

BEFORE THE FTAA-2510-1120 – LAKE PŪKAKI EXPERT PANEL

Under

the Fast-Track Approvals Act 2024 (the *FTAA*).

In the matter of

the deliberations and final decision of the Expert Panel appointed under section 50 and Schedule 3 of the FTAA for the **Lake Pūkaki Hydro Storage and Dam Resilience Works** referred project requiring:

- (a) Resource consents under sections 13, 14 and 15 of the Resource Management Act 1991 to enable the operation of Lake Pūkaki below the current normal minimum level of 518.0 m above mean sea level (m RL), for a three-year period through 2028, and for civil works at Pūkaki Dam to improve the structure's resilience to wave action during lower lake operational levels; and
- (b) Authority under section 53 of the Wildlife Act 1953 to catch and relocate native lizards.

Expert Panel

Kitt Littlejohn
(*Chair*)

Tim Vial
(*Member*)

Dr Kaley Crawford-Flett
(*Member*)

Tony Cussins
(*Member*)

John Isleli
(*Member*)

**Record of Final Decision of the Expert Consenting Panel
under Section 87 of the
Fast-Track Approvals Act 2024**

Dated 3 July 2026

DECISION: *THE APPLICATION IS APPROVED SUBJECT TO CONDITIONS*

Date of Decision:

3 July 2026

Date of Issue:

3 July 2026

Comments received
under Section 53 of the
FTAA: 8 April 2026

Details of any hearing
under Section 57 of the
FTAA: No hearing was held.

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REASONS FOR DECISION MADE BY THE PANEL: FTAA-2510-1120 –

LAKE PŪKAKI HYDRO STORAGE AND DAM RESILIENCE WORKS

PART A: EXECUTIVE SUMMARY

- 1 Meridian Energy Limited (**Meridian** or, the **Applicant**) owns and operates the Waitaki Power Scheme, which includes the Lake Pūkaki Dam and its associated water intake and diversion infrastructure. Through the operation of that infrastructure, Meridian manages water stored in Lake Pūkaki to enable the hydro generation of electricity which is exported to the National Grid. The amount of water able to be taken from Lake Pūkaki for this purpose, expressed as a minimum lake level of metres above mean sea level (m RL), is regulated by rules in the Waitaki Catchment Water Allocation Regional Plan (**WAP**).
- 2 This is an application by Meridian for a referred project to enable the operation of Lake Pūkaki below the currently regulated ('normal') minimum level of 518.0 m RL, down to no less than 513.0 m RL, for a three-year period through until late 2028 (**Application**)¹.
- 3 The Application also seeks consent to place rock rip-rap on the lower slopes of the upstream face of the Pūkaki Dam and abutments to provide better protection from wave action during lower lake operational levels. Activities associated with these civil works regulated by sections 13 and 15 of the Resource Management Act 1991 (**RMA**), namely rock placement on the bed of a lake, discharges of dust to air and of sediment etc to land and water, are also proposed. As there is a possibility of killing or injuring protected native lizards during these civil works, an authority has also been sought under the Wildlife Act 1953 (**WA**).
- 4 The Application was referred by the Minister under section 21 of the FTAA² for processing under the FTAA on 14 August 2025. On 11 February 2026 an expert panel was appointed to determine the Application (**Panel**).
- 5 The Panel has assessed the Application applying the relevant statutory criteria within the purpose and context of the FTAA³.
- 6 The Panel received comments from commentators and a response to those comments from the Applicant. The Panel has carefully reviewed all of that information in evaluating the Application.
- 7 The Panel has applied the statutory tests in the following provisions in determining and approving the Application:
 - a. Schedule 5, clause 17 - criteria and other matters for assessment of resource consent applications.

¹ For the purposes of this decision the 'Application' includes an application for approval to handle wildlife under the Wildlife Act 1953.

² Unless stated otherwise, all references in this decision to Parts, sections, clauses, or schedules are references to Parts, sections, clauses, or schedules in the FTAA.

³ Legislation Act 2019, s 10; and FTAA, ss 10 and Schedules 5 and 7.

- b. Schedule 7, clause 5 - the criteria for assessment of an application for a wildlife approval.
- 8 Having considered all relevant matters the Panel finds that the Project meets the purposes of the FTAA and the RMA.
 - 9 The Panel therefore grants approval for the Application subject to the conditions in **Appendix A**.
 - 10 This decision is made in accordance with section 87. This decision covers all the approvals sought under the substantive application. This decision document includes:
 - a. The decision – throughout and summarised in Part R;
 - b. The reasons for the decision – throughout and summarised in Part R; and
 - c. A statement of the principal issues in contention and the Panel’s findings on those issues – summarised in Part F, addressed throughout and in Part M.

PART B: OVERVIEW OF THE APPLICATION

1. Introduction - Lake Pūkaki and the Waitaki Power Scheme

- 11 The Application has been made by Meridian, the owner and operator of the Waitaki Power Scheme (**WPS**), which includes the Lake Pūkaki Dam and its associated water intake and diversion infrastructure⁴. Through the operation of that infrastructure, Meridian manages water stored in Lake Pūkaki to generate electricity to export to the National Grid.
- 12 The WPS is a nationally and regionally significant component of New Zealand’s electricity supply infrastructure. It is New Zealand’s largest and most flexible hydroelectricity power scheme and plays an important role in the electricity system and economy. It consists of eight power stations (two owned by Genesis Energy and six owned by Meridian), commissioned between 1935 and 1985, together having an installed capacity of 1,761 MW, being ~32% of New Zealand’s installed hydro capacity.
- 13 Lake Pūkaki itself is a modified natural lake located approximately 10 kilometres (km) north of Twizel in the Mackenzie Basin. It is New Zealand’s largest hydro storage lake and provides an average of 4,485 GWh of stored water, being 44 % of New Zealand’s total hydro storage capacity.
- 14 The water levels Lake Pūkaki have been controlled since the early 1950’s, when it was raised by 9 m via a low dam. In the late 1970s, water from Lake Tekapo was directed into Lake Pūkaki via the Tekapo Canal and during this time Lake Pūkaki was raised by a further 37 m with the construction of the Pūkaki high dam (referred to as the Pūkaki Dam).
- 15 Lake Pūkaki is glacial, 15 km and fed by natural and diverted inflows, which include snow melt, in particular from the Tasman and Hooker Rivers, as well as from Lake Tekapo via the Tekapo Canal and Tekapo B Power Station. It covers an area of approximately 179 square kilometres and reaches a depth of 107 m.

⁴ The Application was approved to use the procedures in the FTAA by the Minister on 14 August 2025.

- 16 The outflow of water from Lake Pūkaki is generally into the Pūkaki Canal via the Pūkaki Canal inlet (Gate 18). To pass flood flows when the lake level is high, for recreational flows in accordance with consent requirements, and for gate testing, flows can also be released as necessary into the Pūkaki River via the spillway situated within the Pūkaki Dam (Gate 19).
- 17 Lake Pūkaki is a Statutory Acknowledgement Area. The Mackenzie Basin is also recognised as an Outstanding Natural Landscape in the Canterbury Regional Policy Statement (**CRPS**) and in Plan Change 13 to the Mackenzie District Plan (**MDP**).
- 18 Lake Pūkaki is an important gateway to Aoraki Mt Cook National Park. The mountain ranges surrounding the basin include Aoraki/Mount Cook, the Ben Ohau Range and the Two Thumb Range. The Mackenzie Basin includes Lake Pūkaki and Lake Tekapo (among other smaller high-country lakes), all of which accentuate the openness and vastness of this landscape. The braided Tasman River flows into Lake Pūkaki at its northern end.
- 19 The Pūkaki Dam is located at the southern end of the lake where the Pūkaki Canal begins. Constructed in 1977, the Pūkaki Dam is made up of two structures separated by a natural moraine ridge in the centre. Both the 'high' dam and saddle dam are earth-fill structures with a maximum height of approximately 61 m and a total crest length of 1.7 km. The upstream face of the dam is protected from wave damage by a layer of rip-rap sitting on bedding material. The rip-rap protection extends along the lake edge for approximately 1.8 km. The downstream shoulders comprise coarse outwash gravels, providing protection from surface erosion.

2. Application purpose and rationale

- 20 The Application has two related components. The first is a temporary approval to operate Lake Pūkaki below the current normal minimum operating lake water level of 518.0 m RL, down to 513.0 m RL, for a three-year period through to the end of 2028 without the current System Operator⁵ (**SO**) triggers needing to be first exercised. The second is approval to install permanent rock armouring on the lower slopes of the upstream face of Pūkaki Dam and its abutments, to improve protection of the dam when the lake is operated at lower levels. In this decision we refer to these components of the Application together as either the 'project' or the 'proposal'.
- 21 Under the existing resource management framework, Meridian is allowed to operate Lake Pūkaki between 518.0 m RL and 532.5 m RL. Access to the water stored below 518.0 m RL, however, is presently dependent on security of supply triggers, including a Security of Supply Alert (**SSA**) or Official Conservation Campaign (**OCC**) being initiated by the SO. Meridian says this means that, for ordinary operational planning, it must manage Lake Pūkaki as if the water stored below 518.0 m RL is not available. Its position is that this causes it to act more cautiously as lake levels approach 518.0 m RL in dry periods, with the potential consequence being reduced hydro generation, greater reliance on other higher-cost generation, increased wholesale electricity prices, and increased emissions.
- 22 The rationale for the Application is that removing the current trigger-based constraints for a limited period would allow the stored water between 518.0 m RL and 513.0 m RL to be considered as part of the available generation resource during a period of potential electricity shortages. Meridian also says that the dam armouring works are necessary to maintain the resilience of Pūkaki Dam if the lake is operated at these lower levels. The

⁵ The System Operator is Transpower Limited.

Application is advanced on the basis that those two components together would improve the efficient use and resilience of nationally significant electricity infrastructure.

3. Claimed benefits of the proposal

- 23 Meridian states that the proposal will provide significant national benefits in terms of security of electricity supply, electricity affordability and the resilience of nationally significant infrastructure. As Lake Pūkaki represents a substantial part of New Zealand's controlled hydro storage, it says that eased access to water stored between 518.0 m RL and 513.0 m RL would make approximately 545 GWh of realisable energy available to the national grid. Meridian describes that volume as equivalent to the annual output of its Harapaki wind farm, the annual electricity consumption of approximately 75,000 average New Zealand households or running one Huntly Rankine unit for approximately 91 days.
- 24 The economic case for the Application is that the current trigger-based access arrangements require Meridian to manage Lake Pūkaki as if storage below 518.0 m RL may not be available, even during dry periods. Meridian says this causes more conservative hydro storage management as the lake approaches 518.0 m RL, with resulting impacts on hydro generation, wholesale spot prices, forward and futures prices, price volatility, and electricity consumers. The Economic Benefits and Costs Report prepared by Dr Brent Layton states that eased access would reduce wholesale spot prices over the three-year period, reduce contracted forward prices, increase retail competition, reduce hydro spill, reduce the need for demand response, and reduce carbon dioxide emissions by increasing hydro generation relative to fossil-fuelled generation.
- 25 Meridian also relies on broader electricity system benefits. Its evidence is that New Zealand's electricity system remains materially exposed to dry-year risk, particularly given hydro's role in national generation and the reduced availability of gas. In Meridian's case, allowing Lake Pūkaki storage below 518.0 m RL to be considered as part of the available generation resource would improve the market's perception of storage availability in dry years and remove a constraint that currently increases electricity prices in dry periods. Meridian submits⁶ that, in simple terms, electricity is essential to society and the economy, and that removing a constraint that works to increase electricity prices in dry periods provides a national benefit.
- 26 The second claimed benefit of the Application relates to dam resilience. Meridian says permanent rock armouring on the lower upstream face of Pūkaki Dam and its abutments is needed to protect the dam from wave erosion when the lake is operated at levels below 518.0 m RL. The proposed works will provide enduring protection for future low-lake operation and improve the resilience of a major component of New Zealand's electricity infrastructure. Meridian therefore presents the proposal as having two linked benefit streams: temporary access to additional hydro storage over the next three years, and longer-term protection of the dam infrastructure required to safely support low-lake operation.

4. Resource consent requirements

- 27 Based on its review of the Application and the relevant statutory documents, and the comments made by the Canterbury Regional Council (**CRC**), the Panel agrees that the proposal requires resource consents under sections 13, 14 and 15 of the RMA for the

⁶ Project Overview Briefing: Submissions of Counsel for Meridian Energy Limited, 1 April 2026.

following activities:

- a. To disturb and deposit material on the bed of a lake as part of the rock armouring works (section 13);
 - b. To take and use water for hydroelectricity generation via the operation of Lake Pūkaki below 518 m RL (section 14);
 - c. To discharge dust to air during rock armouring works (section 15); and
 - d. To discharge contaminants (including sediment-laden water, dust, and incidental hydrocarbon discharges) to land and water during rock armouring works (section 15).
- 28 Under the WAP, the consent status of these activities varies. We accept the advice of the CRC⁷ that the section 13 consent and the second of the two section 15 consents are discretionary, while the discharge to air consent is non-complying, and the section 14 take and use of water consent is prohibited.
- 29 We find it appropriate to 'un-bundle'⁸ the civil works aspects of the Application from the water take aspect, with the overall status of the former components therefore being assessed as non-complying. However, as clause 17(b) of Schedule 5 excludes from consideration section 104D RMA, the effect is that neither of the 'gateway' tests for non-complying activities have to be passed for the Application to be considered for approval under section 104B of the RMA. Essentially, therefore, our RMA-discretion is to have regard to the matters in section 104 RMA, and to approve or refuse consent under section 104B, with the non-complying status having no relevance to that task.
- 30 With respect to the section 14 take and use of water consent, normally the RMA prevents applications for prohibited activities being made, or consent for them being granted⁹. However, the FTAA entitles an 'authorised person' (such as Meridian in this case) to seek approval for a prohibited activity in a substantive application¹⁰, and directs a panel to simply "take into account" that prohibited activity provision, but not treat it as requiring the application for it to be declined¹¹.
- 31 Meridian accepts this position and says this is one of the reasons why the project required the FTAA pathway¹². Its counsel submits that as the FTAA expressly allows approvals to be granted for activities that would be prohibited under the RMA, even though the prohibited activity status must be taken into account under the FTAA, it is not determinative. We agree that this is an appropriate summary of the approach to be taken to a prohibited activity under the FTAA. A matter in contention for us is the weight to be given to the relevant prohibited activity rule in this case, to which we turn later in this

⁷ CRC s53 comments, S Black, CRC Principal Consents Planner, 27 March 2026.

⁸ That is, we find the two activities in question are discreet and do not to overlap, such that they can be considered separately (refer *South Park Corp Ltd v Auckland City Council* [2001] NZRMA 350; *Newbury Holdings Ltd v Auckland Council* [2013] NZHC 1172).

⁹ Section 87A(6) RMA.

¹⁰ Section 42(5) FTAA.

¹¹ Section 81(3)(a) and clause 17(3) and (4) of Schedule 5 FTAA.

¹² Project Overview Briefing: Submissions of Counsel for Meridian Energy Limited, 1 April 2026.

decision (refer Part L).

- 32 For the resource consents, Schedule 5, clause 17 sets out the criteria for their consideration namely, the purpose of the FTAA, the provisions of Parts 2, 3, 6, and 8 to 10 of the RMA that direct decision making on resource consent applications (but excluding section 104D), and the relevant provisions of any other related legislation.

5. Approvals required under the Wildlife Act 1953

- 33 The Application also seeks approval under section 53 of the Wildlife Act 1953 (**WA**) to (accidentally) kill, or catch and relocate native lizards observed to be inhabiting the stockpiles of rocks to be used for the rock armouring works.
- 34 Schedule 7, clause 5 of WA sets out the criteria for consideration of an application for a wildlife approval namely, the purpose of the FTAA, the purpose of the WA and the effects of the project on the protected wildlife in question, and any specific information and requirements relating to the protected wildlife.

PART C: PANEL PROCEDURE

- 35 In considering the Application, the Panel records the following procedural events.

