

Before Gisborne District Council

Under the Resource Management Act 1991 (the **RMA**)

In the matter of applications by Gisborne District Council for resource consents to modify a stopbank at Te Karaka

Statement of evidence of Andrew Steven Hicks on behalf of Gisborne District Council

Ecology

14 September 2026

MC.

Solicitors:

Jessica Easton | Brandon Watts

PO Box 90750, Victoria Street West, Auckland 1142

DX CP24063

T: +64 9 336 7500

Jessica.Easton@mc.co.nz | Brandon.Watts@mc.co.nz

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1 Executive summary

- 1.1 My evidence addresses three specific ecological matters raised through submissions and subsequent technical review, namely freshwater fish and fish passage associated with the proposed culvert works, the potential removal of a kauri tree, and the proposed temporary abstraction of water from the Waipaoa River for construction purposes. It is supplementary in nature and should be read alongside the broader Ecological Impact Assessment.
- 1.2 In relation to freshwater ecology, I consider the available information indicates that the affected waterways have the potential to support a diverse assemblage of native freshwater fish, many of which are diadromous and rely on access between freshwater and the marine environment to complete their life cycles. In my opinion, the proposed culvert design requirements and consent conditions appropriately recognise these values and provide a suitable framework for maintaining or improving fish passage relative to the existing environment.
- 1.3 In relation to the submitter concern regarding the potential removal of a kauri tree, I note that the Gisborne district lies outside the recognised natural range of kauri and any affected tree is therefore likely to represent a planted specimen rather than the loss of a naturally occurring vegetation type. I also note that kauri is currently classified as At Risk - Declining rather than Threatened under the New Zealand Threat Classification System.
- 1.4 In relation to the proposed construction water take, I consider the ecological effects of the proposed abstraction to be negligible. The proposed take is very small relative to flows within the Waipaoa River, whether considered under the A Block or B Block allocation regimes, and is also temporary in duration.

2 Introduction

- 2.1 My full name is Andrew Steven Hicks and I am a Principal Ecologist at Strategy Planning Ltd.
- 2.2 I have been asked by Gisborne District Council to provide ecology evidence in respect of its application for resource consents to modify the stopbanks around Te Karaka (the **Stopbank Proposal**).

3 Qualifications and experience

- 3.1 I hold the qualifications of BSc/BA (Hons) from the University of Melbourne and a PhD in Ecology from the University of Otago.
- 3.2 I am an ecologist with specialisation in freshwater (especially rivers and lakes) along with broader expertise in general ecology including riparian, wetland, estuarine and coastal habitats. I have about 16 years' experience of employment providing technical advice to the Department of Conservation (2010-2012), Environment Southland (2012-2014), HBRC (2014-2022) and the Ministry for the Environment (2022-2026). This has included overseeing various monitoring

programmes that span rivers, lakes, wetlands and the coastal environment and has covered various components of ecology (fish, macroinvertebrates, birds, water quality, habitat structure etc.). I have supported plan changes and their implementation, along with consents and compliance investigations. I have led various mitigation projects aimed at improving ecological values including constructed wetlands, river and riparian enhancement and fish barrier remediation. I provided science and other technical advice for policy development and implementation on various natural resource management topics to central government.

- 3.3 Since 2022, I have provided ecological consulting services involving ecological scoping and risk assessments, Ecological Impact Assessments, Ecological Management Plans, Freshwater Fauna Management Plans and related ecological advice. This has included stopbank upgrades, pump station upgrades, drainage improvements, river management activities and associated culvert and waterway works in catchments extending from Wairoa through to Central Hawke's Bay and Pōrangahau. While I have not had any substantial involvement in equivalent projects within the Gisborne region, many of the projects I have assessed have occurred within highly modified rural and floodplain environments with ecological characteristics and management considerations broadly comparable to those relevant to this Stopbank proposal. My experience therefore includes assessing and managing the types of ecological risks relevant to the flood resilience works proposed here.
- 3.4 I have been a member of the New Zealand Freshwater Sciences Society since 2006 and currently sit on the Expert Fish Panel for the Department of Conservation's New Zealand Threat Classification System.

