

Your Comment on the Lake Pūkaki Hydro Storage and Dam Resilience Work application

Please include all the contact details listed below with your comments and indicate whether you can receive further communications from us by email at substantive@fastrack.govt.nz

1. Contact Details			
Please ensure that you have authority to comment on the application on behalf of those named on this form.			
Organisation name (if relevant)	Department of Conservation		
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2. We will email you draft conditions of consent for your comment			
X	I can receive emails and my email address is correct	<input type="checkbox"/>	I cannot receive emails and my postal address is correct

3. Please provide your comments on this application
Please find comments attached

Note: All comments will be made available to the public and the applicant when the Ministry for the Environment proactively releases advice provided to the Minister for the Environment.



Jenni Fitzgerald
Fast-Track Applications Manager

Acting pursuant to delegated authority on behalf of the Director-General of Conservation.

Date: 8/4/2025

Note: A copy of the Instrument of Delegation may be inspected at the Director-General's office at Conservation House Whare Kaupapa Atawhai, 18/32 Manners Street, Wellington 6011

Comments on a fast-track consenting application

Fast-track Approvals Act 2024 section 53

To: The Expert Panel

From: Department of Conservation

Regarding fast-track project: Lake Pūkaki Hydro Storage and Dam Resilience Work

Fast track Reference: FTAA-2510-1120

1 Overview

- 1.1 Meridian Energy Limited (the applicant / Meridian) is seeking approval to temporarily ease access restrictions on Lake Pūkaki hydro storage to allow it to operate between 518.0 m RL and 513.0 m RL over the next three years to 31 December 2028. The application indicates that this is anticipated to be a period of potential electricity shortages.
- 1.2 The applicant is also seeking approval to permanently install rock armouring at Pūkaki Dam to ensure the structure's resilience to wave erosion when operating the lake at lower levels (below 518.0 m RL). The application indicates that this work is necessary to ensure the safe operation of the Pūkaki Dam at these lower lake levels. Undertaking this work is dependent upon suitably low lake levels and the rock, once placed, will be permanent.
- 1.3 The application does not involve activities on public conservation land.
- 1.4 Approvals are sought in relation to the Resource Management Act 1991 (RMA) and the Wildlife Act 1953.
- 1.5 In accordance with sections 53(2)(k), 53(2)(m)(i), and 53(2)(m)(iv) of the Fast-track Approvals Act (FTAA / the Act), the Director-General of Conservation (D-G) has been invited to comment on the substantive application. Statutory delegations authorise Department of Conservation officials (DOC / the Department) to perform that function.
- 1.6 Under the Waitaki Catchment Water Allocation Regional Plan, operation of the lake below 518.0 m RL is a prohibited activity. However, an application made under the Fast-track Approvals Act 2024 may seek approval for a prohibited activity, in accordance with section 42(5) of the Act.
- 1.7 In addition, resource consent is required under the Canterbury Land and Water Regional Plan for the following elements of the rock armouring proposal:
 - discharge of water or contaminants onto or into land in circumstances where a contaminant may enter groundwater;

- discharge of water or contaminants into surface water or onto or into land in circumstances where it may enter surface water, and;
 - deposition of material onto the bed of the lake.
- 1.8 DOC's understanding is that resource consent is not required under any applicable planning document for the disturbance of the dam itself, or for the excavation, deposition or stockpiling of materials associated with the rock armouring. This is the aspect of the project that will likely impact lizards. Because of the absence of a resource consent trigger for this part of the proposal, effects on lizards are not considered in these section 53 comments; instead, these are discussed in DOC's section 51 report, which focuses on the application for wildlife approval relating to lizards.
- 1.9 The Department's concerns in relation to the resource consent application focus on: effects from the lowering of the level of Lake Pūkaki, specifically effects on the wetlands and terrestrial vegetation around the lake, and effects on birds and their habitat; and effects on terrestrial vegetation from proposed vegetation clearance associated with the rock armouring works.

