

Memo.

**Manapōuri Lake Control Improvement Project –
Response to avifauna S92 requests**

To: Meridian Energy Ltd

From: Dr Leigh Bull

Date: 31 May 2024

Project No.: BG2407

Introduction

Hoye et al. (2023) authored the “Assessment of Environmental Effects: Freshwater” that accompanied Meridian Energy Limited (MEL) resource consent application for the Manapōuri Lake Control Flow Improvement Project (MLCIP). That report included an assessment of effects on freshwater avifauna. The avifauna specialist from NIWA who informed this assessment has since changed employers, and I understand is no longer available to assist with the MLCIP application.

MEL has therefore engaged BlueGreen Ecology to respond to Environment Southland’s s92 request (dated 13 May 2024), in relation to question 3 of the request. This relates to potential effects on native birds, and contains four components, each of which is addressed below.

Effects on native birds:

3. *Please provide an evaluation of the indigenous avifauna occupying the sediment deposition sites for nesting, feeding or roosting and the effects of the project on these species.*

Please provide an evaluation of the use of the wider area affected by the project by bird species for roosting and the effects of the project on this activity.

Can you provide further explanation for why the effects on bird species of conservation concern (Data Deficient, At Risk or Threatened species) is considered minor and a description of what “minor” means in the context of the evaluation.

Please also provide the source documents that support your assessment, in particular McClellan 2001, McClellan 2002 and Whitehead 2021.

Relevant Qualifications

The author of this memo holds the relevant qualifications and experience appropriate to undertake this work:

- Bachelor of Science (Zoology), MSc with Honours (Ecology) and PhD (Ecology).

- 20 years of working as a practicing ecologist / ornithologist, including within the Biodiversity Recovery Unit of the Department of Conservation (DOC).
- Co-authoring the DOC New Zealand threat classification list (Hitchmough et al., 2007) as well as reviewing and production of a number of DOC threatened species recovery plans.
- Preparation of ecological assessments and provision of expert avifauna advice for the consenting for large scale infrastructure projects (e.g. Tekapo Power Scheme reconsenting, Waitaki Power Scheme reconsenting, Lyttelton Port development, Christchurch Airport, Harapaki Wind Farm).

Assessment Method

Given the s92 requests information pertaining to the effects on avifauna, we have used the EIANZ ecological impact assessments guidelines (Roper-Lindsay et al., 2018), whereby a matrix was used to determine the overall level of ecological effect (Table 1) which combines the magnitude of the effect in association with the ecological values.

The EIANZ guidelines (Roper-Lindsay et al., 2018) use the New Zealand threat classification as a criteria for assigning ecological value as outlined in Table 2. Robertson et al. (2021) provides the most recent threat classifications for avifauna and as such has been used to assign values to individual species.

Table 3 lists the criteria and descriptions for determining the magnitude of effect as described in the EIANZ guidelines (Roper-Lindsay et al., 2018). For this assessment, we have taken a species, rather than habitat, focus and applied the criteria or proportion thresholds below, to assist with determining the magnitude of effect (text italicised and bolded in Table 3):

- Very High: >50% of the population¹ affected or habitat lost.
- High: 20-50% of the population affected or habitat lost.
- Moderate: 10-20% of the population affected or habitat lost.
- Low: 1-10% of the population affected or habitat lost.
- Negligible: <1% of the population affected or habitat lost.

For the purposes of this assessment, in determining overall effects of the proposal, the Ecological District (Upukerora) scale is considered most appropriate.

According to Roper-Lindsay et al. (2018), the overall level of effect (Table 1 below) can then be used to guide the extent and nature of the ecological management response required (including the need for biodiversity offsetting):

- Very High adverse effects require a net biodiversity gain.
- High and Moderate adverse effects require no net loss of biodiversity values.
- Low and Very Low effects should not normally be a concern. If effects are assessed taking impact management developed during project shaping into consideration, then it is essential that prescribed impact management is carried out to ensure Low or Very Low effects.

¹ At the scale of the Upukerora Ecological District

Table 1: Criteria for describing the level of effect (Roper-Lindsay et al., 2018)

LEVEL OF EFFECT		ECOLOGICAL AND / OR CONSERVATION VALUE				
		Very High	High	Moderate	Low	Negligible
MAGNITUDE	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

Table 2: Criteria for assigning ecological value to species (Roper-Lindsay et al., 2018).