4 Code of conduct for expert witnesses

- 4.1 I confirm that I have read the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2023 and that I agree to comply with it. I confirm that I have considered all the material facts that I am aware of that might alter or detract from the opinions that I express, and that this evidence is within my area of expertise, except where I state that I am relying on the evidence of another person.

5 Scope of evidence

- 5.1 My evidence provides supplementary ecological advice on three matters that have arisen through the review of the application and the submissions. It is not intended to repeat the broader Ecological Impact Assessment or provide a new assessment of the project as a whole. Rather, I address specific matters where additional ecological context is useful to the Commissioners, relating to freshwater fish and the proposed culvert works, the potential removal of a kauri tree, and the ecological implications of the proposed temporary construction water take.
- 5.2 Specifically, in my evidence, I will address the following:
- (a) Assessment of the freshwater fish species likely to occur within the two tributary waterways affected by the proposed culvert works, the

ecological values associated with those species, and matters relating to fish passage, fish salvage and construction management measures.

- (b) The ecological significance of the identified kauri tree, the effects of any removal, and potential mitigation and replacement planting should removal be required.
- (c) The temporary abstraction of water from the Waipaoa River for construction purposes, and the relative risk to aquatic values if this take was provided under each of the two allocation bands.

6 Involvement with the Stopbank Proposal

- 6.1 My involvement in the Te Karaka Flood Scheme Upgrade has been relatively limited.
- 6.2 Earlier during the resource consent process I provided ecological advice in relation to the freshwater values of two small tributary waterways affected by the proposed culvert works and the likely benefits of undertaking additional fish survey work. In particular, I considered whether further eDNA sampling or targeted fish surveys would materially improve the understanding of ecological effects, noting that the waterway already contained an obvious and substantial barrier to fish passage which meant that undertaking fish surveys would not necessarily identify the fish community that could utilise the waterway in the absence of the existing passage barrier. Instead of investment in further survey work, I recommended that management should commit to and focus on improving fish passage as a better use of limited funds.
- 6.3 More recently, I was asked to review the aquatic ecology matters raised in the Te Karaka Stopbank – Aquatic Ecology Review prepared for the hearing process and to provide supplementary ecological evidence in response to those matters.
- 6.4 My role has therefore been focused on providing targeted ecological input on specific freshwater ecology, fish passage and related environmental matters rather than undertaking the original ecological assessment for the project.
- 6.5 I have not been involved in regular project meetings and at the time of writing this evidence, had not been on a site visit. I do, however, intend on visiting the sites prior to the Hearing.

7 Ecological Matters Raised Through Submissions and Technical Review

Fish community and fish passage

- 7.1 I understand a number of submitters and the subsequent aquatic ecology review prepared by Jarred Arthur raised questions regarding the adequacy of information available on freshwater fish values within the smaller tributary waterways affected by the Project, particularly the unnamed eastern stream and the proposed culvert and floodgate structures. Specific concerns related to the extent to which the fish community had been characterised, whether sufficient information was available regarding the potential presence of native fish within the affected waterways, and whether the proposed culvert design and

associated management measures would adequately provide for fish passage and ongoing aquatic ecological function.

- 7.2 I have been asked to provide supplementary ecological evidence in relation to these matters. My involvement with the Project has included earlier advice regarding the freshwater values of the tributary waterways affected by the proposed culvert works and consideration of whether further fish surveys, including additional eDNA investigations, were warranted. In providing that advice, I noted that one of the waterways already contains an existing perched culvert and associated fish passage constraints, meaning that surveys of the existing fish community alone would provide limited insight into the fish communities that could potentially utilise the waterway if barriers to fish passage were removed. In my opinion, the more important ecological consideration is whether the final culvert and floodgate design results in a maintenance or improvement of fish passage outcomes relative to the existing environment. For this reason, my evidence focuses on the likely fish community, the relevance of the existing barriers to fish passage, and the extent to which the proposed design, together with the proposed consent conditions provide sufficient measures to mitigate potential effects on freshwater fish and fish passage.
- 7.3 In the absence of a site visit, I familiarised myself with the site and its surrounding environmental context using desktop information, including recent aerial imagery, digital elevation and surface models available through LINZ, and site photographs supplied by others.
- 7.4 Predicted fish distributions were reviewed using the NZ Fish Predictions (Crow REC2 2014) dataset available through NIWA. This modelled dataset was developed for the Department of Conservation using records from the New Zealand Freshwater Fish Database and environmental attributes derived from the River Environment Classification (REC2). The models generate predicted probabilities of capture for freshwater fish species with sufficient data available, at a stream-reach scale based on known fish records and environmental characteristics. While the outputs do not confirm species presence and do not replace field survey data, they provide a useful indication of species that may occur within a waterway and can assist in identifying species warranting further consideration during ecological assessment.