6. Meetings and site visits

- 36 The Panel convened a project overview briefing conference with the Applicant and a number of its specialist advisers on 1 April 2026 in person in Twizel. The briefing was very helpful, and the Panel is grateful to the Applicant for arranging it.
- 37 After the briefing conference, on 2 April 2026, the Panel undertook an extensive site visit which included a walkover of key parts of the Lake Pūkaki Dam and a drive around its immediate surrounds. On 3 April, the Panel undertook a visit to the Tasman Delta.
- 38 A summary of the project overview briefing and site visits is set out in Panel Minute 4 dated 10 April 2026.
- 39 Much of the Panel's other correspondence, deliberations and decision-making occurred over email following review, drafting and commenting on drafts of further information requests, this decision report and the conditions. Notwithstanding this, the Panel met on the following occasions:
- a. 18 February 2026– introductions and discuss administration, project briefing, site visit etc;
 - b. 1 – 3 April 2026 – discuss comments received, project briefing, site visit, application materials etc;
 - c. 28 April 2026 - discuss comments received and Applicant responses; further information required;
 - d. 28 May 2026 – discuss further information received and decision process; and
 - e. 22 June 2026 – discuss comments on conditions and draft decision progress.

7. Invitations to comment and response

40 The Panel determined the parties from whom comments on the Application would be sought in its Minute 2¹³ and the EPA subsequently invited comments by letter dated 10 March 2026. Responses to this invitation were due on 8 April 2026. A summary of the comments received is included in Part D.

41 On 15 April 2026 the Applicant provided a detailed response to the various section 53 comments received. The response included legal submissions, eleven briefs of expert evidence and various attachments. Its responses are referred to as necessary in considering the issues in contention with the Application.

8. Further information

42 At the Panel's direction the EPA made one request for further information under section 67 FTAA. The request was made on 4 May 2026 and sought information in relation to air quality (dust management) issues from the Applicant and the CRC, information about the Tekapo B tailrace from the Applicant and Genesis, and information about power system management obligations from the Electricity Authority (EA).

9. Conditions

43 The Assessment of Effects on the Environment (AEE) submitted with the Application included draft proposed conditions for the approvals sought¹⁴. Several commenting parties, notably the CRC, DOC and Genesis, provided suggested amendments to the Applicant's condition proposals. In its response to comments received, the Applicant included various amendments to these conditions to accommodate some of the matters raised by commenting parties.

44 Responses to the Panel's draft RMA conditions, circulated pursuant to section 70 FTAA for comment on 5 June 2026, were received from parties invited to comment on 15 June 2026. The Applicant responded to both the conditions and the other parties' comments on 22 June 2026.

45 The Panel also prepared and circulated for comment at the same time a draft set of conditions for the proposed Wildlife Act authority. These draft conditions were based substantially on those proposed by the Applicant after considering comments received on its draft conditions included as Appendix B to its report provided under section 51(2)(c) FTAA dated 23 March 2026.

46 The Panel has considered the comments received on the draft conditions in Part M.

10. Hearing

47 The Panel determined not to hold a hearing.

11. Approach to determination

48 The Panel records that it has been mindful of the emphasis on time limited decision-making in the present process, the purpose of the FTAA in section 3 - to facilitate the delivery of infrastructure and development projects with significant regional or national

¹³ Minute 2 dated 9 March 2026.

¹⁴ Refer Part 13 of the AEE.

benefits - and the procedural principles in section 10 that require the Panel to take all practicable steps to use timely, efficient, consistent, and cost effective processes that are proportionate to the Panel's functions, duties or powers.

- 49 To this end, the Panel has endeavoured to conduct its processes efficiently, focussing on the issues in contention identified through the detailed information exchange process provided under the FTAA. It has also endeavoured to avoid repetition in completing its reasons for this decision, cross referencing and adopting analysis and assessments of others where appropriate and relying on the expert evidence and opinions provided to it in accordance with the Code of Conduct for Expert Witnesses¹⁵.

12. Timing of the Panel decision

- 50 In accordance with the panel convenor minute dated 12 February 2026 the time frame for the Panel to issue its decision documents under sections 79 and 88 is 3 July 2026.

PART D: COMMENTS ON THE APPLICATION

- 51 Comments on the Application were received on time from the following parties:
- a. Canterbury Regional Council (**CRC**);
 - b. Genesis Energy Limited (**Genesis**);
 - c. The Department of Conservation (**DOC**);
 - d. The Electricity Authority (**EA**);
 - e. Kā Rūnaka & Te Rūnanga o Ngāi Tahu;
 - f. Minister for Arts, Culture and Heritage & Minister for Treaty of Waitangi Negotiations;
 - g. Minister for Māori Crown Relations;
 - h. Minister for Land Information;
 - i. Minister for Regional Development
 - j. Minister for the South Island;
 - k. New Zealand Transport Agency Waka Kotahi (**NZTA**);
 - l. The Parliamentary Commissioner for the Environment (**PCE**); and
 - m. Transpower Limited (**Transpower** or **SO**).
- 52 In Panel Minute 5, dated 28 May 2026, the Panel accepted a late comment on the Application from the Minister of Energy.

¹⁵ Refer Appendix B.

53 In Panel Minute 6, dated 4 June 2026, the Panel accepted late further comments from the Minister for the South Island.

54 In Panel Minute 8, dated 29 June 2026, the Panel accepted a late further comment from Genesis.

13. Summary of comments received

55 The essential issues raised by each commenter are summarised below. The more detailed evidence and submissions, particularly those provided by CRC, DOC (including via its section 51 report on the WA aspect of the Application), Genesis and Transpower, are addressed later, either in the relevant topic, or the matters in contention, sections of this decision.

56 CRC addressed the RMA approvals, existing consent and plan framework, national and regional benefits, and environmental effects. Its detailed comments focused on effects on the Tasman Delta and Lake Pūkaki ecosystems, landscape values, dust from exposed lakebed and rock armouring works, and the adequacy of proposed management plans and conditions. CRC considered the proposal was generally consistent with the relevant policy framework and likely to achieve the purpose of the RMA, subject to recommended conditions.

57 Ministerial comments were received from several portfolios. The Minister for Land Information noted that parts of the project site are on Crown land administered by LINZ and that any works or assets on Crown land may require separate approval outside the FTAA process. The Minister for Māori Crown Relations supported the Application subject to the Panel having due regard to Ngāi Tahu statutory acknowledgements, deed of recognition matters, taonga species, mahika kai, nohoanga entitlements, and the comments of Kā Rūnaka and Te Rūnanga o Ngāi Tahu. The Minister for Arts, Culture and Heritage advised that he had no comments. The Minister for Regional Development supported the project by reference to its claimed regional and national economic benefits, including lower and more stable electricity prices and potential benefits for regional manufacturing. The Minister for the South Island initially expressed support on similar economic and infrastructure-resilience grounds, but later provided an addendum noting Transpower's security of supply concerns and asking that the claimed economic benefits be considered in the context of those broader system resilience risks.

58 Kā Rūnaka and Te Rūnanga o Ngāi Tahu addressed the cultural and spiritual significance of Lake Pūkaki and the Waitaki catchment, including rangatiratanga, kaitiakitanga, wāhi tūpuna, mahika kai, taonga species, the statutory acknowledgement, deed of recognition and nohoanga entitlement. Kā Rūnaka supported the application as a gesture of manaakitanga to enable national electricity security of supply, on the basis of its temporary nature, existing relationships with Meridian, and agreed changes to conditions addressing reporting, nohoanga notification, cultural values and mahika kai, and accidental discovery procedures. Te Rūnanga o Ngāi Tahu supported the Kā Rūnaka position and provided additional Treaty settlement and taonga species context.

59 NZTA did not oppose the lowering of Lake Pūkaki or the rock armouring works. Its comments focused on effects on the state highway network, including construction traffic across SH8, temporary traffic management, corridor access requirements, repair of any damage to state highway assets, and operational effects of lower lake levels on erosion, dust, gravel aggradation and livestock access affecting SH8 and SH80.

60 The PCE commented principally on electricity system operation, regulation, resilience and

the wider policy implications of shifting control over contingent storage. He also noted local environmental and amenity impacts, but did not provide specialist ecological or amenity evidence. His key concerns were the value to be placed on resilience and security of supply, potential long-term dynamic effects of unrestricted access to contingent storage, and whether a price-based trigger or fee could better reflect the value of resilience and provide local compensation if consent were granted.

- 61 DOC's section 53 comments addressed resource consent matters within its conservation interests. DOC focused on effects from lake lowering on wetlands, terrestrial vegetation, birds and habitat, and effects from vegetation clearance associated with the rock armouring works. DOC was satisfied that effects on avifauna could be appropriately managed, but raised concerns about effects on wetlands and plant communities and proposed amendments to conditions.
- 62 The Director-General of Conservation's section 51 wildlife approval report addressed the requested WA approval for protected lizards. The report considered the effects of the project on these species, the adequacy of the Applicant's proposed management and compensation measures, the proposed term of the approval, and conditions that should be imposed if approval were granted. These matters are addressed in the wildlife approval section of this decision.
- 63 Genesis opposed the Application. Its comments and supporting expert evidence addressed electricity system security and resilience, the role of Lake Pūkaki contingent storage as a "fuel of last resort", alleged bypassing of the existing regulatory framework, the scope and prohibited activity status of the application, and potential impacts on the Tekapo B Power Station 'temporary' tailrace weir and rock chute. Genesis also provided detailed evidence on potential system costs and proposed conditions in the event the Panel were minded to grant approval. Those matters are addressed Parts G, H and L of this decision.
- 64 Transpower opposed unrestricted access to Lake Pūkaki contingent storage over the proposed three-year period. Its comments and expert evidence addressed the role of existing contingent storage arrangements in security of supply, recent and previous SOSFIP¹⁶ reviews, the respective roles of Transpower and the EA, the claimed economic benefits of the proposal, and the potential costs and risks of reducing contingent storage available during stressed system conditions. Those matters are addressed in Parts H and L of this decision.
- 65 The EA supported the proposal in principle. Its comments focused on the power system, competition, efficiency, reliability and security of supply. It considered that suspending the current arrangements for access to Pūkaki contingent storage for the proposed period was likely to have a small positive impact on competition, efficiency and reliability, while recognising uncertainty about the quantum of benefits and the potential cost of increased vulnerability to low-probability, high-impact events.
- 66 The Minister for Energy provided a late comment, which the Panel accepted for consideration. The Minister did not support the application in its current form. He noted New Zealand's dry-year risk, declining gas supply, ageing thermal generation fleet, ongoing policy reforms and the differing views of Transpower and the EA. His position was that the Panel should take a cautious approach to proposals that materially alter

¹⁶ Security of Supply Forecasting and Information Policy.

hydro storage management while broader electricity system reforms are being implemented and their effects remain uncertain.

- 67 The late further comment from Genesis criticised Meridian's response to the Panel's draft conditions. We address this below in Part M.
- 68 The Panel would like to thank all parties who commented for their detailed and helpful contributions.

PART E: LEGAL CONTEXT FOR CONSIDERATION OF APPLICATION

14. Legal context for a referred project under the FTAA

- 69 In accordance with section 42 an authorised person¹⁷ for a referred project may lodge a substantive application with the EPA. The substantive application is required to follow the process set out in sections 43 and 44. The Applicant lodged its substantive application on 5 November 2025.
- 70 The EPA decided that the Application was complete and within scope¹⁸ on 26 November 2025. The EPA made a recommendation on whether there were competing applications or existing resource consents for the same activity on 9 December 2025¹⁹. The EPA then provided the Application to the panel convenor and at the same time requested a report from the Ministry responsible agency²⁰ under section 18. A report was received on 12 August 2025²¹.

15. Decisions on approvals

- 71 Section 81(1) states the scope of the Panel's discretion on approvals sought in a substantive application; section 81(2) sets out the specific matters that the Panel must consider, apply or comply with for the purposes of making its decision and confirms that it may impose conditions (if approving) or decline (in accordance with section 85); and section 81(3) lists the specific matters that must be considered for the various types of approval that may be sought.
- 72 The Panel records that in making its decision on the Application it has:
- a. complied with subsections 81(2)(a), (b) (c), and (d);
 - b. elected to impose conditions under section 81(2)(e); and
 - c. determined not to decline approval for the Application under section 85 (section 81(2)(f)).

¹⁷ FTAA, sections 4 and 42.

¹⁸ FTAA, section 43.

¹⁹ FTAA, section 47.

²⁰ The Ministry for the Environment is the responsible agency for section 18.

²¹ Treaty Settlements and other obligations (Section 18) report ([FTAA-2503-1036 Lake Pukaki Hydro Storage and Dam Resilience Works - Section 18 Report](#)).

16. Approvals relating to the Resource Management Act 1991

- 73 The relationship of the FTAA with the RMA is outlined in Schedule 5 which provides the consent application process that applies instead of the 'standard' RMA consent application process. Clause 17 states:

17 Criteria and other matters for assessment of consent application

- (1) For the purposes of section 81, when considering a consent application, including conditions in accordance with clauses 18 and 19, the panel must take into account, giving the greatest weight to paragraph (a),
 - (a) the purpose of this Act; and
 - (b) the provisions of Parts 2, 3, 6, and 8 to 10 of the Resource Management Act 1991 that direct decision making on an application for a resource consent (but excluding section 104D of that Act); and
 - (c) the relevant provisions of any other legislation that directs decision making under the Resource Management Act 1991.
- (2) For the purpose of applying any provisions in subclause (1),—
 - (a) a reference in the Resource Management Act 1991 to Part 2 of that Act must be read as a reference to sections 5, 6, and 7 of that Act; and
 - (b) if the consent application relates to an activity that is the subject of a determination under section 23 of this Act, the panel must treat the effects of the activity on the relevant land and on the rights or interests of Māori as a relevant matter under section 6(e) of the Resource Management Act 1991; and
 - (c) to avoid doubt, for the purposes of subclause (1)(b), when taking into account section 104(1)(c) of the Resource Management Act 1991, any Mana Whakahoā ō Rohe or joint management agreement that is relevant to the approval is a relevant matter.
- (3) Subclause (4) applies to any provision of the Resource Management Act 1991 (including, for example, section 87A(6)) or any other Act referred to in subclause (1)(c) that would require a decision maker to decline an application for a resource consent.
- (4) For the purposes of subclause (1), the panel must take into account that the provision referred to in subclause (3) would normally require an application to be declined, but must not treat the provision as requiring the panel to decline the application the panel is considering.
- (5) ...
- (6) For the purposes of subclause (1), the provisions referred to in that subclause must be read with all necessary modifications, including that a reference to a consent authority must be read as a reference to a panel.
- (7) Sections 123 and 123A of the Resource Management Act 1991 apply to a decision of the panel on the consent.

- 74 In relation to this framework, Meridian's legal submission²² is that the Panel's assessment of the Application is governed by a weighting framework under the FTAA, rather than the ordinary RMA consent assessment. It submits that the direction to "take into account" relevant matters requires the Panel to give those matters genuine attention and thought, but that the weight to be given to each matter is for the Panel. Within that framework, Meridian says the purpose of the FTAA is the paramount consideration, and the Panel must consider the extent of the project's regional or national benefits at every step.

- 75 Meridian also submits that the Panel must consider all project impacts, both positive and adverse, and then consider how adverse impacts are best managed. It argues that adverse impacts should be avoided, or otherwise mitigated, offset or compensated for, to the extent practicable. It also says the Panel must determine what conditions are needed to ensure the project's impacts are managed as intended. Relevant planning

²² Project Overview Briefing: Submissions of Counsel for Meridian Energy Limited, 1 April 2026.

instruments may assist in understanding the importance of adverse impacts, but Meridian cautions that those instruments were not written for the FTAA framework.

- 76 On the legal test for decline, Meridian submits that if residual adverse impacts remain after practicable management measures have been exhausted, the Panel must then undertake a weighing exercise. The question is whether those residual adverse impacts “are sufficiently significant to be out of proportion to the project’s regional or national benefits”. Meridian says the Panel only has jurisdiction to decline an approval if that threshold is met and only after considering conditions, or project modifications the applicant may agree to. Even then, that power to decline remains discretionary.
- 77 Meridian’s overall position is therefore that the FTAA presumes approvals will be granted, with refusal available only as an exception where adverse impacts outweigh the project’s regional or national benefits and cannot be appropriately managed through conditions or modifications.
- 78 The only other party from whom we received legal submissions on this approach was Genesis. In this regard, we understand it to agree substantially with the submissions for Meridian, namely that the FTAA sets a high threshold for decline, and that even where adverse impacts are out of proportion to benefits, the Panel retains a discretion whether to decline. However, Genesis’ case was that the Application meets that threshold, submitting that the adverse impacts are sufficiently significant to be out of proportion to the project’s benefits under section 85(3), and the Panel should therefore exercise its discretion to decline. We set out our views on this evaluative dispute in Part P of this decision. For ‘scene-setting’ purposes here though, we adopt the legal submissions for these parties.
- 79 Finally, the Panel records that it has considered clauses 17 and 18 of Schedule 5 and concluded that the purpose and principles of the RMA in sections 5, 6, and 7 remain relevant to our decision-making.