ECOLOGICAL VALUE	SPECIES CLASSIFICATION
Very High	Nationally Threatened (Nationally Critical, Nationally Endangered, Nationally Vulnerable, Nationally Increasing ²) species found in the ZOI ³ either permanently or seasonally
High	Species listed as <i>At Risk – Declining</i> found in the ZOI either permanently or seasonally.
Moderate	Regionally Recovering or Naturally Uncommon species found in the ZOI either permanently or seasonally; or Locally (ED) uncommon or distinctive species.
Low	Regionally Not Threatened
Negligible	Exotic species, including pests, species having recreational value.

Table 3: Criteria for describing magnitude of effect (Roper-Lindsay et al., 2018)

MAGNITUDE	DESCRIPTION
Very High	Total loss of, or very major alteration, to key elements/ features of the baseline conditions such that the post development character/ composition/ attributes will be fundamentally changed and may be lost from the site altogether; AND/OR Loss⁴ of a very high proportion of the known population or range of the element / feature.
High	Major loss or major alteration to key elements/ features of the existing baseline conditions such that the post-development character, composition and/or attributes will be fundamentally changed; AND/OR Loss⁴ of a high proportion of the known population or range of the element / feature.
Moderate	Loss or alteration to one or more key elements/features of the existing baseline conditions, such that post-development character, composition and/or attributes will be partially changed; AND/OR Loss⁴ of a moderate proportion of the known population or range of the element / feature.
Low	Minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible, but underlying character, composition and/or attributes of the existing baseline condition will be similar to pre-development circumstances/patterns; AND/OR Having a minor effect on the known population or range of the element / feature.
Negligible	Very slight change from existing baseline condition. Change barely distinguishable, approximating to the “no change” situation; AND/OR Having a negligible effect on the known population or range of the element / feature.

² Nationally Increasing is category that was devised by DOC (Michel, 2021) in 2021 to resolve a problem that would arise if the population of a taxon assessed as At Risk Recovering A should stabilise. Threatened – Nationally Increasing is assigned to “Small population that have experienced a previous decline (or for which it is uncertain whether it has experienced a previous decline) and that is forecast to increase >10% over the next 10 years or 3 generations, whichever is longer” (Rolfe et al., 2021). Thus, while such a threat category is not identified in Roper-Lindsay et al. (2018), we have included it along with all other *Threatened* classifications in to the Very High ecological value category.

³ Roper-Lindsay et al. (2018) define the Zone of Influence (ZOI) as “the areas/resources that may be affected by the biophysical changes caused by the proposed project and associated activities.”

⁴ In the context of mobile fauna, the term “loss” can include displacement from an area.

Further Information Requests

QUESTION: *Please provide an evaluation of the indigenous avifauna occupying the sediment deposition sites for nesting, feeding or roosting and the effects of the project on these species.*

RESPONSE:

We have interpreted the “sediment deposition sites” referred to in this question to be the 14.5 ha spoil disposal site identified in Figure 1.1 and Section 5.6 of the AEE (Tonkin & Taylor Ltd, 2023). Boffa Miskell (2023) describe the spoil disposal site as a relatively flat area of exotic grassland (e.g. Yorkshire fog, sweet vernal, perennial ryegrass, crested dogstail, and cocksfoot) and young planted Eucalyptus sp. trees. A number of wetlands were identified on the site by Boffa Miskell (2023), however the construction footprint now avoids all but one of these, which in and of itself was assessed as having Low ecological value from a terrestrial vegetation perspective (refer to Figure 7 in Boffa Miskell (2023)).

A list of the freshwater and terrestrial avifauna species that have been recorded in the wider area, and associated with the Manapouri Lake Control site (MLC), is provided in Table 4 and Table 5 respectively.

Based on the above description of the terrestrial vegetation at the disposal site, the species most likely to be present will be the introduced terrestrial species listed in Table 5. If left as is, the eucalyptus trees would grow and the native grey warbler and fantail may also utilise the site. All these species are common and widespread, and are assigned Negligible to Low ecological value. Given the abundant availability of habitat for these species in the wider area, the magnitude of the effect of the project on these species will be Negligible, resulting in a **Very Low** effect overall.

With regards to freshwater species, the disposal site may provide limited and marginal habitat opportunities, including:

- Roosting habitat for South Island pied oystercatcher (SIPO), pied stilt, southern black-backed gull.
- Foraging habitat for banded dotterel, most likely in association with the wetlands.
- Breeding habitat for spur-winged plover.

However, it should be noted that over time, such potential habitat use will decrease due to the growth of the planted Eucalyptus trees which will not be conducive to these species’ requirements. Nevertheless, even the loss of this area in its current state will result in a Negligible magnitude of effect due to it providing only marginal habitat for the species identified, with higher value habitat available elsewhere, and all but one of the wetlands being avoided. When combining this magnitude of effect with High (banded dotterel and SIPO) or Low (pied stilt, southern black-backed gull, spur-winged plover) ecological value, the overall level of effect of the project on species potentially utilising spoil disposal site will be Low to Very Low.