2 Department of Conservation advice

- 2.1 The following advice is based on:
- the application documents provided to the EPA on 5 November 2025, as amended by the additional and updated documents provided to the EPA on 8 December 2025 and 5 March 2026; and
 - additional documents that were provided to the Department by Meridian on request. These comprise the peer review of Meridian's modelling of lake levels at Lake Pūkaki undertaken by Sapere (March 2025), a report prepared by Boffa Miskell that informed Meridian's understanding of the existing wetland environment around the lake (April 2020), and daily lake level data from 1 January 1980 to present.
- 2.2 The assessment in this report is informed by expert technical advice, which is provided in full in **Appendix A**.
- 2.3 Overall, the Department is satisfied that effects on avifauna will be appropriately managed but has concerns in relation to effects on wetlands and their plant communities. Amendments are proposed to conditions to address these concerns as follows:
- Addition of a new condition to provide assurance that the fluctuating lake levels necessary to maintain the wetlands and their turf communities will continue, similar to the approach currently taken by Meridian at lakes Te Anau and Manapouri. This could be achieved by: defining a "main operating range" of lake levels for Lake Pūkaki, based on lake level data from the past 20 years; requiring endeavours to maintain continuous variation within that range and to achieve an annual mean level within that range; setting limits on the duration of time spent below this range; and

requiring a minimum interval between drawdowns below 518 m RL. A condition of this kind would align the proposal with Meridian's modelling of predicted lake levels over the consent period and would also be in line with mitigation measures proposed in the application. Both the modelling and the mitigation measures have been used in the application as a basis for assessing effects on wetlands.

- Addition of a new condition to require the establishment of a regular vegetation monitoring regime, to ensure that adverse effects on wetlands and their plant communities can be identified and remedied.
- Deletion of a condition requiring "re-grassing" of areas cleared of vegetation for an access track, and addition of a new condition to require: a survey for weeds and indigenous shrubs along proposed track(s) prior to disturbance; routing of access tracks to avoid indigenous shrubs where practicable; and a programme of follow-up weed survey and weed removal in the affected areas.

3 Assessment

- 3.1 This assessment focuses on the actual and potential ecological effects of the Application. The Department has generally not commented on its consistency with the wider statutory framework.
- 3.2 The Department welcomes the opportunity to comment on draft conditions, as set out in section 70 of the Act. Comments on conditions are also provided in Section 4 below.

3.3 Terrestrial vegetation and wetlands

- 3.3.1 The Department has reviewed the application with respect to effects on wetlands and their plant species and communities, and provides the following comments.

Ecological values

- 3.3.2 As set out in Dr Susan Walker's evidence (see Appendix A), lake margins are wetlands (classified as marshes¹) and naturally uncommon ecosystems in New Zealand (Williams et al. 2007)² and are ranked as Vulnerable according to International Union for Conservation of Nature (IUCN) criteria³. Both the Tasman River Delta at the head of Lake Pūkaki and parts of the lake margin around the eastern shores of Lake Pūkaki support indigenous short turf vegetation. These are associations of indigenous species that are highly distinctive, of restricted occurrence,

¹ In New Zealand, a marsh is a mineral-soil wetland characterized by high nutrient levels, neutral pH, and significant water level fluctuations. Marshes are found on valley margins, around lake edges, or along rivers. They are dominated by non-woody vegetation.

² Williams, P.A.; Wiser, S.; Clarkson, B.; Stanley, M.C. 2007. New Zealand's historically rare terrestrial ecosystems set in a physical and physiognomic framework. *NZ Journal of Ecology* 31: 119-128.

³ Holdaway, R.J.; Wiser, S.K.; Williams, P.A. 2012. Status assessment of New Zealand's naturally uncommon ecosystems. *Conservation Biology* 26: 619-629.

occur within an originally rare ecosystem (i.e. on lake margins) and have developed as a result of unusual environmental factors (i.e. seasonal inundation followed by exposure).

