water quality on streams upstream, within and downstream of the reservoir is proposed.
- Algal blooms could occur in the reservoir which could cause adverse effects on water quality and ecological health and cause a human health risk within and downstream of the reservoir.
- The construction of the dam and reservoir has the potential to mobilise and 'export' sediment and nutrients and cause decomposition and breakdown of organic matter.
- Changes in land use resulting from irrigation could alter water quality in the Waipaoa River (e.g., increasing nutrient concentrations). Water quality effects associated with changes to land use will be evaluated as part of the assessment of effects.



Effects on Fish

- Twelve native fish have been recorded in the Waipaoa River catchment, nine of which are considered 'Threatened' or 'At Risk' (Dunn et. al. 2025). Longfin eel (At Risk – Declining), redfin bully (At Risk – Naturally Uncommon), bluegill bully (At Risk – Naturally Uncommon), upland bully (At Risk – Naturally Uncommon), common smelt (At Risk – Declining), Cran's bully (At Risk – Naturally Uncommon), Dinah's bully (At Risk – Naturally Uncommon), inanga (Threatened – Nationally Vulnerable) and torrentfish (At Risk – Naturally Uncommon).
- The mainstem of the Waipaoa River supports low trout numbers and is not a valued trout fishery.
- If unscreened the proposed high flow water harvesting and gallery intake or alternative intake structures (including those associated with water distribution) has the potential to affect native fish and trout.
- The dam could affect upstream and downstream fish passage if not managed.
- The Pouarua Stream and its tributaries support predominantly shortfin eel although a full survey of the stream downstream, within and upstream of the reservoir footprint will be used to fully assess current native fish values and effects.
- The presence of pest fish, and the potential for introducing them, will be investigated as part of the assessment.

Effects Management for Stream Habitat

- The loss of stream habitat within the reservoir footprint can be partially mitigated by:
 - Enhancement of stream habitat (e.g., riparian planting and weed and pest control) upstream and downstream of the reservoir.
 - Enhancing the instream habitat of other streams within the Pouarua Stream or wider Waipaoa catchments (in order of preference) via planting of erosion prone areas to reduce sediment loads and through including habitat features (e.g., islands and woody debris) for native fish within the reservoir.
- Effects on fish distribution and migration in the Pouarua Stream can be mitigated by ensuring the dam meets the relevant requirements of the Freshwater Fisheries Act (1983) and NPS-FM and that the dam design provides upstream and downstream fish passage at the dam through the construction of a fish pass and/or implementing trap and transfer.
- The loss of stream extent cannot be mitigated and offset/compensation will be required.



Effects Management for Water Quality

- Potential or actual negative downstream water quality effects from the reservoir discharge to the Pouarua Stream and Waipaoa River (e.g., elevated water temperature or low dissolved oxygen) can be mitigated by using a multi level discharge as set out in the Proof-of-Concept Scoping Study (Mitchell Daysh 2025) and/or other interventions such as aeration to manage dissolved oxygen, reservoir nutrient controls (e.g. Regen Alguard and Regen floc and floating wetlands) or catchment source reduction to manage nutrient levels.
- Downstream effects on the hydrology of the Pouarua Stream could be mitigated through the provision of a flow regime that protects and enhances the ecological health (e.g., provision of a minimum flow and flushing flows).
- Any short-term and localized effects on streams associated with the construction and operation of the water distribution network are not expected to be significant and can be managed through the implementation of management plans.
- Potential effects on the water quality and the ecological health of streams within or downstream of land with additional or new irrigation can be mitigated by implementing farm environmental plans (refer to Landvision assessment).



Effects Management for the Water Take

- Minimum flows will be maintained in the Waipaoa River.
- The potential effects of harvesting water from the Waipaoa River during high flows on the water quality and ecological health of the Waipaoa River is not expected to require mitigation.
- The potential for effects on water quality and ecological health from the use of the river to distribute water (e.g., periphyton growths) will be assessed as part of the substantive application.
- Effects on fish distribution and migration in the Waipaoa River can be avoided through the use of a gallery intake structure or alternative take structure that includes fish screening and meets the relevant guidelines.
- The short term localised ecological effects associated with the construction on the intake structure(s), including fish screens, can be effectively managed through the implementation of a construction management plan.



