

Pākōwhai Flood Resilience Project: Ecological Opportunities and Constraints Assessment

Summary of Tonkin + Taylor's report for Hawke's Bay Regional Council | March 2025

Hawke's Bay Regional Council's (HBRC) proposed Pākōwhai flood resilience project, built around a new 8.5km-long stopbank, has undergone a detailed ecological assessment by environmental and engineering consultancy, Tonkin + Taylor. Commissioned in the wake of the devastating 2023 weather events, the report provides insights into how construction might affect the surrounding environment – and where there are opportunities to lessen the impact. The final assessment was submitted in March 2025.

The lay of the land

Pākōwhai sits within the Heretaunga Ecological District, a once richly forested plain reshaped over generations. Caught between the Tūtaekurī and Ngaruroro Rivers, the site today is a patchwork of pasture, orchards, lifestyle blocks and exotic shelterbelts. The proposed stopbank – stretching alongside the Waiohiki waterway and the Tūtaekurī-Waimate stream – forms part of a broader push to strengthen Hawke's Bay's flood defences in the face of a changing climate.

The Tūtaekurī-Waimate stream is a permanent lowland stream that meanders through the proposed footprint, while the Waiohiki waterway is ephemeral – its channel largely straightened and shaped by a floodgate culvert near its confluence with the stream. Although heavily modified, these waterways still support a surprising diversity of aquatic life.

A methodical assessment

Tonkin + Taylor's assessment followed a three-stage process: desktop analysis, on-the-ground fieldwork, and targeted species surveys. Ecologists spent three days in the field from 20–22 August 2024, with follow-up visits through November and December to survey bats, lizards and potential wetlands. Using environmental DNA (eDNA), macroinvertebrate sampling, Stream Ecological Valuation (SEV), tracking tunnels, and acoustic monitoring, they built up a comprehensive picture of the area's ecological health. All up, approximately 370 hectares were assessed.

Teeming streams

One of the most fascinating aspects of the report is the diversity of native freshwater fish detected in the Tūtaekuri-Waimate Stream. The eDNA survey picked up 15 aquatic species, including:

- **Common bully** – Not threatened
- **Longfin eel** – At Risk – Declining
- **Shortfin eel** – Not threatened
- **Īnanga** – At Risk – Declining
- **Redfin bully** – Not threatened
- **Giant bully** – Naturally uncommon
- **Lamprey** – Threatened – Nationally vulnerable
- **Common smelt** – Not threatened

Also turning up were kōura, freshwater shrimp, and three introduced fish species – rainbow trout, goldfish, and mosquitofish.

The presence of so many diadromous species – those that migrate between fresh and saltwater – underscores how important it is to keep changes to the stream path to a minimum.

Wetlands – and bats, birds, and lizards

One small wetland (Wetland 23) was confirmed and will need careful protection from sedimentation and changes to hydrology. It's the only site that meets the legal definition of a 'wetland' under the Resource Management Act and a 'natural, inland wetland' under the National Policy Statement for Freshwater Management. The best course is to avoid impacting it – but if that's not possible, restoration work elsewhere could compensate for any loss.

Despite the presence of suitable habitat – cracked trunks, hollows, shelterbelts – long-tailed bats were no-shows. Acoustic monitors ran for 36 nights and picked up nothing. Surveys at nearby Waiohiki and Ohiti in 2024 told the same story.

Lizards were also absent. Not for lack of effort: 183 tracking tunnels were deployed and 8.5 hours of manual searching completed. Rats and mice, however, were all over the place – their prints showed up on more than half the cards. Any surviving lizard populations were probably wiped out during the flooding of 2023.

Birds, however, abound. Twenty-six native species have been recorded in the area, including pipits, banded dotterels and black shags – all classified as At Risk. To avoid disturbing breeding seasons, vegetation clearance should be timed carefully. If works are unavoidable, an ecologist will need to conduct nest checks beforehand.

The silver lining: Opportunities for enhancement

The ecological constraints are real – but so are the opportunities. The report recommends riparian planting along the Tūtaekurī-Waimate stream to increase shade (currently lacking), stabilise banks, and improve habitat. The flood gate on the Waiohiki waterway could be refined to ease the passage of fish returning upstream. These improvements support the project’s requirement under Clause 28 of the Order in Council: to deliver a “Net Positive” ecological outcome.

If impacts on Wetland 23 cannot be avoided, restoration work in similar streamside areas – or other potential wetlands nearby – could offset the loss. Still, the report is clear: avoidance remains the ideal.

Conclusion

The Pākōwhai flood resilience project is more than just an engineering challenge – it’s an ecological balancing act. The site still supports a mosaic of life, from vulnerable native fish to roving shorebirds. While some species have retreated or vanished, the ecological threads that remain are well worth preserving. This report provides a clear, evidence-based path for doing so – balancing flood protection with environmental stewardship.

It’s a delicate equation: protect people and property, while upholding the integrity of the land and the life it supports. With careful planning, local collaboration, and thoughtful ecological management, the Pākōwhai project could yet become a model for resilient, future-focused infrastructure in a fast-changing region.