- 3.3.1 The Department is concerned that the identification of potentially affected terrestrial vegetation and wetland values provided in the Ecological Impact Assessment (EIA) provided by Tonkin and Taylor (dated October 2025) is incomplete.
- 3.3.1 Firstly, although the EIA refers to the Tasman River Delta wetland, it does not identify or assess effects on the lake margin turf wetlands on the eastern shore of the lake (hereafter “eastern lake margin turf wetlands”). Dr Walker considers that the turf communities in both the Tasman River Delta and the eastern lake margin turf wetlands meet the definition of indigenous vegetation in the Mackenzie District Plan, are consistent with multiple significance criteria in the Canterbury Regional Policy Statement (CRPS), and are significant under the Mackenzie District Plan. Seven threatened or at-risk (TAR) vascular plant species have been recorded within the eastern lake margin turf wetlands (see Attachment 4 of Dr Walker’s evidence). These are:
- *Crassula peduncularis* (Threatened – Nationally Critical)
 - *Leptinella maniototo*, *Montia angustifolia*, *Veronica lilliputiana* and *Epilobium angustum* (all At Risk – Declining)
 - *Juncus pusillus* and *Centrolepis minima* (both At Risk – Naturally Uncommon).
- 3.3.2 Dr Walker notes that both the Tasman River Delta wetland and the eastern lake margin turf wetlands are highly dependent on the fluctuating levels of Lake Pūkaki: *The primary ecological driver of both the eastern lake margin turf wetlands and the turfs of the Tasman River delta is periods of lake inundation followed by periods of exposure when lake levels are low. Both therefore have very high connectivity with the lake, both ecologically and hydrologically.*
- 3.3.3 This high connectivity of the eastern lake margin turf wetlands with the lake adds to the Department’s concerns about the apparent omission of those wetlands from the EIA. Section 5.4 of the EIA (the assessment section for wetlands) assesses effects on the Tasman River Delta only, on the basis that it is “the only wetland with a direct hydrological connection to the lake”.
- 3.3.4 Secondly, in relation to the Tasman River Delta wetland, the list of TAR plant species provided in the EIA is incomplete and out-of-date. The EIA lists only five TAR plant species present in this area, as follows:
- Turf marsh arrow grass/*Triglochin palustris* (Threatened – Nationally Endangered)
 - Buchanan’s sedge/*Carex buchananii* (At Risk – Declining)
 - *Montia angustifolia* (At Risk – Declining)

- Pygmy clubbrush/*Isolepis basilaris* (At Risk – Naturally Uncommon)
- *Leptinella maniototo* (At Risk – Relict)

3.3.5 However, Dr Walker’s evidence cites sources indicating that a further 11 TAR plant species are present in the Tasman River Delta, as follows:

- *Luzula celata* (Threatened - Nationally Vulnerable),
- *Carmichaelia petriei*, *Koelaria antarctica*, *Leptinella pusilla*, *Lobelia ionantha*, *Poa maniototo*, *Raoulia australis* and *Rytidosperma thomsonii* (all At Risk – Declining) and
- *Euchiton delicatus*, *Juncus pusillus* and *Ranunculus maculatus* (all At Risk – Naturally Uncommon).

3.3.6 Finally, there may also be effects on additional wetlands. The EIA discusses potential effects from eased access to the water below 518 m RL on 16 wetlands other than the Tasman River Delta (these do not include the eastern lake margin turf wetlands). The EIA (Section 4.2.1) reports that, in a 2023 assessment undertaken by Boffa Miskell, all 16 wetlands “were considered ‘Significant’ in accordance with the Canterbury Regional Policy Statement (CRPS) definitions”. Table 4.2 in the EIA indicates that 13 of these wetlands are assessed by the authors as having “moderate” ecological value, and three as having “high” ecological value.

3.3.7 Based on the 2025 groundwater assessment undertaken by GHD (Appendix J of the substantive application), the EIA (section 4.2.1) concludes that these 16 wetlands will not be affected by the eased access proposal:

Further assessment has been undertaken by GHD (2025) on wetland hydrology and groundwater effects. Their analysis concluded that the 17 wetlands are occasionally inundated by the lake. With the exception of the Tasman Delta, these wetlands interact with lake at approximately 525 m RL and above. Given the large range of lake levels that occur now (518 to 532.5 m RL), it is considered unlikely that there will be a change to wetland hydrology if the lake operates between 518 and 513 mRL for limited periods of time. They also found that the effect of lake lowering would result in no change to groundwater for all wetlands.