17. Approvals relating to a wildlife approval under the Wildlife Act 1953

- 80 Schedule 7, clause 5 sets out the criteria for assessment of an application for a wildlife approval. Clause 5 states:

5 Criteria for assessment of application for wildlife approval

- (1) For the purposes of section 81, when considering an application for a wildlife approval, including conditions under clause 6, the panel must take into account, giving the greatest weight to paragraph (a),
- (a) the purpose of this Act; and
 - (b) the purpose of the Wildlife Act 1953 and the effects of the project on the protected wildlife that is to be covered by the approval; and
 - (c) information and requirements relating to the protected wildlife that is to be covered by the approval (including, as the case may be, in the New Zealand Threat Classification System or any relevant international conservation agreement).

- 81 The Panel has considered clause 5 of Schedule 7 FTAA and concluded that the purpose and principles of the Wildlife Act 1953 remain relevant to its decision-making.
- 82 For the Panel’s decision-making in relation to the WA approval, clause 5 sets out the relevant legal approach. In considering the wildlife approval, including any conditions under clause 6, the Panel must take into account, giving greatest weight to the purpose of the FTAA; the purpose of the Wildlife Act and the effects of the project on the protected wildlife covered by the approval; and information and requirements relating to that protected wildlife, including the New Zealand Threat Classification System or any relevant

international conservation agreement. The approach is therefore not a standalone Wildlife Act assessment; it is an FTAA assessment in which the Wildlife Act purpose, wildlife effects and protected-species information are mandatory considerations but are weighed within the FTAA framework.

18. Requirements for decision – principal issues in contention

- 83 Section 87(2) FTAA requires a panel's decision document to state the decision and the reasons for it, but also to include a statement of the principal issues that were in contention and the panel's main findings on those issues.
- 84 Following the Panel's consideration of the Application, the comments received and the Applicant's response to those comments, the request for information and the responses provided, and the parties' comments on conditions, a number of issues in contention with the Application were apparent. We state those issues in the table below and also identify where they are evaluated in this decision.

Issue in Contention	Evaluated here
Effects on air quality of rock armouring works	Part G, Section 25.1
Effects on native lizards	Part G, Section 25.3
Modelling of frequency and extent of proposed lake lowering	Part G, Section 26.1
Effects on wetlands	Part G, Section 26.3
Effects on Tekapo B tailrace weir and chute structure and effects of failure	Part G, Section 26.4
National and regional benefits of the project	Part H
Scope (duration) of water take application	Part L, Section 39
Electricity system management and contingent storage – roles of parties and weight of views	Part L, Section 40
Weight of prohibited Rule 12 and whether grounds to decline approval made out on the evidence	Part L, Section 41
Conditions (various)	Part M
Overall assessment – grounds to decline	Part P

PART F: IWI AUTHORITIES

19. Section 18 Report for a listed project

85 The Ministry for the Environment provided a report under section 18 in accordance with section 49²³.

86 The key points of the report included:

- a. a list of relevant Māori groups, including the relevant iwi authority and Treaty settlement entities that must be invited by the Panel to comment on a substantive application under section 53(2) of the Act;
- b. the Ngāi Tahu Treaty settlement that is relevant to this Application; and
- c. cultural redress mechanisms under the Ngāi Tahu Claims Settlement Act 1998 including:
 - the statutory acknowledgement of Ngāi Tahu's cultural, spiritual, historic, and traditional association to Lake Pūkaki²⁴. Pūkaki is referred to as "*the basin that captures the tears of Aoraki*," a reference to the meltwaters that flow from Aoraki into the lake in the spring.
 - the deed of recognition over Lake Pūkaki which requires that Te Rūnanga o Ngāi Tahu must be consulted on any application for the use or occupation of the lakebed, including the terms and conditions of any rights of use or occupation²⁵.
 - a one-hectare Lake Pūkaki Nohoanga Entitlement adjoining the lake shoreline near the eastern end of the Pūkaki Dam. Nohoanga entitlements provide seasonal occupation sites for traditional practices of gathering food and other natural resources²⁶; and
 - acknowledgement of the special association of Ngāi Tahu with taonga species of birds, plants and animals, including kakī/black stilts, pārerā/grey ducks, tara pirohe/black fronted terns, and kāmana/southern crested grebes²⁷.

20. Substantive application information

87 As outlined in the Application, the Applicant identified and engaged with the following relevant iwi and hāpu through the iwi authority and Treaty settlement entities, respectively:

²³ Lake Pūkaki Hydro Storage and Dam Resilience Works, Treaty settlements and other obligations (Section 18) report ([FTAA-2503-1036 Lake Pukaki Hydro Storage and Dam Resilience Works - Section 18 Report](#)).

²⁴ Ngāi Tahu Claims Settlement Act 1998, sch 34.

²⁵ Ngāi Tahu Deed of Settlement and Ngāi Tahu Claims Settlement Act 1998, s 213.

²⁶ Ngāi Tahu Claims Settlement Act 1998, sch 95.

²⁷ Ngāi Tahu Claims Settlement Act 1998, sch 97.

- Te Rūnanga o Ngāi Tahu (**TRONT**)
- Te Rūnanga o Arowhenua
- Te Rūnanga o Waihao
- Te Rūnanga o Moeraki

- 88 TRONT and the Waitaki Rūnaka (Te Rūnanga o Arowhenua, Te Rūnanga o Waihao and Te Rūnanga o Moeraki) have an established relationship with Meridian in the Waitaki Catchment. Waitaki Rūnaka speak for mana whenua in this catchment and involve TRONT as they deem appropriate.
- 89 Meridian met with the Waitaki Rūnaka and provided an overview of the application, a summary of the technical assessments, and detailed the authorisations sought (resource consents and a Wildlife Act authority).
- 90 Waitaki Rūnaka requested that Meridian provide a summary of the steps that are taken in the electricity system during periods of security of supply pressure, and consider implementing a hydrological measure that would provide confidence that, in the event low lake levels were being used, it was a result of hydrology and not simply due to aggressive utilisation or management choice.
- 91 Meridian provided a response to the information requested by the Waitaki Rūnaka. Meridian's response was being considered by the Waitaki Rūnaka at the date of lodgement of the substantive application.

21. Iwi Authority and Treaty Settlement Entity Comments

- 92 The Panel invited comments from the iwi authority, Treaty settlement entities and other Māori groups with relevant interests in the Application under section 53(2)(b) and (c) and s53(3), respectively:
- Te Rūnanga o Ngāi Tahu
 - Te Rūnanga o Arowhenua
 - Te Rūnanga o Waihao
 - Te Rūnanga o Moeraki
 - Aoraki Environmental Consultancy Limited
- 93 Comments were received from the iwi authority and Treaty settlement entities listed above.

21.1 Cultural Association with the Waitaki and Lake Pūkaki

- 94 The Waitaki Catchment holds immense significance for the Waitaki Rūnaka and wider Ngāi Tahu, acting as a unifying awa for all iwi members. The Waitaki lies under the cloak of Ngāi Tahu rakatirataka and is cared for and managed by the Waitaki Rūnaka in a manner consistent with kaitiakitaka.

- 95 Lake Pūkaki and the Waitaki catchment is steeped in cultural and spiritual significance. Pūkaki is one of the lakes referred to in the tradition of “*Ngā Puna Wai Karikari o Rakaihautu*” which tells how the principal lakes of Te Wai Pounamu were dug by the rangatira (chief) Rakaihautu²⁸.
- 96 The Treaty Impact Assessment prepared for the consenting of the Tekapo and Waitaki Power Schemes records that Pūkaki was a kāinga nohoanga where weka, pūtakitaki (paradise duck), aruhe (bracken fernroot), and tuna (eels) were gathered. Sites from which resources were gathered extended to the base of Aoraki. Tuna were gathered from the wetlands at the head of Pūkaki.

21.2 Lake Pūkaki Nohoanga Entitlement

- 97 TRONT manages the Nohoanga Entitlements including maintenance and authorisation of use. During the rock armouring access to the nohoanga must be maintained, and the effects of the activity on those using the nohoanga entitlement must be mitigated.
- 98 The Applicant has noted that dust may be an issue for the campground (at times) and has put measures in place. This concern also applies to the nohoanga entitlement which is located adjacent to the campground.
- 99 The Waitaki Rūnaka and TRONT have worked with the Applicant to mitigate the effects of the activity on the ability of Ngāi Tahu Whānui to use the Lake Pūkaki nohoanga.

21.3 Position of the Iwi Authority and Treaty Settlement Entities

- 100 By supporting the Application, the Waitaki Rūnaka are making a gesture of manaakitaka by enabling the security of supply of electricity that will benefit New Zealand. This position reflects the understanding of the Waitaki Rūnaka that:
- the lake lowering element of the Application during times of electricity shortage is already enabled but is dependent on the actions of Transpower as the System Operator.
 - the Application is necessary for New Zealand's security of electricity supply over the proposed three-year term;
 - the operation and effects of the Application will be temporary in nature;
 - the ongoing meaningful and enduring relationship between the Applicant and the Waitaki Rūnaka provides a platform for addressing any adverse effects, including matters of rakatirataka, kaitiakitaka, whānau ora, and the protection of wāhi tūpuna; and
 - the obligations of the Waitaki Rūnaka to Pūkaki and the Waitaki will be efficiently and effectively met through working with the Applicant.
- 101 Representatives for the Waitaki Rūnaka have worked with the Applicant to agree on changes to the consent conditions.

²⁸ Ngāi Tahu Claims Settlement Act 1998, sch 34.

22. Statutory requirements

22.1 Treaty settlements and recognised customary rights

- 102 Section 7 requires all persons performing functions and exercising powers under the FTCA to act in a manner that is consistent with the obligations arising under existing Treaty settlements and customary rights recognised under the Marine and Coastal Area (Takutai Moana) Act 2011 and the Ngā Rohe Moana o Ngā Hapū o Ngāti Porou Act 2019.
- 103 The project is not within or adjacent to Customary Marine Title Groups or Protected Customary Rights areas. The proposal is not occurring within or adjacent to the environmental covenant prepared by ngā hapū o Ngāti Porou under section 19 of the Ngā Rohe Moana o Ngā Hapū o Ngāti Porou Act 2019.
- 104 However, the Ngāi Tahu Treaty settlement is relevant to the Application.

22.2 Effect of treaty settlements and other obligations

- 105 Because the Ngāi Tahu Treaty settlement applies, section 82 becomes relevant to our decision making. Section 82 provides:

82 Effect of Treaty settlements and other obligations on decision making

- (1) This section applies if a Treaty settlement, the Marine and Coastal Area (Takutai Moana) Act 2011, or the Ngā Rohe Moana o Ngā Hapū o Ngāti Porou Act 2019 is relevant to an approval.
- (2) If the settlement or Act provides for the consideration of any document, the panel must give the document the same or equivalent effect through the panel's decision making as it would have under any relevant specified Act.
- (3) The panel must also consider whether granting the approval would comply with section 7.
- (4) In this section, **document**—
 - (a) means any document, arrangement, or other matter; and
 - (b) includes any statutory planning document amended as a result of the settlement or Act referred to in subsection (1).

22.3 Ngāi Tahu Treaty Settlement – statutory acknowledgement

- 106 Lake Pūkaki is subject to a statutory acknowledgement under the Ngāi Tahu Claims Settlement Act 1998.
- 107 A consent authority must, when considering a resource consent for a proposed activity that is within, adjacent to, or affecting a statutory area, provide a summary of the application to the holder of the statutory acknowledgement and have regard to the statutory acknowledgement when deciding whether the holder is an 'affected person' for the purposes of notification decisions under the RMA²⁹.
- 108 The section 18 report identifies TRONT and the Waitaki Rūnaka as having relevant interests in the application and concludes that the process of inviting comment on the application is comparable to the process under the Ngāi Tahu Claims Settlement Act and the RMA of providing those who hold statutory acknowledgements with a summary of the application.

²⁹ Ngāi Tahu Claims Settlement Act 1998, ss 208 and 215

- 109 The Panel concurs that inviting comments from the Iwi Authority and Treaty Settlement Entities under section 53(2)(c) is comparable to the Ngāi Tahu Claims Settlement Act and RMA processes. TRONT and the Waitaki Rūnaka provided comments on the application.
- 110 The Panel has considered the comments of the Iwi Authority and Treaty Settlement Entities and the statutory acknowledgement for Lake Pūkaki in its decision making.

22.4 Deed of Recognition

- 111 Te Rūnanga o Ngāi Tahu have a deed of recognition with the Commissioner of Crown Lands (**LINZ**) over Lake Pūkaki. The deed of recognition requires the relevant Crown agency to consult with and have particular regard to the views of Te Rūnanga o Ngāi Tahu concerning the management or administration of the statutory area³⁰.
- 112 The applicant proposes to undertake works on the bed of Lake Pūkaki and holds a deed of grant of easement which allows the rock armouring and other activities to be undertaken by the applicant within the deed of recognition area administered by the Commissioner of Crown Lands.
- 113 The Crown is required to inform TRONT of any applications for rights of use or occupation in relation to the statutory area and provide Te Rūnanga o Ngāi Tahu with relevant information to enable it to consider and advise its views to the Crown.
- 114 The section 18 report concludes that the process of inviting comment from TRONT on the application under the Act is comparable to the deed of recognition consultation process. The section 18 report further advises that the Panel must have particular regard to the views of TRONT relating to its association with Lake Pūkaki to fully comply with the procedural requirements of the deed of recognition³¹.
- 115 The Panel concurs that inviting comments from TRONT on the application under section 53(2)(c) is comparable to the deed of recognition consultation process. TRONT provided comments on the application.
- 116 The Panel has had particular regard to the views of TRONT relating to its association with Lake Pūkaki in its decision-making.

22.5 Nohoanga Entitlement

- 117 The Ngāi Tahu Claims Settlement Act 1998 provides for a one-hectare Lake Pūkaki Nohoanga Entitlement near the eastern end of the Pūkaki Dam.
- 118 The Waitaki Rūnaka and TRONT have worked with the Applicant to mitigate the effects of the activity on the ability of Ngāi Tahu Whānui to use the Lake Pūkaki nohoanga.

³⁰ Ngāi Tahu Claims Settlement Act 1998, s 213

³¹ Deed of Recognition for Lake Pūkaki, ss 2 and 3

22.6 Taonga Species

- 119 The Crown has also acknowledged the special association of Ngāi Tahu with taonga species of birds, plants and animals, including kakī/black stilts, pāpera/grey ducks, tara pirohe/black fronted terns, and kāmana/southern crested grebes³².
- 120 While the application seeks an approval under the Wildlife Act 1953 for the handling/relocation of lizards, these species are not included amongst the taonga species in the Ngāi Tahu Claims Settlement Act 1998.
- 121 The section 18 report notes that there are no procedural requirements in relation to the taonga species listed in the Ngāi Tahu Claims Settlement Act 1998 and the approvals sought by the Applicant.
- 122 The Panel has considered the effects of the application on the taonga species identified in the Ngāi Tahu Claims Settlement Act 1998 in its decision-making.

22.7 Conditions relating to Treaty settlements and recognised customary rights

- 123 Section 84 provides:

84 Conditions relating to Treaty settlements and recognised customary rights

- (1) For the purposes of section 7, the panel may set conditions to recognise or protect a relevant Treaty settlement and any obligations arising under the Marine and Coastal Area (Takutai Moana) Act 2011 or the Ngā Rohe Moana o Ngā Hapū o Ngāti Porou Act 2019.
 - (2) This section applies in addition to, and does not limit, any other powers to set conditions under this Act.
- 124 Section 84 is relevant to our decision making and developing conditions with regard to the relevant Treaty settlements, especially that of the Ngāi Tahu Treaty Settlement, such that we ought not set conditions that may impact any Treaty settlements.