Table 4: List of freshwater avifauna species recorded in the wider area, and associated with MLC (Source: Whitehead (2021)).

SPECIES	CLASSIFICATION	ECOLOGICAL VALUE ⁵	GUILD	MLC
NZ scaup	Not Threatened	Low	Open water diver	
Black shag	At Risk - Relict	Moderate	Open water diver	x
Little shag	At Risk Relict	Moderate	Open water diver	x
Australasian shoveler	Not Threatened	Low	Dabbling waterfowl	
Black swan	Not Threatened	Low	Dabbling waterfowl	x
Grey teal	Not Threatened	Low	Dabbling waterfowl	x
Paradise shelduck	Not Threatened	Low	Dabbling waterfowl	
Canada goose	Introduced & Naturalised	Negligible	Dabbling waterfowl	
Mallard	Introduced & Naturalised	Negligible	Dabbling waterfowl	x
White-faced heron	Not Threatened	Low	Deep water wader	
Spur-winged plover	Not Threatened	Low	Deep water wader	x
SIPO	At Risk – Declining	High	Deep water wader	x
Pied stilt	Not Threatened	Low	Deep water wader	x
Banded dotterel	At Risk - Declining	High	Shallow water wader	x
Swamp harrier	Not Threatened	Low	Riparian wetland	x
Welcome swallow	Not Threatened	Low	Riparian wetland	x
Black-billed gull	At Risk - Declining	High	Aerial gulls & terns	x
Southern black-backed gull	Not Threatened	Low	Aerial gulls & terns	x
Black-fronted tern	Threatened – Nationally Endangered	Very High	Aerial gulls & terns	

Table 5: List of terrestrial avifauna species recorded in the wider area (Source: Whitehead (2021)).

SPECIES	CLASSIFICATION	ECOLOGICAL VALUE ⁵
Grey warbler	Not Threatened	Low
Skylark	Introduced & Naturalised	Negligible
Australian magpie	Introduced & Naturalised	Negligible
Yellow hammer	Introduced & Naturalised	Negligible
Chaffinch	Introduced & Naturalised	Negligible
Goldfinch	Introduced & Naturalised	Negligible
Redpoll	Introduced & Naturalised	Negligible
Dunnock	Introduced & Naturalised	Negligible
South Island fantail	Not Threatened	Low
Starling	Introduced & Naturalised	Negligible
Blackbird	Introduced & Naturalised	Negligible
Song thrush	Introduced & Naturalised	Negligible

⁵ As per Table 2

QUESTION: Please provide an evaluation of the use of the wider area affected by the project by bird species for roosting and the effects of the project on this activity.

RESPONSE:

The freshwater species found in the wider area are listed in Table 4 above, along with their relative guild.

Swamp specialist and riparian wetland species (e.g. swamp harrier and welcome swallow) are associated with wetland vegetation along the lake and margins, while tall trees adjacent to these freshwater habitats provide roosting habitat for some open water divers (e.g. shags). Given that these habitats will not be impacted by the project, there will be no impact on roosting by these species. This matter will be further confirmed after I have undertaken a site visit and before the hearing.

Open water divers, dabbling waterfowl, waders, and aerials gulls and terns utilise shallow edge and shoreline habitats for roosting (and foraging). The channel excavation will result in the loss of several areas of potential roosting habitat for these species (refer to areas circled yellow in Figure 1 below), however similar habitat remains available nearby.

Overall, we consider the magnitude of effect of the project on roosting birds will be Negligible. When combining this magnitude of effect with High (banded dotterel, SIPO) to Low ecological value, the level of effect of the project on roosting species will be **Low to Very Low**.