3.3.8 On that basis, the main application document states (section 4.10.2):

Therefore, for the purposes of assessing wetland effects associated with this proposal, the only relevant wetland is the Tasman Delta.

3.3.9 However, Dr Walker’s evidence questions this conclusion in relation to the 16 other wetlands. She comments:

Retaining dynamic lake levels within the current elevation range is also likely to be important to maintain the functioning of the other 16 ‘other’ wetlands adjacent to Lake Pūkaki. Compared to the turfs, the ‘other’ wetlands are expected to interact with the lake at somewhat higher lake levels (mostly from 530 m according to GHD) and

therefore more occasionally (the lake was above 530 m on 30.4% of days over the last 20 years). However, even occasional inundation may play a crucial ecological role, for example by periodically setting back weed invasion.

Of the 16 'other' wetlands the most dependent on lake dynamism is the Glentanner Airstrip wetland, which GHD estimated to be affected by the lake at '~525-530 m' which represents up to 82.9% of days over the last 20 years.

Potential effects from lower lake levels

- 3.3.10 Eased access to the water in Lake Pūkaki below 518 m RL, and the resulting lower average lake levels, could adversely affect wetlands and their plant species and communities, including the Tasman River Delta wetland, the eastern lake margin turf wetlands and the 16 other wetlands, in the following ways, which are set out in more detail in Dr Walker's evidence.
- 3.3.11 Inundation when lake levels are high suppresses weed invasion, and "resets" the habitat via disturbance, reworking of the substrates, and deposited veneers of fresh silt. When lake levels fall again each year, the turfs re-establish on freshly disturbed, weed-free substrate.
- 3.3.12 Protracted low lake levels allow time for taller weed species, such as pasture grass and tall herbs, to invade from the surrounding environment, and then competitively exclude the small indigenous plant species.
- 3.3.13 If lake drawdown occurs over an extended period, this can prevent indigenous plant species from maintaining populations, resulting in loss of the key values of the turfs.
- 3.3.14 Therefore, fluctuating lake levels are necessary for the turf communities to exist in these areas; low levels are needed for the communities to develop each year, but periodic inundation is also required to exclude taller invasive weed species and maintain suitable habitat.
- 3.3.15 Dr Walker cites research on the Tasman River Delta, from 2014 to 2016, which indicates that the levels of inundation and disturbance present at that time were important for the persistence of the turf plant pygmy clubrush / *Isolepis basilaris* (At-risk - Naturally uncommon), because they prevented the dominance of taller pasture species.

Modelling of lake levels over the duration of the consent

- 3.3.16 Although consent for the lower lake level is sought for a period of three years, the application indicates that, according to modelling undertaken by Meridian, "the lake levels would drop below 518.0 m RL for a maximum of 39 days" within the three years.⁴

⁴ [12656630-Substantive-Application-Final-Redacted_Redacted.pdf](#), section 8.9.1.1, p66.

- 3.3.17 Based on this assumption, the EIA assesses effects on the Tasman River Delta wetland as “negligible” (section 5.4). However, Dr Walker raises concerns that the 39-day maximum may be an underestimate:

I have reservations about the reliability of the low water level duration predicted by Meridian’s model. If I understand correctly, the model assumes that hydrological and meteorological conditions in future will be within the probability distribution of the past 91 years⁵. Yet the climate is changing directionally rather than varying around some historic mean. Therefore lake level outcomes in future years will not necessarily fall within the probability distribution calculated across most of the last century.

- 3.3.18 As discussed further below, no consent conditions are proposed in relation to duration of low water level.

Potential effects from vegetation clearance and proposed consent condition on “re-grassing”

- 3.3.19 On a separate matter, the Department notes that, as part of the proposed rock armouring works on the dam, a 915 m² area of “short grass with occasional native shrubs” is proposed to be cleared, to establish an access track. This area is briefly described at section 5.5.1.2 of the EIA, and the species present in the area are listed in Appendix E of the EIA at Table E.2. Dr Walker’s view is that this area is ecologically significant, based on criteria in the Canterbury RPS, due to the presence of at least five At Risk - Declining native plant species. However, it is not assessed as such in the EIA (see section 4.3.1).