22.8 Conduct of hearings and other procedural matters in the context of Treaty settlements and other arrangements

- 125 Schedule 3, clause 5 provides:

- (1) This clause applies if any Treaty settlement Act, the Ngā Rohe Moana o Ngā Hapū o Ngāti Porou Act 2019, or any other iwi participation legislation, or any Mana Whakahono a Rohe or joint management agreement, includes procedural arrangements relating to the appointment of a decision-making body for hearings and other procedural matters, such as the following:
 - (a) a requirement for iwi or hapū to participate in the appointment of hearing commissioners to determine resource consent applications or notice of requirement lodged under the Resource Management Act 1991;
 - (b) a requirement that notice be given to any person or specified class of person of any steps in a resource management process;
 - (c) any consultation requirements with iwi or hapū;
 - (d) any other matter of procedure for determining a matter granted under a specified Act that corresponds to an approval under this Act.
- (2) The panel convener or panel must—
 - (a) comply with the arrangements in the legislation, arrangement, or agreement referred to in subclause (1) as if they were a relevant decision maker (such as a local authority, department, Crown entity, or board of inquiry); or
 - (b) obtain the agreement of the relevant party under the legislation, arrangement, or agreement to adopt a modified arrangement that is consistent with achieving the purpose

³² Ngāi Tahu Claims Settlement Act 1998, sch 97

of this Act and the other legislation, arrangement, or agreement referred to in subclause (1).

- (3) The party referred to in subclause (2)(b) may not unreasonably withhold their agreement to a modified arrangement (as described in that subclause).
- (4) If the panel convener or panel are unable to obtain agreement under subclause (2)(b) (in circumstances where that agreement is not unreasonably withheld) they must stop processing the substantive application and must direct the EPA to return the application to the applicant immediately.
- (5) The panel must also direct the EPA to give written notice to the following that processing of the substantive application has stopped:
 - (a) the relevant local authorities; and
 - (b) if advice or a report has been requested from a person under section 51 and is yet to be provided to the EPA, that person; and
 - (c) if a recommendation has been requested from the relevant chief executive under section 48 and is yet to be made, the relevant chief executive; and
 - (d) if persons or groups have been invited to provide comments under section 35 or 53, those persons or groups.
 - (6) The panel and a person referred to in subclause (5)(b) or (c) must stop processing the substantive application if they receive notice of the stoppage.

126 Overall, the Panel is satisfied that it has complied with all procedural requirements in relation to the Ngāi Tahu Treaty Settlement and has therefore met its obligations under Section 7 and Schedule 3, Clause 5.

127 As noted above clause 17 of Schedule 5 provides the criteria and other matters for assessment of consent applications.

PART G: EFFECTS OF THE PROPOSED ACTIVITIES ON THE ENVIRONMENT

128 Schedule 5 clause 5(4) requires a consent application to provide an assessment of an activity's effects on the environment covering the information in clauses 6 and 7. These matters include:

- (a) an assessment of the actual or potential effects on the environment:
- (b) if the activity includes the use of hazardous installations, an assessment of any risks to the environment that are likely to arise from such use:
- (c) if the activity includes the discharge of any contaminant, a description of—
 - (i) the nature of the discharge and the sensitivity of the receiving environment to adverse effects; and
 - (ii) any possible alternative methods of discharge, including discharge into any other receiving environment:
- (d) a description of the mitigation measures (including safeguards and contingency plans where relevant) to be undertaken to help prevent or reduce the actual or potential effect of the activity:
- (e) identification of persons who may be affected by the activity and any response to the views of any persons consulted, including the views of iwi or hapū that have been consulted in relation to the proposal:
- (f) if iwi or hapū elect not to respond when consulted on the proposal, any reasons that they have specified for that decision:
- (g) if the scale and significance of the activity's effects are such that monitoring is required, a description of how the effects will be monitored and by whom, if the activity is approved:
- (h) an assessment of any effects of the activity on the exercise of a protected customary right.

...

- (a) any effect on the people in the neighbourhood and, if relevant, the wider community, including any social, economic, or cultural effects:
- (b) any physical effect on the locality, including landscape and visual effects:
- (c) any effect on ecosystems, including effects on plants or animals and physical disturbance of habitats in the vicinity:
- (d) any effect on natural and physical resources having aesthetic, recreational, scientific, historical, spiritual, or cultural value, or other special value, for present or future generations:
- (e) any discharge of contaminants into the environment and options for the treatment and disposal of contaminants:
- (f) the unreasonable emission of noise:
- (g) any risk to the neighbourhood, the wider community, or the environment through natural hazards or hazardous installations.

129 The AEE provided a detailed assessment of these matters in Section 8. It categorised its assessment of actual and potential effects by whether they were effects arising from the proposed rock armouring works, or whether they were effects arising from the proposed lowering of the lake water level below 518 m RL (referred to in the AEE as 'eased access'). We have found it helpful to understand and evaluate the effects of the Application in a similar way and proceed on that basis below.

23. Receiving environment and planning framework

130 It is well established that for the purposes of assessing effects the "environment" includes that which presently exists and also³³:

...embraces the future state of the environment as it might be modified by the utilisation of rights to carry out a permitted activity under a district or regional plan or by the implementation of resource consents which have been granted at the time a particular application is considered, where it appears likely that those resource consents will be implemented.

131 The Panel confirms that it has applied this understanding of the "environment" in its evaluation of the effects of the proposal.

132 We have also had regard to the relevant national and regional planning provisions in considering effects of the proposal (refer Parts I and J).

24. Effects on cultural values

133 As both components of the proposal give rise to effects on cultural values, it is convenient for us to summarise and evaluate them first.

134 The Application asserted that the proposed design of the rock armouring works, and the construction methods, would ensure that the cultural values associated with the area were protected. In that regard, Meridian identified Lake Pūkaki as a Statutory Acknowledgement Area, and recorded the cultural, spiritual, historic and traditional association of Ngāi Tahu with Lake Pūkaki and the wider Waitaki catchment. The AEE

³³ *Queenstown Lakes District Council v Hawthorn Estate Ltd* [2006] NZRMA 424 at [84]

noted that following feedback from Kā Rūnaka, the eastern construction area was amended to avoid intruding onto the Lake Pūkaki nohoanga.

- 135 The AEE also recorded that Kā Rūnaka requested Meridian to consider implementing a hydrological trigger for lake lowering below 518 m RL, but that Meridian considered such a trigger was not feasible given the complexity and dynamic nature of the electricity system. Instead, it proposed consent conditions that included detailed reporting to Kā Rūnaka of any lake lowering event, the circumstances leading up to the lowering event and the strategies to restore the lake to the normal consented minimum.
- 136 No concerns were raised during consultation regarding the impacts of the project on wildlife.
- 137 Overall, Meridian concluded in the Application that any adverse effects on cultural values associated with the rock armouring and lowering of Lake Pūkaki below 518 m RL will be appropriately mitigated, with project design changes, offered reporting obligations, engagement with Kā Rūnaka and proposed consent conditions referred to as the basis for that conclusion.
- 138 From the comments received on the Application from Iwi Authorities etc, the Panel understands that the Waitaki Catchment holds immense significance for Kā Rūnaka and wider Ngāi Tahu, acting as a unifying awa for all iwi members. The Waitaki lies under the cloak of Ngāi Tahu rangatiratanga and is cared for and managed by Kā Rūnaka in a manner consistent with kaitiakitanga.
- 139 In their comments, Kā Rūnaka and TRONT record that Lake Pūkaki is subject to the Ngāi Tahu statutory acknowledgement and Deed of Recognition, is identified as a Site and Area of Significance to Māori, and is associated with mahika kai, taonga species, wāhi taonga, wāhi tūpuna and wāhi tapu. TRONT also identifies the Lake Pūkaki Nohoanga Entitlement as relevant to access to the lake and surrounding area for customary purposes.
- 140 Kā Rūnaka note that, specific to this Application, Meridian's initial engagement did not result in direct input into the Application before lodgement, and no Cultural Impact Assessment or Treaty Impact Assessment was prepared. However, Kā Rūnaka and Meridian subsequently engaged on the proposed conditions and mitigations. The condition changes agreed with Kā Rūnaka relate primarily to reporting, notification of works affecting the Nohoanga Entitlement, reporting of mitigations for cultural values and mahinga kai, and the accidental discovery protocol.
- 141 Importantly, by supporting the Application, Kā Rūnaka make it clear that iwi are making a gesture of manaakitaka by enabling the security of supply of electricity that will benefit all New Zealanders. Their support is expressed on the basis that the lake lowering element is temporary, relates to an existing lower lake level framework, and can be addressed through the ongoing relationship with Meridian and the agreed conditions.
- 142 For its part, Meridian acknowledges the generosity of Kā Rūnaka in enabling the operation of the wholesale electricity market and security of supply of electricity that benefits New Zealand and records its gratitude for the ongoing willingness of Kā Rūnaka and Ngāi Tahu to engage on the project.
- 143 The Panel acknowledges the cultural significance of the Waitaki Catchment and Lake Pūkaki for Kā Rūnaka and wider Ngāi Tahu. The Panel has considered the Ngāi Tahu

Treaty Settlement, the cultural redress set out in the Ngāi Tahu Settlement Act 1998, and the comments of TRONT and Kā Rūnaka.

- 144 We give particular weight to the direct comments from Kā Rūnaka and TRONT on the cultural associations with Lake Pūkaki, including the statutory acknowledgement, Deed of Recognition, Nohoanga Entitlement, taonga species and mahinga kai values. We also recognise Kā Rūnaka's statement that support for the Application is a gesture of manaakitaka.
- 145 We note that no Cultural Impact Assessment or Treaty Impact Assessment was prepared for this Application. However, in the circumstances, we are satisfied that the absence of those reports does not leave a material evidential gap, because Kā Rūnaka and TRONT have provided direct comments to the Panel, have engaged with Meridian on conditions, and have not sought further changes to the condition set on the information before us.
- 146 The conditions we have imposed appropriately reflect the views of TRONT and Kā Rūnaka. In particular, those conditions provide for notification and reporting to Kā Rūnaka when lake levels approach and fall below 518 m RL, reporting on measures adopted to mitigate effects on cultural values and mahinga kai, and procedures relevant to the Nohoanga Entitlement and accidental discoveries.
- 147 We are satisfied that no cultural issues arise for TRONT and Kā Rūnaka that have not been identified and appropriately addressed. Overall, we conclude that the cultural effects of the Application will be no more than minor.
- 148 The Panel records its gratitude to Kā Rūnaka and TRONT for the important information they have provided to this Fast-track process, and for the pragmatic and generous approach they have taken to the Application.

25. Effects of rock-armouring works

- 149 On our assessment of the Application and the other materials provided to us, we find that the rock-armouring works will give rise to the following main categories of actual and potential effects on the environment:
 - a. Effects on air quality (dust from works);
 - b. Effects on water quality (sediment discharges during works);
 - c. Ecological effects, particularly on native lizards;
 - d. Landscape and visual effects;
 - e. Socio-economic effects; and
 - f. Effects on Alps to Ocean Cycle Trail and Te Araroa Trail.
- 150 As the rock-armouring works also seek consent for the discharge of contaminants to water, section 105 RMA is engaged and requires an assessment of alternatives to be undertaken (via clause 6(c), Sch 5 FTAA). We address each of these matters below.

25.1 Effects on air-quality (dust from works)

Summary of Applicant's Position

- 151 The air quality assessments undertaken by GHD³⁴ and included in the AEE considered the effects of particulate matter (dust) emissions related to the two discrete aspects of the Application. Firstly, the impact of dust discharges caused by lowering of Lake Pūkaki below 518 m RL was assessed, taking into account the additional river delta and lake shoreline area exposed to wind erosion. Secondly, the impact of dust discharges from the proposed rock armouring works near the High Dam was assessed. We deal with the second of these potential effects here.
- 152 The proposed rock armouring works are associated with rip-rap placement over a lake shore length of approximately 1700m near the high dam. Works would occur in blocks of at least three weeks, likely over a period of several years as lake lowering allows. The Applicant estimates that the total duration of rock armouring works would be in the order of 18 weeks.
- 153 GHD identified the key sensitive receptors that may be affected by dust emissions. In terms of the rock armouring works, the nearest dwelling is located approximately 760m from the left abutment work site. The Pines freedom camping area, public toilet and a nohoaka are also located in close proximity to the east and north of this work site. The Te Araroa Trail, Alps to Ocean Cycleway and the State Highway will also potentially be affected. Meridian confirmed that the Mt Cook Alpine Salmon shop near the high dam is to be closed for the duration of each rock armouring work stage.
- 154 GHD undertook dispersion modelling of particulate matter emissions from the rock armouring works. This modelling indicated potential for elevated concentrations of nuisance dust and fine particulate matter (PM₁₀) to occur at receptors close to the works (particularly The Pines camping area/toilet) if best practice dust controls are not implemented.
- 155 Mr Peter Stacey of Air Quality Consulting New Zealand (**AQCNZ**) reviewed the GHD assessments on behalf of Meridian and provided evidence³⁵ to the Panel in response to section 53 comments. Mr Stacey considered that GHD's dispersion modelling assessment was based on assumptions that were overly conservative. He preferred a qualitative assessment approach to such dust sources, recognising the difficulty in accurately quantifying emissions. He stated³⁶ that, based on his experience, unmitigated construction dust effects typically extend to approximately 300m from the dust source, reducing to a distance of approximately 100m where good practice dust controls are applied.
- 156 Mr Stacey provided an updated Dust Management Plan (**DMP**) for the rock armouring works. The DMP included additional dust mitigation measures and the requirement to operate an on-site weather station when works are occurring. The weather station would allow wind speed triggers to be sent to the site manager, initiating dust controls during dry and windy conditions.
- 157 GHD and AQCNZ concluded that dust and PM₁₀ discharges from the rock armouring works

³⁴ AEE, Appendices F and G.

³⁵ Statement of Evidence of Peter Stacey on Behalf of Meridian Energy Ltd. 15 April 2026.

³⁶ Ibid, para 17.

could be adequately controlled, provided good practice site management and dust control measures were employed. They considered that any adverse health effects of PM₁₀ would not be significant, bearing in mind the location of sensitive receptors and the frequency and duration of discharges.

Comments received and Applicant's response

- 158 Comments relating to air quality were received from CRC and NZTA. No comments were received from parties residing near to the shoreline of Lake Pūkaki, the Tasman River delta or the rock armouring works area.
- 159 CRC engaged Ms Suzanne Cawood and Mr Matthew Noonan of Beca to review the air quality assessment undertaken by GHD. This review expressed a low level of confidence in the dispersion modelling undertaken by GHD. The review considered that greater emphasis should be placed on mitigation of dust effects, with more specific measures to be included in the DMP for the rock armouring works. Beca identified several areas of improvement that could be made to both the DMP and the proposed conditions of consent.
- 160 Mr Stacey's evidence responded specifically to the matters raised in the Beca review. The updated DMP for rock armouring, submitted with his evidence, adopted some of the Beca recommendations, including monitoring of wind conditions when works were occurring.
- 161 NZTA considered that monitoring and management of dust from rock armouring works would be required to prevent adverse effects on highway traffic. In response, Meridian agreed to include such measures in the DMP.
- 162 The Panel directed that expert conferencing be undertaken between the experts for Meridian and CRC in response to several specific matters relating to the proposed consent conditions and the DMP for rock armouring. The response was provided as a Joint Witness Statement (**JWS**)³⁷ by Mr Stacey and Ms Callaghan for Meridian and Ms Cawood and Ms Black for CRC.

Panel assessment and findings

- 163 The proposed rock armouring works near the Lake Pūkaki High Dam will occur sporadically as lake lowering allows, with works likely to occur for approximately 18 weeks in total over several years. As agreement was reached between the experts for Meridian and CRC regarding the mitigation measures and monitoring to be included in the DMP and consent conditions, we are satisfied that the specific issues we raised regarding dust control have been adequately addressed.
- 164 The issue raised by NZTA has been covered in the updated DMP that requires regular cleaning of any accumulated debris from the highway and cognisance of visibility effects on road users. We find that the updates also address potential effects on the nohoaka, on cyclists using the Alps to Ocean Trail and on walkers using the Te Araroa Trail.
- 165 Persons in close proximity to the rock armouring works area are primarily transient and are not expected to be present in significant numbers during the typical works period (late winter to spring). We note that Meridian has the option to temporarily close The Pines freedom camping and parking area if monitoring identifies adverse effects during

³⁷ Expert Conferencing Joint Witness Statement - Dust Management for Rock Armouring Works. 14th May 2026.

high wind conditions. The Panel is satisfied on the evidence that other sensitive receptors, including the dwelling approximately 760m from the works area, are unlikely to be significantly adversely affected if the proposed good practice dust controls are applied.