- 7.5 The stream segments from which species predictions were extracted are shown for the two relevant waterways below.

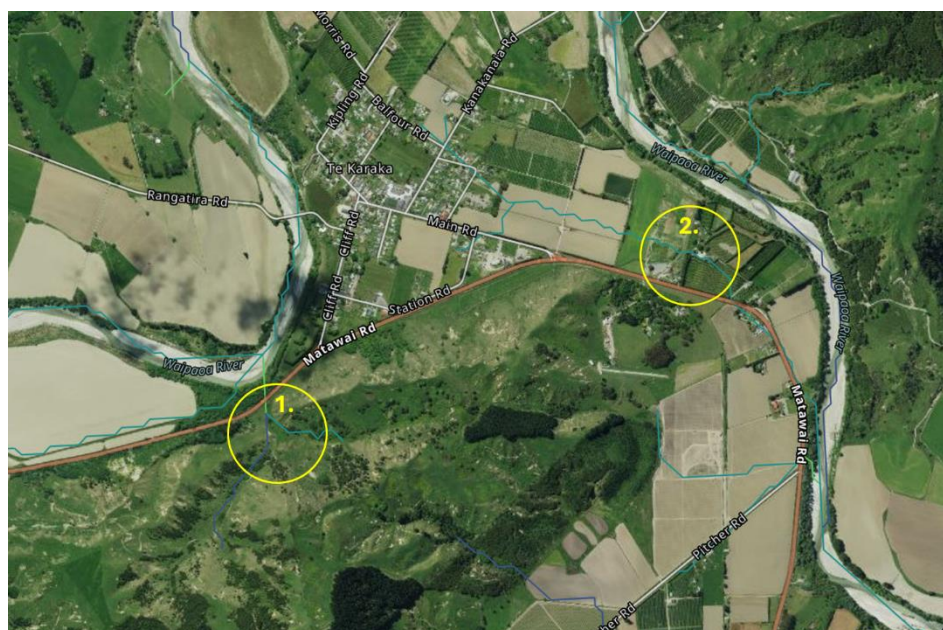


Figure 1 Stream segments used from Crow et al. modelling

- 7.6 Where multiple prediction methods were available for a species, only the highest predicted probability was retained. The results are provided in the two tables that follow

Table 1: Fish species predicted to occur at site 1

Species code	Scientific name	Common name	Highest probability
angdie	<i>Anguilla dieffenbachii</i>	Longfin eel	0.64
angaus	<i>Anguilla australis</i>	Shortfin eel	0.58
galmac	<i>Galaxias maculatus</i>	Īnanga	0.52
gobcot	<i>Gobiomorphus cotidianus</i>	Common bully	0.49
onctsh	<i>Oncorhynchus tshawytscha</i>	Chinook salmon	0.47
gobbas	<i>Gobiomorphus basalis</i>	Crans bully	0.42
galfas	<i>Galaxias fasciatus</i>	Banded kōkopu	0.35
galbre	<i>Galaxias brevipinnis</i>	Kōaro	0.34
gobhut	<i>Gobiomorphus huttoni</i>	Redfin bully	0.34
retret	<i>Retropinna retropinna</i>	Common smelt	0.32
caraur	<i>Carassius auratus</i>	Goldfish	0.27
chefos	<i>Cheimarrichthys fosteri</i>	Torrentfish	0.26
saltru	<i>Salmo trutta</i>	Brown trout	0.19
gobhub	<i>Gobiomorphus hubbsi</i>	Bluegill bully	0.14
oncmk	<i>Oncorhynchus mykiss</i>	Rainbow trout	0.12
rhoret	<i>Rhombosolea retiaria</i>	Black flounder	0.12
galarg	<i>Galaxias argenteus</i>	Giant kōkopu	0.1