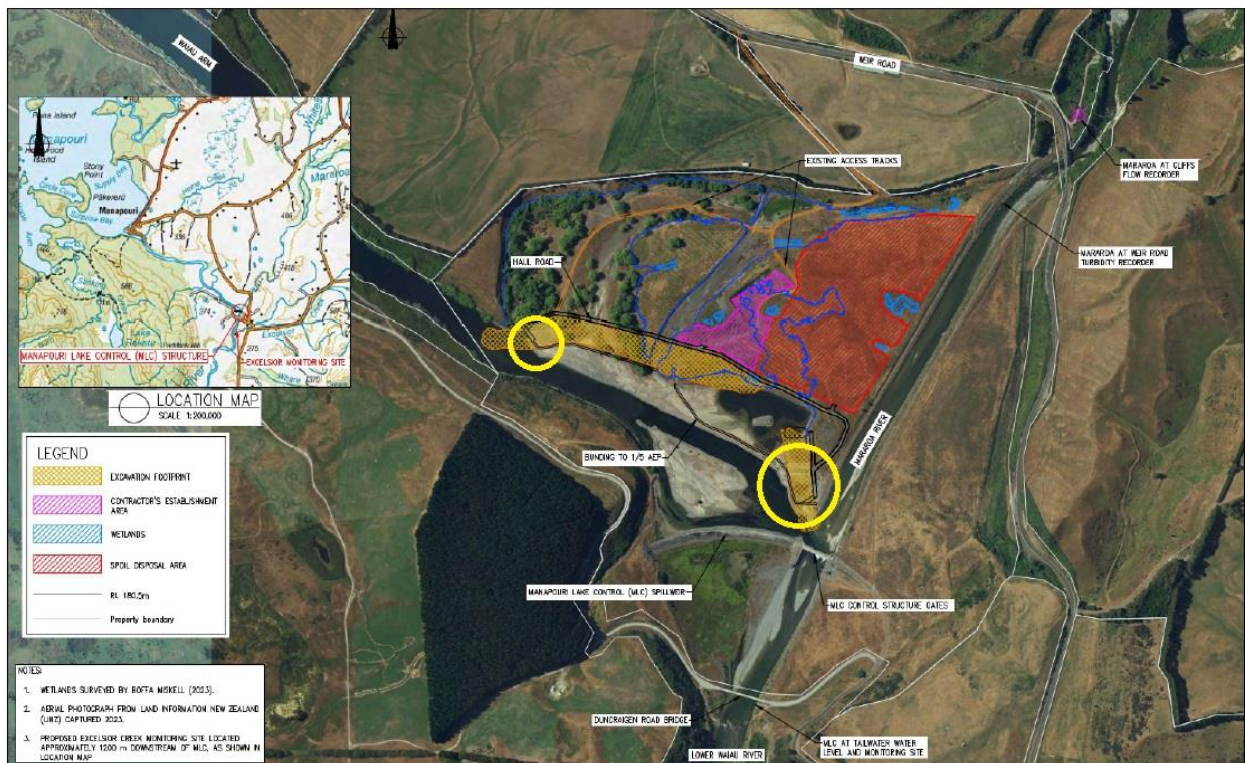


Figure 1: Project overview. Yellow circles denote area of potential roosting habitat that will be lost under the footprint

QUESTION: *Can you provide further explanation for why the effects on bird species of conservation concern (Data Deficient, At Risk or Threatened species) is considered minor and a description of what “minor” means in the context of the evaluation.*

RESPONSE:

As noted by NIWA (2024), their assessment of effects (Hoyle et al., 2023), including for birds, did not use a formal framework but was based on expert opinion combining the ecological value in question (i.e., does the value have special status, are there threatened species) with type and duration of effect. Hoyle et al. (2023) considered the effects of the project on birds would be minor in the view of:

- Mitigating factors that will enable avoidance of effects on birds (e.g. construction outside of the breeding season of Threatened and At Risk species as well as their mobility across the catchment);
- The relatively small effects expected from the Project of fine sediment inputs, and therefore not impacting the foraging ability and food supply of birds, including Threatened and At Risk species;
- The temporary nature of the effects (for the duration of the Project) with expected rapid recovery afterwards.

NIWA (2024) concluded that the effects are assessed as minor because they are small effects, for a small amount of time, on an ecosystem that is already relatively low quality.

We have considered the potential effects identified both within the ecological assessment (Hoyle et al., 2023), and in the above s92 questions, using the EIANZ method and consider the magnitude of these to be Negligible in the context of the species at the scale of the Ecological District. When combined with Very High (e.g. black-fronted tern) to Low (e.g. pied stilt) ecological values, the overall level of effect will be **Low to Very Low**.

In the RMA context, minor adverse effects are defined as being “noticeable but will not cause any significant adverse impacts”⁶. Therefore, based on our assessment using the EIANZ method, we consider that the minor effect identified by NIWA (Hoyle et al., 2023; NIWA, 2024) is correct and appropriate, even in the context of the RMA definition.

QUESTION: *Please also provide the source documents that support your assessment, in particular McClellan 2001, McClellan 2002 and Whitehead 2021.*

RESPONSE:

A copy of the requested documents will be provided.

⁶ Quality Planning website <https://www.qualityplanning.org.nz/node/837>

References

- Boffa Miskell Ltd. (2023). *Manapōuri Lake Control Improvement Project: Wetland Assessment Report* [Report prepared by Boffa Miskell Ltd for Meridian Energy Ltd].
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