- 166 We are satisfied that the revised conditions of consent included with the JWS are now sufficiently robust and require appropriate dust controls for the rock armouring works. The conditions require that the finalised DMP, with input from the works contractor, be certified by CRC. Given that works could be undertaken intermittently over many years before completion, we have determined that review of the DMP should be required every five years to include consideration of any changes to the sensitivity of the receiving environment, including sensitive receptor locations, and improvements in dust mitigation and monitoring methods. We have amended the relevant consent conditions accordingly.
- 167 Overall, we find that adverse effects on air quality caused by the rock armouring works are not likely to be significant. The improved DMP and the updated consent conditions that we intend to impose are considered to be sufficiently robust to ensure that appropriate dust controls are applied.

25.2 Effects on water quality (sediment discharges during works)

Summary of Applicant's Position

- 168 The water quality impacts associated with the Application are limited to the rock armouring works, namely construction activities carried out near and below the lake waterline, and runoff from stockpiles and construction works containing elevated sediment or contaminants. In-lake works are also expected to disturb and mobilise sediment from the dam and abutment rip-rap armouring and sediment accumulated along the dam margin.
- 169 The key sediment discharge minimisation principles are set out in a draft Erosion & Sediment Control Plan (**ESCP**), together with area-specific measures for work near and within the lake. Those measures include construction timing as the first control, completing works from dry positions where practicable, minimising machinery operation in water, sediment controls for stockpile and construction runoff, inspection and monitoring, and contingency measures if sediment management is inadequate or is causing excessive or unsightly sediment plumes, including use of sediment curtains if required.
- 170 Meridian provided an updated ESCP with its response to comments. The updated ESCP confirms that rip-rap will be placed to a maximum depth of 510.5 m RL, with earthworks and site preparation extending to 509.6 m RL, and that the rock armouring works are expected to take 12 to 18 weeks, likely over multiple stages and possibly beyond 2028.
- 171 Based on the proposed mitigation and given the short duration of the works and reinstatement of work sites, the Applicant concludes that water quality effects will be less than minor.

Comments received and Applicant's response

- 172 CRC mostly accepts the Applicant's water quality assessment. CRC records that Dr Tina Bayer generally agrees with the Applicant's conclusions regarding effects on water quality and how they are best managed during rock armouring works. CRC also records that Lake Pūkaki is in a very low nutrient state and that relevant CLWRP water quality limits are being met. On that basis, CRC considers section 107(2A) RMA is not relevant.
- 173 CRC agreed with the Applicant's conclusions regarding the need for rip-rap protection to

mitigate erosion of the lower shoreline with lake lowering and the need for post-construction lakeshore monitoring to identify and quantify any adverse effects. It raised specific questions about the specification and implementation of erosion and sediment controls, which Meridian responded to through its updated ESCP and evidence.

- 174 Kā Rūnaka and TRONT support the Application subject to agreed conditions. Their comments are not framed as a technical water quality critique, but they emphasise the importance of Pūkaki, mauri, mahika kai and taonga species.
- 175 Overall, Meridian's response did not identify any substantive disagreement with CRC on water quality effects from the rock armouring works.

Panel assessment and findings

- 176 We have considered the Application, the comments received and the Applicant's response and find that with the updated ESCP it provides sufficient information to understand the level and magnitude of construction-phase water quality effects from the rock armouring works.
- 177 We accept that sediment will be disturbed and mobilised during below-water works. However, like CRC, we are satisfied that a robust ESCP and conditions can adequately manage sediment disturbance, visual clarity and sediment plume response, as well as potential discharges from machinery, fuels and other construction-related contaminants.
- 178 We find that adverse impacts on water quality will be appropriately managed through the sediment discharge minimisation principles, area-specific control measures and contingency response measures set out in the ESCP. The short duration of the work, staged construction methodology and proposed reinstatement of work sites will further mitigate water quality effects. Subject to conditions, we find those effects will be less than minor.

25.3 Ecological effects, particularly on native lizards

Summary of Applicant's Position

- 179 Meridian's position is that the rock armouring works will have limited ecological effects other than potential effects on native lizards associated with access tracks, laydown areas, and the use of existing rock stockpiles. The AEE records that sedimentation effects on the littoral zone are expected to be negligible and not long-term, that the works are away from identified wetlands, that terrestrial vegetation effects are limited to temporary loss of approximately 915 m² of exotic grassland with occasional native shrubs, and that avifauna effects are expected to be negligible.
- 180 For lizards, the Applicant's assessment initially recorded that the relevant areas had been assessed as having a low likelihood of being lizard habitat, but that a late October 2025 lizard survey identified lizards in the vicinity of the proposed works. The Applicant therefore adopted a conservative approach by assessing effects on the basis that lizards are present within the work areas. The AEE notes that the dam armouring works are in an area usually inundated and unsuitable as lizard habitat, but that an access track across the existing revetment will use marginal lizard habitat, and that the 6.3 ha and 0.8 ha rock stockpile areas may comprise lizard habitat.

- 181 The Ecological Impact Assessment (EcIA)³⁸ identifies the potential effects of dam

³⁸ AEE, Appendix M.

armouring on native lizards as temporary loss of marginal habitat, temporary effects on exposed boulder revetment, use of stockpiled rock that may have become artificial lizard habitat, disturbance, injury or mortality during construction, and displacement of lizards into nearby habitats. The EcIA records that if no lizards are found during pre-construction surveys no further lizard management is required, but if lizards are recorded, the magnitude of effect could be moderate due to potential injury or mortality, with an overall low to high level of effect depending on species.

- 182 A Lizard Management Plan (**LMP**)³⁹, was prepared to support the wildlife approval application and updated in the Applicant's response to comments. The updated LMP records that native lizards have been identified as present in the project area through targeted surveys, that all native lizards are protected under the Wildlife Act, and that the LMP addresses Schedule 7 information requirements for the FTAA wildlife approval. The LMP identifies the wildlife approval sought as relating to incidental killing of protected wildlife, with locations including the dam armouring access tracks/material laydown, south stockpile and north stockpile. It principally proposes effects management through avoidance/minimisation techniques, where practicable. In addition, environmental compensation to support targeted lizard monitoring and management in the local area is offered via a Compensation Management Plan (**CMP**). As the AEE accepts as high the residual effects for Southern grass skink and Southern Alps gecko and low for McCann's skink, with residual adverse effects including potential injury or mortality during construction and stockpile use, and loss of lizard habitat, the CMP is intended to address those effects. To that end, a \$30,000 compensation fund for wilding pine control and lizard monitoring at a site approximately 5 km south of the project footprint, within an existing Project River Recovery initiative, is offered.

Comments received and Applicant's response

- 183 DOC is the principal commenting party on native lizards and the WA. In its comments on the Application, it records that Meridian seeks a wildlife approval to manage impacts on absolutely protected lizard species and requests lawful authority to kill protected lizards at the location affected by the project, with compensation proposed to address these adverse effects. DOC's section 51 report states that the project will inevitably involve disturbance and killing of lizards, that the proposal relies heavily on financial compensation, and that DOC is concerned about the scale of impacts over the 35-year term sought.
- 184 DOC records that lizard surveys between 27 and 31 October 2025 detected McCann's skink and Southern Alps gecko across the footprint areas, and that Southern grass skink and Mackenzie skink were recorded adjacent to the stockpiles. DOC also notes the possible presence nearby of Lake's skink. It identifies potential impacts as arising from access track construction across the rock slope and works at laydown areas and stockpiles, with impacts including disturbance, injury or mortality.
- 185 DOC's core concerns are that the Applicant's survey covered only the directly affected dam-armouring areas, leaving periodically exposed habitats unassessed; that four native lizard species occur within the disturbance footprint and adjacent habitats; that the proposal relies principally on compensation; that the compensation proposal does not meet the 'additionality' principle; that targeted wilding pine removal is supported in principle but is insufficient on its own; and that significant residual effects will remain even if the exclusion fence is installed and DOC undertakes wilding pine control. DOC was

³⁹ AEE, Appendix E.

not satisfied that the proposal, as lodged, was consistent with the purpose of the WA, but considered the approvals could likely be granted consistently with that Act if additional mitigation and/or conditions were applied.

- 186 DOC also raises concerns about the term and scope of the wildlife approval. It prefers a maximum 10-year term, noting the mismatch between a 35-year approval and the duration of compensation benefits, and the potential for lizard threat classifications to change over that period. If a 35-year term is granted, DOC seeks review or recertification every five years. DOC also records concern that the Applicant had not provided sufficient information for the Panel to authorise handling and relocation of lizards, particularly Mackenzie skink, although Meridian later responded with an updated salvage proposal for the northern stockpile.
- 187 Kā Rūnaka and TRONT do not provide a lizard-specific WA assessment, but they emphasise the importance of taonga species, mahinga kai, kaitiakitaka and ongoing engagement. They support the Application on the basis of agreed conditions and the ongoing relationship with Meridian, including reporting, notification, cultural values, mahinga kai, nohoanga and accidental discovery matters. The Minister for Māori Crown Relations similarly supports the application subject to due regard being had to TRONT and Kā Rūnaka views, taonga species, mahinga kai, nohoanga entitlements and ongoing consultation.
- 188 Meridian's response to DOC, following the lizard survey and further engagement with DOC and herpetologists, is to propose additional lizard management measures to be incorporated into the WA approval. These include a salvage process for the northern stockpile, updated LMP methods for catching, handling and release of Mackenzie skink in that area, a lizard exclusion fence, an accidental discovery protocol and a compensation plan. Ms Callaghan, Meridian's planner, considers these measures make the wildlife approval consistent with the purpose of the WA⁴⁰.
- 189 Meridian also disagrees with DOC's preferred 10-year permit term, stating that the approval is sought in relation to four specific species, that any other species would require a new approval, and that while a 35-year term is sought, the works themselves will occur over a shorter period. Finally, Meridian's lizard experts consider the proposed compensation amount to be appropriate, with an additional \$10,000 if Mackenzie skink or another Threatened species is detected in the north stockpile, and believe the compensation proposal to be commensurate with the area and quality of habitat affected.

Panel assessment and findings

- 190 The principal ecological issue arising from the rock armouring works is their effect on native lizards and the associated Wildlife Act approval requirements. Other ecological effects from the rock armouring works, including sedimentation, wetland, terrestrial vegetation and avifauna impacts, are comparatively limited. We accept the Applicant's assessment that sedimentation effects on the lake littoral zone will be negligible and not long-term, that the works are located away from identified wetlands, and that terrestrial vegetation effects can be addressed through reinstatement following completion of the works. We also accept that avifauna effects from the rock armouring works are likely to be negligible.
- 191 The position is different for native lizards. The material before us establishes that native

⁴⁰ Evidence A Callaghan (response to comments), xx May 2026.

lizards are present within the project footprint and adjacent habitats. McCann's skink and Southern Alps gecko were detected within the footprint areas, and Southern grass skink and Mackenzie skink were recorded adjacent to the stockpiles. We also note DOC's evidence that Lake's skink may be present nearby, although Meridian considers that risk to be very low. All native lizards are protected under the WA. The rock armouring works therefore require careful assessment under the FTAA wildlife approval provisions as well as under the RMA effects framework.

- 192 We accept that the dam face itself is usually inundated and is generally unsuitable as lizard habitat. However, the works are not confined to inundated areas. Access tracks, laydown areas and, most importantly, the existing rock stockpiles provide or may provide lizard habitat. The stockpiles appear to have become artificial habitat since they were established. The use of that rock for dam armouring may disturb, injure or kill protected lizards and will also remove habitat currently used, or capable of being used, by lizards.
- 193 We accept DOC's concern that the effects on lizards are not negligible. The Applicant's own proposed CMP recognises residual adverse effects, including potential injury or mortality during construction and stockpile use and loss of habitat. It assesses residual effects as high for Southern grass skink and Southern Alps gecko and low for McCann's skink. We adopt that assessment as indicating that lizard effects are a material adverse effect requiring specific management.
- 194 The Applicant has progressively amended its lizard management approach. As lodged, the proposal relied substantially on survey, management through the LMP, and compensation. DOC raised substantive concerns about the absence of sufficient avoidance, minimisation, salvage, rehabilitation and additionality in the proposed compensation. In response, Meridian now proposes a lizard exclusion fence around the northern stockpile, an accidental discovery protocol, a salvage process for the northern stockpile, updated LMP methods for catching, handling and release of Mackenzie skink in that area, and compensation directed to wilding pine control and lizard monitoring at a nearby conservation site.
- 195 We give significant weight to DOC's section 51 wildlife report. DOC is the statutory agency with relevant expertise in wildlife management, and its report identifies real concerns about the sufficiency of the Applicant's original approach. In particular, we accept DOC's points that the WA protects individual lizards as well as species, that compensation alone is not a substitute for reasonable avoidance and minimisation where those measures are practicable, and that the duration of any wildlife approval must be aligned with the nature of the effects and the ability to reassess ecological risk.
- 196 The Panel also gives weight to Meridian's updated response and expert evidence. We accept that salvage across all stockpile and work areas may be difficult because of the scale of the stockpiles, the uncertain timing of works, the seasonal constraints on lizard activity, and the risk of recolonisation between salvage and construction. However, we also accept that the proposed northern stockpile exclusion fencing and salvage process materially improve the effects management package. Those measures reduce, but do not eliminate, the residual risk to native lizards.
- 197 We are not satisfied that the lizard effects can be treated as minor simply because some habitat is artificial or because the stockpiles were established for future dam resilience works. The WA protection applies to the animals affected, and the relevant question is whether the approval, with conditions, appropriately manages the authorised incidental killing and associated habitat disturbance. Nor do we accept that the proposed

compensation should be given determinative weight unless it is secured by clear, enforceable conditions and directed to measurable conservation benefit.

- 198 We consider that a wildlife approval can be granted consistent with the purpose of the WA, but only subject to robust conditions. Those conditions should require implementation of the updated LMP, use of suitably qualified and experienced herpetologists, lizard exclusion fencing for the northern stockpile, salvage and relocation procedures where authorised and practicable, accidental discovery procedures, injury and mortality reporting, ARDS reporting, post-survey and post-salvage reporting, and a CMP that is approved before works commence and secures funding for targeted lizard conservation outcomes. The conditions should also ensure that any handling, holding, relocation or release of protected lizards is expressly authorised and controlled, rather than left to later informal agreement.
- 199 We accept DOC's concern about the 35-year term sought for the wildlife approval. The works may not occur continuously over that period, but a long approval term creates uncertainty because lizard threat classifications, conservation knowledge, habitat conditions and best practice management methods may change. A shorter term would provide a clearer opportunity for reassessment. However, we are persuaded by Meridian that a longer-term permit is still reasonable, albeit, in our view, only if subject to the LMP being regularly reviewed and recertified every 10 years, including with respect to changes to species threat classifications and current best practice. We discuss this further in Part M.
- 200 Overall, we find that the rock armouring works will have material adverse effects on native lizards unless carefully managed. Those effects arise primarily from disturbance and use of rock stockpiles and associated access and laydown areas, rather than from the inundated dam face itself. We find that the effects can be made acceptable, and the WA approval can be granted, subject to conditions that secure avoidance and minimisation where practicable, authorise salvage and handling where appropriate, and provide for compensation for residual effects, reporting, regular and adaptive review of the LMP, and ongoing engagement with DOC and Kā Rūnaka/Te Rūnanga o Ngāi Tahu.