Table 2: Fish species predicted to occur at Site 2

Species code	Scientific name	Common name	Highest probability
gobcot	<i>Gobiomorphus cotidianus</i>	Common bully	0.61
angaus	<i>Anguilla australis</i>	Shortfin eel	0.58
galmac	<i>Galaxias maculatus</i>	Īnanga	0.56
angdie	<i>Anguilla dieffenbachii</i>	Longfin eel	0.42
gamaff	<i>Gambusia affinis</i>	Mosquitofish	0.35
gobbas	<i>Gobiomorphus basalis</i>	Crans bully	0.31
onctsh	<i>Oncorhynchus tshawytscha</i>	Chinook salmon	0.28
Retret	<i>Retropinna retropinna</i>	Common smelt	0.27
gobhut	<i>Gobiomorphus huttoni</i>	Redfin bully	0.2

- 7.7 Although the Crow et al. model predicts a moderate probability of occurrence for Chinook salmon (*Oncorhynchus tshawytscha*), this species is primarily associated with the South Island, with only occasional stray records reported from North Island rivers. Accordingly, Chinook salmon would not generally be expected to form a regular component of the fish community within the Project area.
- 7.8 The Crow et al. model was developed prior to the recent taxonomic revision of the non-diadromous bully complex and therefore reports *Gobiomorphus basalis* (Cran's bully) as a single taxon. Subsequent taxonomic work has recognised Dinah's bully (*Gobiomorphus diniae*) as distinct from Cran's bully (*G. basalis*). Based on the currently understood distribution of these taxa, including the occurrence of populations south of the Taupō Volcanic Zone, I consider the model prediction reported as Cran's bully to be most appropriately interpreted as Dinah's bully for the purposes of this assessment. Accordingly, references to Cran's bully in the model outputs should be read as Dinah's bully (*Gobiomorphus diniae*).
- 7.9 The Crow et al. modelling indicates that both waterways have the potential to support a relatively diverse freshwater fish community, including native galaxiids, bullies, eels and other migratory species. While the probabilities assigned to individual species should not be interpreted as evidence of current presence, the results are consistent with my professional expectations for lowland tributaries in the Waipaoa catchment. The precise species composition is less important than the broader conclusion that these waterways could support a diverse native fish assemblage where suitable habitat conditions and effective fish passage are available.
- 7.10 Of relevance is that most of the native species likely to occur are diadromous, meaning they migrate between freshwater and the marine environment as part of their life cycle. As a result, the ability of fish to access and move through these tributaries is a key determinant of ecological value. Species predicted to occur include Īnanga, kōaro, banded kōkopu, giant kōkopu, common smelt, torrentfish, common bully, and redfin bully, all of which rely to varying degrees on passage between freshwater and the sea.

- 7.11 A number of the native fish taxa likely to occur are of conservation concern. Several of the predicted species are classified as At Risk under the New Zealand Threat Classification System, while īnanga is now classified as Threatened – Nationally Vulnerable. This reinforces the need for conditions to ensure design and implementation provide for the needs of these fish.
- 7.12 The proposed conditions require the submission and certification of detailed culvert and fish passage designs prior to construction, including provision for either an automatic floodgate that remains open to provide fish passage under normal flow conditions or a passive floodgate that is routinely monitored and managed to maximise fish passage opportunities. The conditions also require culvert inverts to be embedded below the existing stream bed and for the consent holder to demonstrate how the final design will achieve an improvement in fish passage relative to the existing situation, including through the incorporation of a fish-friendly ramp or other suitable measures. I support these conditions.
- 7.13 I also support the requirement for the detailed culvert and fish-passage design to be reviewed by a suitably qualified ecologist before construction. This provides an appropriate opportunity to confirm that the final configuration is suitable for the fish species and swimming capabilities reasonably expected within these waterways.
- 7.14 I also understand that construction of the culvert structures may require temporary diversion or isolation of sections of the waterways to provide a dry working area. Where fish are present within an area to be isolated or dewatered, fish salvage should be undertaken by a suitably qualified and experienced freshwater ecologist before construction proceeds. In my opinion, this represents standard and appropriate management of the short-term construction risk to resident fish.
- 7.15 Subject to these requirements, I am satisfied that the proposed design and consent conditions will provide for the satisfactory management of freshwater fish values and are capable of maintaining or improving fish passage relative to the existing situation.