- 3.3.20 Proposed conditions of the consent would require replanting of this area, following the completion of works, as described at condition 13.d (CRC262541):

Within 14 days of the final completion of rock armouring activities at the site:

...

Re-grassing of any remaining areas of bare ground to match the surrounding existing land.

- 3.3.21 Dr Walker notes that this “re-grassing” is likely to be undertaken using exotic pasture species, which, in this context, “are weeds that compromise natural regeneration of indigenous shrubs, grasses, and mat/cushion herbs”.

Amendments to conditions

- 3.3.22 Amendments to conditions to address the concerns set out in this section are provided in Section 4 below.

3.4 Avifauna

⁵ Appendix B to the application states that “modelling was based on 91 years of catchment hydrological and meteorological data.”

- 3.4.1 The Department has reviewed the application with respect to effects on avifauna and notes potential effects from lake lowering on food availability for braided riverbed birds that use the Tasman River and delta as feeding and breeding habitat. This includes the nationally critical threatened species – kakī / black stilt, but also black-fronted tern / tarapirohe, black-billed gull / tarāpuka, wrybill / ngutu pare, banded dotterel / tūturiwhatu and, South Island pied oystercatcher / tōrea.
- 3.4.2 The Department is satisfied that this potential effect is appropriately managed via an existing agreement between Meridian and DOC (entered into as part of Plan Change 1 to the Waitaki Catchment Water Allocation Regional Plan), under which kakī monitoring will continue to be undertaken, focused on the Tasman Delta, or elsewhere if the birds shift in response to changing lake levels, when the lake level drops below 518 m RL. As set out in section 5.5.2.1 of the EIA, if additional lowering impacts this Threatened - Nationally Critical bird species, the monitoring will detect any change, and management may be undertaken under the existing agreement.

4 Comments on conditions

- 4.1 All comments on conditions in this section relate to management of effects on wetlands and their plant communities.
- 4.2 Two amendments to conditions are proposed to address concerns regarding potential effects of lake lowering on wetlands.
- 4.3 Firstly, a condition is requested to provide assurance that the fluctuating lake levels necessary to maintain the wetlands and their turf communities will continue. This requires the maintenance of dynamic lake levels within the elevation range in which those turfs presently occur. To achieve this, the Department suggests that the Panel consider the application of a condition that would manage lake levels in a similar way to the approach currently taken at lakes Manapouri and Te Anau. This approach, described in Dr Walker's evidence, includes operating guidelines that are designed to protect the ecological stability of the shorelines, and their recreational values, while optimising energy output for the Manapouri Power Station.
- 4.4 A new condition of this kind would include:
- defining a “main operating range” of lake levels for Lake Pūkaki, and requiring endeavours to maintain continuous variation within that range and to achieve an annual mean level within that range, and
 - setting limits on the duration of time spent below this range, and requiring a minimum interval between drawdowns below 518 m RL.
- 4.5 Based on lake level data provided by Meridian, Dr Walker recommends that “an ecologically sensible” main operating range would be 525.4 m to 531.0 m (this represents “the middle

60%” of lake levels from the start of 2006 to the end of 2025; over this period the lake was above 525.4 m 80% of the time, and above 531.0 m 20% of the time).

4.6 In terms of time limits for the lower range, Dr Walker recommends that:

- each metre below 525.4 m should be assigned a number of allowable days per year that progressively decreases with distance from 525.4 m
- the maximum allowable days for the range from 518.4 to 517.4 m should be no greater than 39 consecutive days (aligning with Meridian’s modelling), with progressively fewer allowable consecutive days be assigned to each lower-level range (i.e. 517.4 to 516.4 m, 516.4 to 515.4 m and so on)
- to help to ensure that the lake is returned to its ecologically important normal operating range, as assumed in the EIA, the condition should specify a minimum interval of at least 8 months between any drawdowns below 518 m.