25.4 Socio-economic effects

Summary of Applicant's Position

- 201 The AEE assesses that the socio-economic effects of the rock armouring works will arise mainly during construction activity through the establishment of work zones at the Lake Pūkaki Car Park and Lake Pūkaki Reserve. It AEE records the key socio-economic themes arising from this as access and connectivity, amenity and character, recreation, environment and livelihood. Adverse effects considered include temporary business disruption to the Mt Cook Alpine Salmon (**MCAS**) shop, closure of the Lake Pūkaki Car Park, loss of access to public amenities, potential inconvenience and pressure on alternative toilet and waste facilities, safety risks for cyclists and pedestrians near construction traffic, temporary diversion of the Alps2Ocean and Te Araroa trails, and possible dust effects including potential temporary closure of The Pines freedom camping area if health requirements necessitated that.
- 202 The Socio-Economic Impact Assessment (SEIA)⁴¹ acknowledges that the works can only be undertaken when Lake Pūkaki is below 518.0 m RL, with construction likely to occur over multiple years, typically in mid to late winter and early spring. Each construction

⁴¹ AEE, Appendix O.

period is anticipated to be at least three weeks. It states that the Lake Pūkaki Car Park is a popular rest stop and tour-bus stop, and that the MCAS shop will need to be temporarily relocated, although the specific location was not identified in the SEIA. It also records that the left abutment work zone will use part of Lake Pūkaki Reserve, while access to The Pines campground will remain available through the northern entrance, with toilets remaining open, subject to possible dust-related management.

- 203 The Applicant's proposed effects mitigation package includes consultation with MCAS to identify a temporary relocation site; signage directing visitors to the nearest available alternative car park and amenities; public information through Mackenzie District Council, DOC, A2O and Te Araroa channels; notification to tourism operators; monitoring of alternative toilet and waste facilities; possible temporary toilets or additional waste bins if required; and consultation with A2O and Te Araroa Trail managers on safe diversions.
- 204 The AEE also relies on the timing of works as a mitigating factor. The SEIA in particular records that winter is the least busy time for A2O and Te Araroa users, and that construction is most likely to occur during this period. It records Meridian's commitment to prepare a safe re-routing plan with the contractor, consult the A2O and Te Araroa Trail managers, communicate route changes on relevant websites/apps and through signage, and notify MDC and MCAS as early as possible if lake levels indicate construction may proceed.
- 205 Overall, the SEIA concludes that, with mitigation, the construction phase will have a "Slight Negative" socio-economic impact, and that once installed the rock armouring will have a "Neutral" impact.

Comments received and Applicant's response

- 206 CRC's comments on the Application did not include a separate socio-economic assessment issue as such but identified dust from the rock armouring works as a key issue. In this regard, it noted that management plans, including an Erosion and Sediment Control Plan and Dust Management Plans, are essential for managing these effects. The relevance of CRC's position is that dust management may affect amenity, public health, visitor experience and the use of nearby public areas, particularly The Pines freedom camping area.
- 207 NZTA's comments directly engaged with access and safety aspects of the rock armouring works. NZTA identified construction traffic effects associated with rock armouring and operational effects of lower lake levels on state highway infrastructure. For construction, NZTA records that material will be moved from stockpiles south of SH8 to work areas north of SH8, with heavy vehicles crossing SH8 in a 100 km/h environment. NZTA supports temporary traffic management and seeks a Corridor Access Request process, together with conditions requiring remediation of any damage to the state highway and sweeping of loose material from the carriageway.
- 208 The Minister for Māori Crown Relations supports the application subject to the Panel having due regard to the Lake Pūkaki Statutory Acknowledgement and Deed of Recognition, Kā Rūnaka/TRONT views, taonga species, mahinga kai and nohoanga entitlements, and specifically encourages consideration of potential effects on the Ngāi Tahu nohoanga entitlement, including overlap between works and entitlement periods. While this is primarily a cultural effects matter, it is relevant to the socio-economic/public access assessment because the SEIA identifies the Lake Pūkaki Reserve as one of the work areas and records that the designated nohoanga site is within the reserve.

209 The PCE's comments were directed mainly to the wider electricity-system and environmental externality issues, but the Commissioner also asserted that local environmental and amenity effects are one reason access to contingent storage is restricted, and that Lake Pūkaki sits at the foot of an important visitor attraction where the natural environment is one of the reasons people come to the area. However, the PCE says he is not an expert in local ecology or amenity and trusts the Panel will seek ecological expertise, local input and tourism sector views.

210 In response to NZTA, Meridian accepts that SH8 construction-interface effects should be managed through a Traffic Management Plan and Corridor Access Request process. In its response, Meridian agrees to conditions concerning SH8 in the vicinity of the proposed rip-rap construction works.

Panel assessment and findings

211 The Panel accepts that the rock armouring works will generate localised adverse socio-economic effects during construction. Those effects principally relate to the temporary closure of the Lake Pūkaki Car Park, disruption to the MCAS shop and Punatahu Visitor Centre, temporary changes to public access and amenities, diversion or management of the A2O and Te Araroa trails, construction traffic safety, and potential dust effects affecting public amenity and use of The Pines freedom camping area.

212 We find that those effects will be temporary and episodic. The works are expected to occur only when lake levels are sufficiently low, most likely in mid to late winter or early spring, and each construction stage is expected to be of relatively short duration. That timing is relevant because it is outside the peak visitor and trail-use season, although we do not regard that as removing the need for effective public communication and access management.

213 We accept the Applicant's assessment that, subject to mitigation, the construction-phase socio-economic effects of the rock armouring works will be slight negative. We also accept that the permanent socio-economic effect of the completed armouring will be neutral, because the finished armouring will form part of the existing hydro infrastructure environment at the southern end of Lake Pūkaki.

214 NZTA's comments concerning the SH8 construction interface are worthy of weight. We find that construction traffic, including heavy vehicle movements across or near SH8, requires robust temporary traffic management, appropriate Corridor Access Request processes, and obligations to remediate any damage to the state highway network caused by the works.

215 We also place weight on CRC's concerns about construction dust and the agreed outcomes of the subsequent expert conferencing in relation to this issue. We find that the residual socio-economic risk from dust is acceptable, provided the final Dust Management Plan and associated consent conditions include the agreed measures, including certification, water availability, weather monitoring, wind and PM₁₀ trigger levels, visible dust controls, and appropriate management of The Pines freedom camping area if dust cannot otherwise be managed.

216 We consider that potential effects on the Lake Pūkaki nohoanga entitlement require specific attention. In this regard, we understand that the construction compound will be located away from the nohoanga site and that occupation rights will remain available. However, we consider ongoing consultation with Kā Rūnaka/TRONT and appropriate construction management controls will be necessary to ensure those rights are not

practically undermined.

- 217 Overall, based on our assessment of the evidence and comments, we find that the socio-economic effects of the rock armouring works are localised, temporary and capable of appropriate management through conditions.

25.5 Landscape and visual effects

Summary of Applicant's Position

- 218 Based on its Landscape Effects Assessment (**LEA**)⁴², the Applicant's position is that the rock armouring works will affect the landscape and visual setting of the southern end of Lake Pūkaki during construction but will not result in any material permanent adverse landscape or visual effect once the works are complete. Relevant to this assessment is the existing landscape context, including Lake Pūkaki's location within the Mackenzie Basin Outstanding Natural Feature and Landscape, the iconic views towards Aoraki / Mount Cook, and the modified character of the southern end of the lake associated with the Waitaki Power Scheme, including the dam, outlet works, canal structures, SH8, visitor infrastructure and fluctuating lake levels.
- 219 Meridian accepts that the temporary construction works will generate adverse landscape effects. Those effects are assessed as moderate-high during active construction because of the visibility of temporary construction benches, groynes, fencing, site offices, stockpiles, haul routes, machinery and vehicle movements in an otherwise visually simple and open landscape. Its position is that those effects will be short term and intermittent, occurring only when lake levels allow construction to proceed. Between active construction periods the effects are expected to reduce markedly, and any remaining construction benches are assessed as low in effect because they will be low-lying, close to the lake shore, and may be wholly or partly covered by water.
- 220 Overall, the AEE asserts that no permanent adverse landscape effect will remain once construction is complete. The temporary benches, groynes, fencing, machinery and buildings will be removed. The permanent rock armouring will be visually consistent with existing rip-rap and the artificial and infrastructural character of the dam edge. For SH8 road users, the armoured dam slopes below road level are described as a relatively minor element in the wider vista of Lake Pūkaki, surrounding tussock hills, mountains and Aoraki / Mount Cook. Although the dam slopes may be visible in the foreground or midground from some viewpoints, including the visitor information centre and A20 viewpoints, the applicant considers they will be perceived as an acceptable part of the road and hydroelectric infrastructure.
- 221 Meridian also relies on the SEIA, which records that Lake Pūkaki's scenic quality is important to tourism and that any visual change capable of affecting visitor experience requires consideration. This assessment adopts the LEA and records that the rock armouring will be consistent with the lake's character as part of New Zealand's hydro storage infrastructure. It assesses amenity and character effects from the rock armouring construction phase as slight negative, principally because of temporary loss of access to amenity facilities and construction activity in the visitor area, rather than because of a permanent visual change to the landscape.

Comments received and Applicant's response

- 222 CRC was the only commenter to raise a substantive landscape-specific issue. It records

⁴² AEE, Appendix N.

that the Applicant provided a detailed LEA, including 2025 photographic viewpoints, comparison with 2012 photographs, and visual simulations showing lake levels at 513 m RL and 518 m RL. CRC's landscape reviewer generally agreed with the LEA's methodology, including site visits at different lake levels and use of the NZILA effects scale, but raised concerns about the assessment's treatment of natural character and amenity values. In particular, CRC recorded that its reviewer considered the Application 'light on detail' about the effects on natural character of the shoreline, and did not accept uncritically the description of Lake Pūkaki as a "working lake" or a "utilitarian landscape", given the lake's outstanding landscape status and the range of values people associate with it.

- 223 In relation to the rock armouring works specifically, CRC notes that much of the work is provided for as a permitted activity, that no MDC consent is required, and that the small areas requiring section 13 RMA consent will predominantly be underwater. CRC records that, if exposed, the rock will be covered as lake levels rise and will likely weather over time as it is alternately covered and exposed. CRC does not identify landscape effects from the rock armouring works as a reason to decline consent, and concludes more broadly that the proposal is unlikely to result in adverse effects sufficiently significant to be out of proportion to the project's benefits, provided appropriate conditions are adopted.
- 224 The PCE comments provide a general caution that local environmental and amenity effects at Lake Pūkaki matter because the lake sits at the foot of an iconic tourist attraction and the natural environment is one reason people visit the area. The PCE does not provide specific expert landscape evidence on the rock armouring works and expressly notes that he is not an expert in local ecology or amenity. We treat those comments as relevant context, but not as contradicting the Applicant's landscape evidence.
- 225 Meridian's response to comments does not materially change its position on the landscape effects of this work. It maintains that the main issues in contention are electricity-system issues rather than local amenity or landscape effects. It also relies on the landscape evidence in the AEE and the absence of any specific landscape or amenity opposition from adjacent landowners. In response to NZTA, Meridian accepts conditions requiring traffic management and Corridor Access Request processes for the SH8 construction interface. Those conditions are relevant to the way construction activity is managed in the public-facing southern lake environment.

Panel assessment and findings

- 226 We accept that Lake Pūkaki and the wider Mackenzie Basin have high landscape and visual values, including outstanding natural landscape values and nationally recognised views towards Aoraki / Mount Cook. We also accept that the southern end of the lake is more modified than much of the wider lake environment, because it contains the Pūkaki Dam, SH8, outlet and canal infrastructure, visitor facilities, stockpiles, and the A20 / Te Araroa trail connection. That existing modified context is relevant to the landscape assessment, but it does not remove the need to protect the wider landscape values of the lake.
- 227 We accept the Applicant's assessment that the active construction phase of the rock armouring works will have moderate-high adverse landscape and visual effects. The works will introduce visible construction activity, structures and machinery into a prominent and sensitive visitor setting. Those effects will be most apparent from the visitor information centre, SH8, the A20 / Te Araroa route, nearby car parks and public

viewing areas. We do not minimise those effects.

- 228 However, we place weight on the temporary and intermittent nature of the construction works. The most visually intrusive elements will occur only during construction windows when lake levels allow work to proceed. The evidence indicates that the temporary construction elements will be removed after construction, and that remaining effects between work periods will be materially reduced.
- 229 We agree that the completed rock armouring will not result in a material permanent adverse landscape or visual effect. The permanent armouring will be located on the dam and abutments, visually associated with existing rip-rap and hydroelectric infrastructure, and will be perceived as part of the already modified dam edge. Over time, the rocks are expected to weather and develop sediment coatings as they are covered and exposed by fluctuating lake levels. We find that the completed works will be consistent with the infrastructural character of the immediate dam environment and will not materially detract from the broader landscape values of Lake Pūkaki or the iconic views towards Aoraki / Mount Cook.
- 230 We have considered CRC's concern about the language of "working lake" and "utilitarian landscape". We agree that those descriptions should not be used to diminish the outstanding landscape values of Lake Pūkaki or the range of cultural, recreational, natural character and amenity values associated with it. In our assessment, however, the essential point remains valid: the southern end of Lake Pūkaki is an existing hydro-infrastructure environment, and the proposed permanent rock armouring is closely associated with that established infrastructure. We therefore accept the Applicant's conclusion on permanent effects, while placing less weight on any framing that suggests the lake's landscape values are merely utilitarian.
- 231 We also accept CRC's observation that many of the potentially landscape-relevant works are permitted or located in areas that will usually be underwater. That does not remove the Panel's obligation to assess effects, but it is relevant to scale and context. We also note that no MDC consent is required for the works and CRC records that the Mackenzie District Plan gives effect to the Canterbury Regional Policy Statement landscape framework.
- 232 Overall, we find that the rock armouring works will have moderate-high adverse landscape and visual effects during active construction, low to negligible effects between construction periods, and no material permanent adverse landscape or visual effects once complete. The residual permanent effect is acceptable in the context of the existing dam and hydroelectric infrastructure at the southern end of the lake.

25.6 Effects on Alps to Ocean Cycle Trail and Te Araroa Trail

Summary of Applicant's Position

- 233 The Applicant's position is that the rock armouring works will temporarily affect the Alps to Ocean Cycle Trail and Te Araroa Trail where those routes pass through or near the proposed stockpile areas, construction work zones and access routes at the southern end of Lake Pūkaki. The Te Araroa Trail shares the A2O route in the vicinity of the works. Rock will be transported from existing stockpiles to project-designated stockpiles and then to the dam face and abutments. That construction methodology creates potential conflict points between trail users, construction traffic and work areas.
- 234 Meridian proposes to maintain the existing A2O/Te Araroa route where practicable, with temporary traffic management controls. Two areas require temporary diversion. In Area

1, the existing route traverses the western stockpile site and is proposed to be re-routed around that stockpile for the duration of the relevant works. In Area 2, the existing route passes through the eastern work zone and temporary stockpile area. The applicant proposes to re-route users partly along the existing access road, where there will be an interface with construction traffic, and partly across Meridian land on a temporary trail running parallel to SH8 before re-joining the existing route near the Pūkaki dam crossing. The applicant records that this route will be closed to all traffic other than A2O and Te Araroa users and construction traffic.

- 235 A Traffic Management Plan (**TMP**) is to be relied on as the primary management tool. The proposed TMP is to address construction traffic volumes and routes, hours of operation, signage, temporary traffic controls, safe pedestrian and cyclist access through or past the site, and measures to prevent dust, debris and mud being carried onto public roads. The Engineering Structures Assessment also records that the TMP is to be submitted to NZTA and A2O/Te Araroa for review before construction or earthworks commence.
- 236 The SEIA assesses the effect on trail users as a slight negative recreational effect during construction. The adverse effects are temporary and arise from trail diversion, potential disorientation if a suitable alternative route is not provided, and safety risks from interaction with construction traffic. The SEIA also records that peak use of the A2O and Te Araroa routes is generally from November to February, whereas the most likely construction period is winter or early spring. This timing is considered to reduce the scale of effect, although it does not remove the need for safe diversion and communication.
- 237 Meridian consulted with both the A2O Trail Manager and the Te Araroa Trail Manager. The Te Araroa Trust advised on potential re-routing and noted that its app is well used by trail users. The A2O Trail Manager advised that peak season is November to February, that winter is the least busy period, that re-routing onto SH8 is not an acceptable option due to safety concerns, and that management through work areas could include stop/go controls, temporary traffic lights and signage. The Applicant committed to developing a safe re-routing plan with its contractor, consulting the trail managers before works commence, and communicating route changes through relevant websites/apps and on-site signage.