Kauri tree removal

- 7.16 I understand that a concern was raised by submitter Jenny Moran regarding the potential removal of a kauri tree associated with the Project works. That concern appears to stem from a submission point noting that a kauri tree in the affected area could be impacted and describing the species as "threatened". I am not aware of any further information confirming the location of the tree referred to or whether its removal is required as part of the Project. Nevertheless, I note some ecological considerations in the event that a kauri tree is affected by the works.
- 7.17 Gisborne lies outside the generally recognised natural distribution of kauri (*Agathis australis*), which is largely confined to northern North Island forests north of approximately 38° south latitude, principally in Northland, Auckland and the Coromandel Peninsula. On that basis, any kauri within the Project area is most likely to be a planted specimen rather than part of a naturally occurring kauri population or representative indigenous forest community.

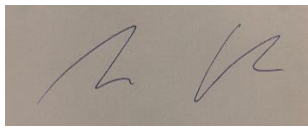
- 7.18 I would also note that kauri is classified under the New Zealand Threat Classification System as At Risk - Declining, rather than as a Threatened species. The Threatened umbrella encompasses taxa facing a higher level of extinction risk, including Nationally Critical, Nationally Endangered, Nationally Vulnerable and Nationally Increasing species. The At Risk umbrella includes a range of categories of lesser conservation concern than those that are Threatened. While the conservation status of kauri reflects ongoing population pressures and warrants appropriate consideration, the species is not currently classified within the Threatened group. In my opinion, if an individual kauri tree were required to be removed and that removal could not reasonably be avoided, the ecological effects would be appropriately considered as the loss of structural habitat with a potential need for wildlife management and addressed through replacement planting or other suitable vegetation mitigation measures.

Water take for dust suppression

- 7.19 I understand the Applicant is seeking authorisation to take water from the Waipaoa River for construction purposes, including dust suppression, moisture conditioning of earthworks, and other associated construction activities. As currently proposed, the water take is to be allocated from the Waipaoa River B Block allocation regime, which is subject to a cease-take trigger when river flows at Kanakanaia Bridge fall below 4,000 L/s.
- 7.20 I understand the cease-take trigger for the A Block is 1,300 L/s.
- 7.21 I understand that the demand for dust-suppression water is likely to be greatest during dry conditions, when river flows are also more likely to approach the applicable cease-take thresholds.
- 7.22 From a freshwater ecology perspective, I do not consider there to be a meaningful distinction between the ecological effects of taking water under the Waipaoa River A Block allocation regime (cease-take flow of 1,300 L/s) and the B Block allocation regime (cease-take flow of 4,000 L/s). The proposed abstraction is limited to a maximum of 30 litres per second, which represents less than 2.5% of river flow at the A Block cease-take threshold and less than 1% of river flow at the B Block cease-take threshold. In either case, the volume of water being removed is very small when viewed in the context of the flow present within the Waipaoa River and would not be expected to result in measurable changes to water depth, wetted habitat availability, fish passage, hydraulic habitat, water quality, or other ecological processes.
- 7.23 I also consider the temporary nature of the water take to be highly relevant. The abstraction is associated with construction activities only and will occur for a limited duration rather than being an ongoing pressure. This distinguishes the proposal from irrigation and other long-term takes that can contribute to the cumulative effects of water allocation within a catchment.
- 7.24 In my opinion, the small scale and temporary nature of the proposed take substantially reduce the potential for cumulative ecological effects. Any adverse effects from this take, in isolation, on freshwater ecological values would be negligible.

8 Conclusion

- 8.1 The ecology matters raised through submissions and the subsequent aquatic ecology review relate primarily to uncertainty regarding fish community composition within smaller tributaries, fish passage design, the potential removal of a kauri tree, and the temporary construction water take.
- 8.2 Having reviewed these matters, I am satisfied that they can be appropriately managed through the proposed design approach and consent conditions.
- 8.3 In my opinion, none of the matters raised alter my conclusion that the Project can be undertaken without resulting in more than minor adverse effects on ecological values.

A handwritten signature in dark ink, appearing to read 'A. Hicks', is written on a light-colored rectangular background.

Andrew Steven Hicks

14 September 2026