Effects Management for the Reservoir

- Effects on fish distribution and migration in the Pouarua Stream can be mitigated by ensuring the dam meets the requirements of the NPS-FM and Freshwater Fisheries Act (1983) and that the dam design provides upstream and downstream fish passage through the construction of a fish pass and/or implementing trap and transfer.
- The reservoir water level is expected to fluctuate seasonally and will result in a varial zone supporting aquatic plant and animal communities capable of exploiting 'transitional' habitat.
- Assuming waterfowl use the reservoir then water level fluctuations have the potential to effect the breeding of some species such as dabchicks. There are a range of options to mitigate this effect such as creating suitable breeding habitat within or around the edge of the reservoir.
- The reservoir will act as a sink for sediment from the upstream catchment. A wide range of variables such as sediment loads, water level fluctuations, residence time, edge stability and trophic state will determine water clarity and dissolved oxygen levels and determine its suitability for rooted aquatic plants, phytoplankton, benthic invertebrates, zooplankton and fish.
- Phytoplankton blooms could occur in the reservoir and have the potential to cause adverse effects on water quality and ecological health and cause a human health risk within and downstream of the reservoir that will require management.
- The reservoir is expected to significantly increase the amount of highly productive shortfin eel habitat within the Waipaoa River catchment as well as provide significant habitat for other native fish suited to lacustrine environments (e.g., common bully) and possibly trout.
- The construction of the dam and reservoir has the potential to cause significant adverse water quality effects through the mobilisation and 'export' of sediment and nutrients and decomposition and breakdown of organic matter. These effects will require careful evaluation and management through the implementation of detailed construction management, water quality and ecological management plans.
- A fish capture and relocation plan will be needed for the portion of the Pouarua Stream affected by the dam and depending on the fish species present a fish capture and relocation plan will be required for the streams that will be inundated by the rising reservoir. This work does not require a Wildlife Act Authority.



Effects Management for Terrestrial Ecology

- Loss of indigenous vegetation can be offset by planting indigenous vegetation. Areas to be planted will be identified and the substantive application will include a revegetation planting plan to address habitat removal.
- Effects on lizards can be managed via search, salvage and relocation of any lizards detected and creation of new lizard habitats to offset habitat removal. The substantive application will include a draft lizard management plan to address effects on lizards.
- Effects on birds during construction are expected to be minor. Any effects identified can be managed via an avian management plan to be provided with the substantive application.
- Effects on bats can be mitigated via implementation of a bat management plan to be provided with the substantive application.



Conclusion – Effects Management

- The freshwater and terrestrial ecological values associated with components of the scheme (i.e., water take, supply pipeline, dam, reservoir, distribution network and on farm) are reflective of the highly modified nature of the environment.
- Further field-based surveys (e.g., water quality, stream habitat, fish, wetlands, vegetation and terrestrial fauna) will be undertaken to fully assess water quality and ecological effects associated with the proposed construction and operation of the Tangihanga Water Storage Scheme.
- The initial desktop assessment has identified a range of options available for avoiding, mitigating, remedying, offsetting and compensating for residual adverse effects on water quality and freshwater and terrestrial ecological values.
- Pre-mitigation the proposed scheme has the potential to have adverse effects on small areas of indigenous vegetation and habitat for lizards, birds and bats, fish distribution and migration in the Waipaoa River (through entrainment by the intake (s)), water quality and ecology in the Pouarua Stream, result in the loss of highly modified wetland and stream habitat within the reservoir footprint, increase shortfin habitat (within the reservoir), impede upstream and downstream migration of native fish (in particular tuna), water quality and ecology from landuse change/intensification.
- By applying options to avoid, remedy, mitigate, offset and if necessary compensate the water quality and ecological effects can be managed to an acceptable level.