Comments received and Applicant's response

- 238 NZTA's comments directly support the need for temporary traffic management. NZTA records that heavy vehicles will be crossing SH8 in a 100 km/h environment and seeks Temporary Traffic Management for construction traffic crossing the highway and for A2O/Te Araroa diversions. NZTA also seeks a Corridor Access Request (**CAR**) process and conditions requiring repair or reinstatement of any state highway damage and sweeping of loose material from the state highway carriageway. Meridian accepts this approach and agrees to conditions requiring a TMP and CAR-related controls for SH8 in the vicinity of the proposed rip-rap construction works.

Panel assessment and findings

- 239 We accept that the A2O and Te Araroa Trails are important recreational and tourism routes in the Mackenzie Basin and that temporary disruption to those routes is a relevant adverse effect of the rock armouring works. The principal effects are not the loss of the trail routes themselves, but temporary diversion, possible confusion for users, reduced recreational amenity during construction, and safety risks where walkers and cyclists' interface with construction traffic.

- 240 We agree with Meridian's assessment that those effects will be temporary and localised. They will occur only during construction stages and only where work zones, stockpiles and haul routes interact with the trail alignment. We also accept that the likely timing of construction during winter or early spring reduces the number of affected trail users, given the evidence that peak A2O and Te Araroa use is generally between November and February. However, we do not treat seasonal timing as a substitute for proper management. Trail users will still be present, and the safety of walkers and cyclists must be maintained throughout each construction period.
- 241 We place weight on the consultation undertaken with the A2O and Te Araroa trail managers. Their feedback has materially informed the Applicant's proposed approach, including the need to avoid re-routing onto SH8, to use safe crossing points and controlled worksite interfaces, and to communicate changes through websites, apps and signage. We also place weight on NZTA's comments, particularly given the SH8 interface and the need to manage heavy vehicle movements in a high-speed road environment.
- 242 We find that the effects on the trails are acceptable, subject to conditions. Those conditions should require a certified or approved TMP before each relevant construction stage; consultation with A2O and Te Araroa trail managers before finalising any temporary diversion; safe, clearly marked and accessible diversion routes; avoidance of any diversion onto SH8 unless specifically agreed by NZTA and the relevant trail manager; appropriate signage and, where necessary, stop/go controls, spotters or temporary traffic signals; advance updates through A2O, Te Araroa, DOC and MDC communication channels; and reinstatement of the trail route after each construction period.
- 243 We find that, with those controls, the effects on the Alps to Ocean Cycle Trail and Te Araroa Trail will be slight negative during construction and neutral once the rock armouring works are complete. Overall though they will be temporary and are capable of practical management.

25.7 Sections 105 & 107 RMA – alternatives and receiving environment effects

- 244 The Application seeks a discharge permit for construction-phase discharges to land and water associated with the placement of rock armouring on the Pūkaki Dam face and abutments. Those discharges arise from site preparation, access tracks, laydown areas, machinery operating near or in water, stormwater, sediment and incidental construction-related contaminants. An assessment of those discharges is therefore relevant to sections 105 and 107 of the RMA, as applied through Schedule 5 of the FTAA.
- 245 The Applicant's position is that possible alternative discharge methods and receiving environments have been considered. The discharges are directly associated with maintenance works to an existing dam structure, at the location where the armouring is required. The AEE says that alternative locations and methods were considered by the design team and that the selected methods are appropriate and have the least impact on environmental receptors. It also says that, because there is no reticulated network and because of the nature and location of the works, there are no other viable discharge alternatives.
- 246 The Applicant also relies on its construction methodology and erosion and sediment control approach. The works are to be staged to minimise the time that machinery operates in water, to contain sediment, and to avoid direct discharge to Lake Pūkaki where practicable. Reinstatement activities following each construction phase are also proposed to reduce the risk of incidental sediment discharge from the site. With those

controls it is considered that the works can be undertaken in a manner that safeguards the water quality of Lake Pūkaki.

- 247 CRC was the only commenter that directly addressed sections 105 and 107 RMA in its comments, noting that those provisions remain relevant considerations for the Panel. In relation to section 105 RMA, CRC agrees that the discharge of contaminants to water and air cannot be directed to another receiving environment because of the specific location and purpose of the dam armouring works. It also accepts that the works are essential to maintain the structural integrity of Pūkaki Dam and is satisfied that no other reasonable alternatives exist.
- 248 In relation to section 107 RMA, CRC records that its water quality expert generally agrees with the Applicant's conclusions on water quality. It notes that Lake Pūkaki has a very low nutrient state and that there has been no relevant deterioration in the trophic level index over the assessed period. CRC also records that the relevant water quality limits for Lake Pūkaki are being met and that section 107(2A) RMA is not relevant.

Panel assessment and findings

- 249 We accept that sections 105 and 107 RMA are relevant to our assessment of the discharge permit. Section 105 RMA requires us to have regard to the nature of the discharge, the sensitivity of the receiving environment, the Applicant's reasons for the proposed choice, and possible alternative methods of discharge, including discharge to another receiving environment. Section 107 RMA requires us to consider whether, after reasonable mixing, the discharge is likely to give rise to the specified adverse receiving-water effects, including conspicuous oil or grease films, scums or foams, conspicuous change in colour or visual clarity, objectionable odour, rendering freshwater unsuitable for farm animal consumption, or significant adverse effects on aquatic life.
- 250 We accept that Lake Pūkaki is a sensitive receiving environment. It has very high water quality, significant landscape, cultural and ecological values, and is part of a wider hydro-electricity and freshwater system of regional and national importance. That sensitivity supports a cautious approach to construction methodology, sediment controls, hazardous substance management, monitoring and incident response.
- 251 However, we also accept that the nature of this discharge is confined to construction-phase discharges associated with maintaining and improving an existing dam structure. The relevant works must occur at the dam and abutments. There is no practical alternative receiving environment for those discharges and no reticulated or off-site discharge option that would provide a realistic or less effects-generating alternative. We therefore accept the Applicant's reasons for the proposed discharge location and method.
- 252 We place weight on CRC's agreement that no other reasonable alternatives exist for the purposes of section 105 RMA. We also place weight on CRC's acceptance of the Applicant's water quality conclusions for the purposes of section 107 RMA. No other commenting party has raised a contrary section 105 or section 107 position.
- 253 We find that the section 105 alternatives assessment is adequate. The available alternatives are constrained by the location of the existing dam, the purpose of the works, the need to place rock armouring on the dam face and abutments, and the absence of a viable alternative receiving environment. The relevant issue is therefore not whether the discharge can be relocated elsewhere, but whether the construction methodology and conditions minimise the discharge and its effects as far as practicable.

- 254 We also find that section 107 does not prevent approval. On the evidence before us, and subject to conditions, the discharges are not likely, after reasonable mixing, to give rise to the receiving-water effects listed in section 107(1) RMA. In particular, we are satisfied that the proposed erosion and sediment controls, hazardous substance controls, biosecurity measures, spill response requirements, timing and staging of works, and reinstatement obligations are sufficient to manage the risk of conspicuous changes in water clarity, suspended material, oil or grease effects, or significant adverse effects on aquatic life.
- 255 We consider that the conditions should secure the matters relied on in the assessment. Those conditions should require the works to be carried out in accordance with an approved Erosion and Sediment Control Plan, include a certification or amendment process for that plan, require practicable measures to prevent oil and fuel leaks from vehicles and machinery, prohibit refuelling or fuel storage close to water bodies, require spill response equipment on site, require machinery hygiene and biosecurity controls, and require remediation if erosion or sediment discharge occurs as a result of the works.
- 256 Overall, we find that the Applicant has adequately addressed the section 105 discharge alternatives assessment and that the section 107 receiving-water restrictions do not provide a basis for refusing the discharge permit. The discharge effects are acceptable subject to conditions, and those conditions are necessary to ensure the construction methodology and safeguards relied on in the application are implemented and enforceable.

26. Effects of lake water level lowering (eased access)

- 257 On a similar basis as above, we find that the lake water level lowering aspect of the proposal will give rise to the following main categories of actual and potential effects on the environment:
- a. Effects on groundwater users;
 - b. Effects on wetland hydrology/ecology;
 - c. Effects on existing lakeside structures;
 - d. Effects on air quality (dust from additional exposure of lake bed);
 - e. Effects on shoreline geomorphology;
 - f. Landscape and visual effects;
 - g. Socio-economic effects; and
 - h. Natural hazards.

26.1 Frequency and extent of lowering

- 258 Of importance to our assessment of the effects of lowering water levels in Lake Pūkaki is a proper understanding of the extent and frequency that such lowering might occur.
- 259 In this regard, it is highly relevant to our assessment that the Application only seeks consent to lower water levels for a three-year period, described in the substantive application and technical material as the period from 2026 to 2028 (inclusive).

- 260 Further, Meridian's claim that lake lowering during that consent term will be relatively infrequent and not extensive (i.e., not to the full, allowable depth) is also relevant and important for us to evaluate. The basis for this claim is forward modelling relying on 91 years of hydrological and meteorological data, applied to current electricity system supply and demand assumptions (Modelling Report⁴³). Under the restricted/status quo scenario, the Applicant's model showed essentially no use of storage below 518 m RL, reflecting, it says, its risk-averse approach to avoid breaching that level unless access triggers are met. Under the eased access scenario, the lake is generally modelled to be held lower but still within the current normal operating range above 518 m RL most of the time.
- 261 The Modelling Report also records that, under eased access conditions, the wider operating range is used and Lake Pūkaki is anticipated to drop below 518.0 m RL following prolonged low inflows. It estimates this to occur approximately 3% of the time, with a 5% probability that the duration below 518.0 m RL will exceed 12 weeks in any one year.
- 262 For the first year of eased operation, Meridian models an approximately 3% probability that the lake will be below 518 m RL in any given week, equating to an average of about 1.5 weeks below 518 m RL. Of the 91 hydrological sequences, 21 sequences fall below 518 m RL in the first year. Most are shallow and short-duration: 9 fall between 518–517 m RL, 6 between 517–516.5 m RL, 3 between 516.5–516 m RL, 2 between 516–515 m RL, and only 1 falls below 515 m RL. The worst-case modelled first-year scenario is a fall below 518 m RL from early September until December, a period of about four months, but Meridian assesses that scenario as approximately 1% probability.
- 263 For 2027 and 2028, Meridian says the pattern is broadly the same, but the weekly probability of being below 518 m RL increases slightly to about 3.5% in 2027 and 4% in 2028. Meridian's ecological response summarises the likely average duration below 518 m RL over the three-year period as approximately 1.5–2 weeks per year, and states that where drawdown occurs, only part of the full 518–513 m RL range is likely to be used, more commonly a 2–3 m change rather than the full 5 m.
- 264 We have treated the modelling as relevant not only to the system benefits case, but also to the wetland effects assessment, because the magnitude of any wetland hydrology effect is directly related to how often, how far and for how long lake levels fall below 518.0 m RL.
- 265 Meridian's modelling was not without criticism though. In its assessment of environmental effects, DOC focussed on the importance of duration and frequency. It recorded that the ecological assessment relied on an assumption of about 39 days below 518 m RL between 2026 and 2028, but Dr Walker⁴⁴ expressed reservations about the reliability of the predicted low-water duration because the modelling relied on historic probability distributions in a directionally changing climate. To this end, DOC recommended conditions setting a main operating range, limits on days in lower elevation bands, a maximum of 39 days in the 518.4–517.4 m range over three years, progressively fewer days at lower ranges, and an 8-month minimum interval between drawdowns below 518 m RL.
- 266 CRC also observed that Meridian's effects assessments used 39 days as the likely time below 518 m RL within the three-year consent term, but the proffered conditions did not

⁴³ AEE, Appendix B.

⁴⁴ DOC s53 comments, Appendix A, Evidence of Dr S Walker, 8 April 2026.

restrict the period the lake may be held below 518 m RL. CRC therefore contended that consideration should be given to extended low lake periods, while noting that Meridian's worst-case modelled event of approximately four months is less than the four to seven months assessed during Plan Change 1. CRC also noted that the actual effects of operating below 518 m RL have not been tested because Meridian has not used existing provisions to draw the lake below that level.

- 267 Meridian responded to these comments that the effects should be assessed in light of the limited duration and scale modelled, the short three-year term, and the permitted/consented baseline under the WAP and existing consents. It says residual effects are small in extent and duration, and that additional conditions limiting the extent and frequency of lake lowering below 518 m RL are unnecessary. Instead, Meridian proposes conditions requiring weekly reporting while below 518 m RL, post-event reporting on the timing, levels, duration and mitigation measures, and a detailed explanation where any lowering event differs from what was predicted in the application.

Panel assessment and findings

- 268 We have considered the time-bound nature of the lake lowering approval and the Applicant's modelling of how often, how far and for how long Lake Pūkaki is likely to be operated below 518 m RL. As noted, we consider this issue important because many of the actual and potential environmental effects of eased access depend not simply on the existence of authority to lower the lake to 513 m RL, but on the likely frequency, depth, timing and duration of any drawdown below 518 m RL.
- 269 The approval sought for eased access is temporary. It is sought for a three-year period, covering the 2026, 2027 and 2028 operating years. That is materially different from a permanent change to the Lake Pūkaki operating regime. We treat the temporary nature of the approval as important to our assessment of effects, benefits and risk.
- 270 The approval would allow Lake Pūkaki to be operated between 518 m RL and 513 m RL without the current SSA or OCC triggers. That full 5 m range represents approximately 545 GWh of realisable hydro energy. However, Meridian's modelling does not predict frequent or routine use of the full range. Rather, the modelling indicates that the lake would generally remain above 518 m RL and that excursions below 518 m RL would occur only occasionally, following prolonged low inflows or system conditions where use of the additional storage is economically and operationally justified.
- 271 We accept that Meridian's modelling is a reasonable basis for assessing likely effects, subject to the limitations identified by commenters. The modelling uses 91 years of hydrological and meteorological data, together with current electricity system supply and demand assumptions. Under the status quo restricted scenario, use below 518 m RL is effectively negligible. Under the eased access scenario, Meridian models a 3% probability in the first year that lake levels will be below 518 m RL in any given week, increasing slightly to around 3.5% in 2027 and 4% in 2028. On average, that equates to approximately 1.5 to 2 weeks per year below 518 m RL.
- 272 We acknowledge the Sapere peer review conclusion that the scenario structure was conceptually sound and that easing the constraint would logically produce a more optimised/lower-cost modelled outcome. We treat that as support for the modelling framework, while recognising that ecological effects depend on the physical lake-level outputs rather than the economic optimisation itself.
- 273 We also accept Meridian's evidence that, when drawdown below 518 m RL occurs, it is

likely to be mostly shallow and short-duration. In the first modelled year, 21 of 91 hydrological sequences fall below 518 m RL, but most remain between 518 m RL and 516 m RL. Only one sequence falls below 515 m RL. This supports Meridian's position that, although the approval would authorise operation to 513 m RL, the full 5 m range is unlikely to be used often, if at all, over the three-year term.