4.7 It is noted that this recommended condition would be consistent with the EIA, which proposes, in Table 7.1, “Periodic raising of the lake level to inundate wetland areas to maintain relatively normal hydrological conditions at connected wetlands” as an “impact management measure” to avoid, minimise or remedy impacts. A management measure of this kind is factored into the EIA’s assessment of effects on wetlands as “low to very low” following mitigation measures (Table 7.1), but this is not currently backed up by a consent condition.

4.8 In addition, the assessment of effects on wetlands provided in the EIA is based on Meridian’s modelling that indicated the lake levels would drop below 518.0 m RL for approximately 39 days (see EIA section 5.4). On the basis that the magnitude of effect (at 39 days over 3 years) will be “negligible”, the EIA assesses the overall level of effect as “low”, despite “very high” ecological values in the Tasman River Delta. Section 5.4 further comments:

Any additional drawdown period longer than 3% to 4% modelled (i.e. 39 days over 3 years), would be generally of a short duration (days) and not deep (GHD, 19 August 2025).

Therefore, in the unlikely scenario of an increased drawdown duration, the above impacts assessment would still hold...

4.9 However, the consent conditions currently proposed provide no assurance either that total time under 518 m RL will be 39 days over 3 years, or that any additional period under that level will be “short” and “not deep”. Given the assessment of effects has been based on this being the case, it is important that it is addressed in conditions.

4.10 Secondly, in order to identify and remedy any adverse effects that the altered lake level regime (with or without constraints on duration of drawdown set out in the condition proposed above) may have on wetlands and their plant communities, a regular vegetation monitoring regime should be established as a condition of consent, with the results reported to Canterbury Regional Council (CRC).

- 4.11 Without this monitoring, CRC will not be able to fully give effect to proposed condition 6 of consent CRC262540, which indicates that the Council may review consent conditions to deal with “an adverse effect on the environment occurring as a result of the exercise of this resource consent”.
- 4.12 Dr Walker advises that, as part of effective vegetation monitoring, a comprehensive survey for lake margin turf wetlands must first be undertaken along the eastern shoreline, as the locations of these wetlands do not appear to have been fully documented yet. Quantitative baseline measurement of turf communities present at both the Tasman River Delta and the eastern lakeshore lake margin turf wetlands will then be needed. Measurement of the current lower and upper levels of lake margin turf wetlands should be undertaken at the same time, so that these levels can be better considered in any future lake management changes.
- 4.13 The lakeshore survey and the baseline measurement work should commence in the next period of low lake levels (i.e. 525.4 m or below). Remeasurement (monitoring) should then be repeated after 2 years (and every 2 years thereafter if the consent is extended and eased access continues beyond the proposed 3 years).
- 4.14 A baseline survey, and thereafter 2-yearly wetland vegetation monitoring, should also be established in a subset of the 16 other wetlands referred to in the EIA, around the perimeter of Lake Pūkaki. That monitoring, in combination with lake level data, will provide a basis for understanding how ecologically important the interaction with the lake is for these other wetlands.
- 4.15 The Department of Conservation and CRC should both be consulted on appropriate and adequate vegetation monitoring design and methodology.
- 4.16 An amendment to conditions is also proposed to address concerns regarding potential effects from vegetation clearance associated with establishment of access tracks (see paragraphs 3.3.19 to 3.3.21 above).
- 4.17 Proposed condition 13d (CRC262541), requiring “re-grassing” of cleared areas, should be deleted and a condition should be added to require:
- a survey for weeds and indigenous shrubs along proposed track(s) prior to disturbance
 - routing of access tracks to avoid indigenous shrubs where practicable, and
 - a programme of follow-up weed survey and weed removal by ecologically appropriate methods on the cleared areas for 5 years following disturbance.
- 4.18 The Department welcomes the opportunity to comment on a draft condition set as set out in section 70 of the Act.

5 Conclusion

5.1 Overall, the Department considers effects of the Application could be appropriately managed subject to:

- the applicant addressing the concerns relating to management of effects on wetlands and their plant communities; and
- appropriate consent conditions being imposed.

5.2 Thank you for the opportunity to comment.

6 Appendices

Appendix A - Susan Walker's evidence