- 274 The worst-case modelled scenario is materially different. In that scenario, the lake falls below 518 m RL in early September and does not return above 518 m RL until December, a period of about four months. Meridian assesses that as an approximately 1% probability event. We consider that worst-case scenario relevant because environmental effects may be materially different if lower levels are prolonged. However, we do not consider it appropriate to assess the proposal as if that scenario were the expected or usual operating case.
- 275 We give weight to CRC's and DOC's concerns that duration and frequency matter. CRC correctly notes that Meridian's effects assessments rely on the modelled likely period below 518 m RL, and that conditions should address the possibility of extended periods below that level. DOC similarly raises concern that ecological effects, particularly on lake margin turfs, wetlands and avifauna feeding habitat, may depend on the duration and recurrence of low lake levels. DOC's concern that historic hydrological modelling may not fully capture future climate conditions is also a legitimate qualification.
- 276 We do not accept, however, that those concerns require us to assume that the approval will be exercised to the full 513 m RL limit for prolonged periods as the normal operating case. The evidence before us supports a more nuanced conclusion that the consent would authorise operation to 513 m RL, but the Applicant's modelled and intended use is intermittent, time-limited and more commonly shallow. That distinction is material to the assessment of landscape, dust, geomorphology, wetland, littoral, avifauna, cultural and socio-economic effects.
- 277 We also take into account the existing planning context. The WAP and existing consents already provide pathways for Lake Pūkaki to be lowered below 518 m RL in defined circumstances, including to 513 m RL during a declared electricity supply emergency. Those pathways do not remove the need to assess the effects of this application, because the proposed trigger and decision-making regime is different. However, they confirm that effects of low lake levels have previously been contemplated within the statutory planning framework.
- 278 We find that the actual and potential effects of eased access should be assessed by reference to both the authorised envelope and the likely modelled use. The authorised envelope sets the maximum potential effect: operation down to 513 m RL during the three-year term. The modelled use informs the likely effect: occasional drawdown below 518 m RL, generally for short periods and usually not to the full depth authorised. The worst-case four-month event remains a low-probability scenario that should be allowed for through monitoring and reporting conditions, rather than treated as the normal case.
- 279 Overall, we find that the temporary three-year nature of the approval and the modelled low frequency and limited duration of drawdown below 518 m RL are important factors supporting the acceptability of the Application. We accept that the approval creates an ability to operate to 513 m RL, but find that the likely use of that authority is materially more limited than continuous or frequent operation at that lower level. Subject to conditions securing notification, monitoring, reporting, explanation of departures from modelled use, and review if required, we find that the extent and frequency of lake

lowering are acceptable for the purposes of assessing environmental effects over the consent term.

26.2 Effects on groundwater users

Summary of Applicant's Position

- 280 Meridian's position is that lake lowering is unlikely to affect groundwater users. The Groundwater Assessment⁴⁵ describes the regional aquifers as being hosted in post-glacial outwash gravels, particularly the Mt John Formation, which is considered semi-confined and regionally significant. Groundwater flow generally follows topographic gradients, with limited connectivity to Lake Pūkaki due to low-permeability lakebed sediments.
- 281 The Groundwater Assessment also describes the wider hydrological setting. The topography around Lake Pūkaki ranges from Aoraki/Mt Cook to the north, at approximately 3,700 m, to the Tasman Delta at approximately 533 m. The lake is flanked by the Ben Ohau Range to the west and more gentle slopes to the east. Annual rainfall varies markedly across the Mackenzie Basin, from 4,586 mm at Aoraki/Mount Cook village to 663 mm at Pūkaki-Twizel airport. Average inflow to Lake Pūkaki is 134 m³/s, making up approximately 35% of the Waitaki River catchment's annual flow.
- 282 The assessment identified 34 existing bores close to the margins of Lake Pūkaki. For the reasons set out in Appendix J, the assessment focused on four privately owned active bores within 500 m of the lake margin: H38/0273, H38/0206, H38/0038 and BZ15/5016. Meridian says H38/0273 and H38/0206 are screened well below the proposed lower operating level and are unlikely to be directly hydraulically connected to the lake. H38/0038 is screened well above the lake operating range, with its bottom screen at approximately 558.4 m RL, which is 26 m above the maximum lake level of 532.5 m RL and 45 m above the proposed lower operating level of 513 m RL.
- 283 BZ15/5016 required closer consideration because it is located on the southern edge of Lake Pūkaki and piezometric contours suggest groundwater flow southwards from the lake toward the bore. However, the bore log records approximately 9 m of sandy silt between 519 m RL and 510 m RL, with the screen installed below that silt layer from 510 m RL to 500 m RL. Meridian considers that layer restricts significant hydraulic connection between the lake and the bore, and that the previous yield test for BZ15/5016 indicates that the bore is unlikely to be hydraulically connected to the lake.
- 284 The AEE also compares the anticipated effects of the current proposal with those considered through Plan Change 1. Meridian notes that Plan Change 1 considered periods below 518 m RL of four to seven months, whereas the present proposal anticipates lake levels being below 518 m RL, on average, for materially shorter periods.

Comments received and Applicant's response

- 285 CRC generally agrees that potential groundwater effects of lowering the lake would be lower groundwater levels in nearby wells and possible effects on the hydrological function of nearby wetlands. CRC also agrees with the Applicant's assessment of the four domestic wells within 500 m of the lake edge, which aligns with CRC's wells database. The 500 m cut-off distance for assessing potentially affected wells was agreed with the Applicant. CRC supports the Applicant's conclusion that groundwater users are unlikely to be impacted by lower lake levels.

⁴⁵ AEE, Appendix J.

- 286 Mr Dodson, for Meridian, reviewed and responded to CRC's comments on groundwater users⁴⁶. He confirmed that those comments did not alter his previous conclusion that effects on groundwater users would be negligible.

Panel assessment and findings

- 287 We find that the Groundwater Assessment provides sufficient information to understand the level and magnitude of potential effects on groundwater users from the proposed lake lowering.
- 288 We accept the Applicant's assessment. If lake lowering were to affect groundwater users, effects would be most likely in bores close to the lake, screened within or near the lake operating range, and hydraulically connected to the lake through permeable sediments. The evidence does not identify such a bore.
- 289 We accept that H38/0273 and H38/0206 are unlikely to be directly hydraulically connected to the lake, and that H38/0038 is screened materially above the relevant lake operating range. We also accept that BZ15/5016, although located close to the southern edge of the lake, is separated from the lake by a low-permeability sandy silt layer and has yield-test results more consistent with low permeability conditions than with a bore strongly recharged by the lake.
- 290 We note in particular that the assessment includes consideration of the low-probability worst-case scenario in which the lake falls below 518 m RL in early September and does not recover until December. Meridian's modelling otherwise indicates an estimated 3-4% probability that lake levels might fall below 518.0 m RL in any given week over the 2026-2029 period, equating to approximately 39 days below 518 m RL over the three-year period.
- 291 We have not identified any comment that materially disputes the Applicant's groundwater-user assessment. CRC supports the conclusion that groundwater users are unlikely to be affected, and no other commenting party raised groundwater-user concerns.
- 292 Overall, we find that any ongoing or residual adverse effects on groundwater users will be negligible. We do not consider groundwater-user effects to provide a basis for declining the Application or requiring substantial additional mitigation. Given the monitoring and reporting conditions required for lake-lowering events generally, we consider it appropriate that post-event reporting record any groundwater-user complaints received and any investigation or response undertaken.

26.3 Effects on wetland hydrology

Summary of Applicant's Position

- 293 Meridian's position is that the effects of eased access on wetland hydrology will be low or negligible. It relies on its groundwater and ecological assessments⁴⁷, which identify 17 wetlands hydrologically connected to Lake Pūkaki. Of those, 16 are assessed as having low hydrological connectivity to the lake and interacting with the lake at about 525 m RL and above. The Tasman River Delta is identified as the only wetland with high hydrological connectivity to the lake and as the principal wetland relevant to the assessment of

⁴⁶ Response to s53 comments, Appendix K, Evidence of M Dodson, 15 April 2026.

⁴⁷ EE, Appendices J and M.

operation below 518 m RL.

- 294 Meridian's evidence is that temporary operation between 518 m RL and 513 m RL will not materially change other wetland hydrology because:
- a. most wetlands interact with the lake only at materially higher lake levels;
 - b. Lake Pūkaki already operates over a large level range;
 - c. any operation below 518 m RL is expected to be infrequent, shallow and short-lived;
 - d. the eased access regime is time limited to three years; and
 - e. no material change to groundwater levels is expected.
- 295 Meridian also relied on the previous Plan Change 1 and 2018 consenting assessments as relevant context for considering such effects. At the Panel briefing, its position was that the environmental effects of operating below 518 m RL have already been considered in those processes, and that the present Application changes the likelihood and timing of access rather than the nature of the effects.
- 296 The Panel's request for information⁴⁸ asked Meridian to provide an assessment of ecological effects on the Tasman Delta and other wetlands on the basis that 518 m RL is the existing environment and that no permitted baseline is applied. The Panel also asked, if it considered residual effects and monitoring were required, what measures Meridian said were relevant under NPS-REG Policy F(5), and what the principal features of any monitoring programme would be.
- 297 In its response, Tonkin & Taylor clarified that the EcIA had not relied on Plan Change 1 or other permitted activity provisions to disregard effects. It stated that the EcIA assessed the proposal against an existing environment in which Lake Pūkaki is operated at or above 518 m RL under the standard operational framework. For the avoidance of doubt, it confirmed that its conclusions should be understood on the basis requested by the Panel: 518 m RL is treated as the existing environment, and no permitted baseline is applied or determinative.
- 298 Following that clarification, Tonkin & Taylor maintained its conclusion that the overall level of effect on wetland features, including the Tasman Delta, would be low⁴⁹. Its reasons were the short duration and shallow extent of dips below 518 m RL, the three-year duration of the eased access regime, adaptation of wetland habitats to the existing operational immersion/emersion regime, the fact that 16 of the 17 identified wetlands only interact with the lake above 525 m RL, the high-lake-level interaction of turf communities, and the absence of any anticipated material change to groundwater levels.
- 299 Ms Callaghan addressed the Panel's questions about compensation and monitoring. She stated that, in her opinion, any residual adverse impacts are sufficiently small and temporary and do not support the need for environmental compensation or offsetting under Policy F(5) of the NPS-REG. Meridian is therefore not offering compensation or

⁴⁸ Request for Information 1, 4 May 2026.

⁴⁹ Tonkin & Taylor memorandum - Response to RFI No.: 1.D – Ecology Issues, 13 May 2026. Section 3.

offsetting.

- 300 Ms Callaghan also considered that a new monitoring programme was not warranted. Her reasons were that any monitoring would need to distinguish subtle ecological shifts attributable to the three-year consent from natural and scheme-induced seasonal, intra-seasonal and annual variation, and that the available state-of-the-environment data for the Tasman Delta is not sufficient to make that realistic over the short consent term. She considered that a condition requiring further monitoring may risk being more onerous than necessary. Meridian instead relies on continued facilitation of monitoring under its existing agreement with DOC when the lake drops below 518 m RL.

Comments received and Applicant's response

- 301 CRC accepts parts of Meridian's groundwater and hydrological assessment. Its technical review broadly agrees with the description of the existing hydrogeological environment, while noting that historic groundwater information around Lake Pūkaki is limited.
- 302 CRC also noted that the Applicant had not provided a hydrological assessment of how spill to the Pūkaki River may change if the lake is operated at lower levels. Meridian responded that the AEE (Appendix B) indicates eased operation is likely to allow more spill to be captured in the lake and used for generation, and that for the three-year term the capture of spill events is likely to be less than contemplated during Plan Change 1.
- 303 CRC also accepts that most identified wetlands are located above the levels directly affected by the proposal and that the level of hydrological effect for most wetlands is likely to be low. CRC's primary concern is directed to the Tasman River Delta.
- 304 CRC records that the Tasman Delta is a wetland of very high ecological value and has high hydrological connectivity with Lake Pūkaki. The CRC's groundwater reviewer did not accept, without qualification, Meridian's view that lowering the lake below 518 m RL would be unlikely to materially affect groundwater inputs into the delta. CRC notes that the braid fan may extend into the subsurface and may provide connection between the lake and delta. On that basis, CRC considers there is uncertainty about whether lowering the lake below 518 m RL would affect that connection.
- 305 CRC considers that lowering the lake for extended periods may draw water out of the Tasman Delta. It accepts, however, that the scale of any such effect is difficult to quantify and that it is difficult to distinguish effects additional to those that could occur under existing pathways for emergency or shortage-of-supply lowering. It further notes that the likely modelled scenario of approximately 39 days below 518 m RL over the three-year period is substantially shorter than the four to seven month duration considered in Plan Change 1, although a worst-case scenario could extend to about four months.
- 306 CRC's biodiversity reviewer accepts that if drawdown to 513 m RL occurs infrequently and for short periods, risks to ecology, including wetlands and avifauna, are reduced compared with longer or more frequent drawdowns. The CRC nevertheless considers that monitoring is appropriate to test the conclusions of the Applicant's assessment, especially for threatened or at-risk flora and kākī at the Tasman Delta.
- 307 CRC therefore recommends monitoring of threatened and at-risk flora at the Tasman Delta when lake levels drop below 518 m RL, with results provided to CRC and DOC. CRC also recommends kākī monitoring when lake levels drop below 518 m RL, noting Meridian's existing private agreement with DOC but preferring monitoring to be included in consent conditions for transparency and certainty.

- 308 DOC's comments are more critical of the scope and adequacy of Meridian's ecological assessment. DOC considers that the EcIA did not adequately identify or assess eastern lake margin turf wetlands. DOC relies on Dr Susan Walker's evidence that the Tasman River Delta wetland and eastern lake margin turf wetlands are both highly dependent on fluctuating lake levels and have very high ecological and hydrological connectivity with the lake.
- 309 DOC's position is that the primary ecological driver for the lake margin turf communities is the sequence of inundation followed by exposure. Periodic inundation suppresses taller invasive plants and resets the habitat through disturbance, substrate reworking and deposition of fresh silt. Exposure then allows indigenous turf species to re-establish. DOC considers that prolonged or more frequent drawdown could allow weed invasion and competitive exclusion of small indigenous wetland plants.
- 310 DOC also considers that the ecological values at issue are greater than described in Meridian's assessment. It says the eastern lake margin turf wetlands support threatened and at-risk vascular plant species and that the list of threatened and at-risk plant species in the Tasman River Delta in the AEE (Appendix M) is incomplete and out of date. Furthermore, it considers that high lake levels are likely to be important to the functioning of some of the other 16 wetlands, even if they have lower hydrological connectivity than the Tasman Delta. In DOC's view, retaining dynamic lake levels within the present elevation range may be important to maintain those wetlands and periodically set back weed invasion.
- 311 DOC recommends conditions to manage the duration and recurrence of low lake levels. In particular, Dr Walker recommends a maximum duration below 518 m RL and a minimum interval between drawdowns below 518 m RL, to help ensure the lake returns to its ecologically important normal operating range. DOC also recommends a regular vegetation monitoring regime as a condition of consent, including baseline survey and monitoring of the Tasman Delta and eastern lake margin turf wetlands.
- 312 Meridian responds that the potential effects identified by CRC and DOC are low, temporary and materially addressed by the existing assessment. It accepts that Dr Jack and Dr Walker raise potential adverse effects if the lake is drawn down for an extended period, including effects on the very high value Tasman Delta wetlands, and that those habitats are ecologically significant and support threatened or at-risk plant species. However, Meridian disagrees with DOC's proposal for monitoring of turf communities along the eastern shore. It says these turf communities are connected to the lake within the main operating range and the effects on those communities have been assessed in the context of the consenting of the WPS.
- 313 Meridian agrees that fluctuating lake levels are necessary for hydrologically connected turf communities to persist and that periodic inundation is also required to exclude taller invasive weed species. It says that the eased access scenario, if it occurs, will be for short periods, over a time-bound three-year period, and for shorter periods than assumed in the Plan Change 1 baseline. Meridian considers that wetland turf communities have formed and adapted to the existing lake level regime and associated fluctuations and would be expected to recover following a return to baseline lake fluctuations and relies on modelling predicting that Lake Pūkaki will be below 518 m RL approximately 3% of the time and that any drawdown would generally be short in duration and not deep, generally not below 515 m RL. It therefore considers that further operating constraints are not warranted.

- 314 Meridian also disagrees with DOC's proposed operating condition requiring limits on duration and minimum intervals between drawdowns. It says the application does not seek to alter the normal operating consent above 518 m RL and that the WPS will otherwise continue to operate as previously, with lake levels fluctuating in response to rainfall and periodically inundating lake-edge wetlands.
- 315 Meridian's proposed conditions include notification and reporting when lake levels fall below 518 m RL, including reporting on the timing, duration, levels maintained, circumstances leading to the event, and measures adopted to mitigate adverse effects. Meridian also proposes that DOC be notified when the lake is forecast to drop below 518 m RL and asked to undertake kākī and *Isolepis basilaris* monitoring in accordance with the existing DOC/Meridian agreement, with results provided to CRC.
- 316 Meridian does not offer environmental compensation or offsetting for residual adverse effects on wetlands. Its position is that residual effects are sufficiently small and temporary that compensation or offsetting under NPS-REG Policy F(5) is not justified.

Panel assessment and findings

- 317 We have considered the effects of eased access to Lake Pūkaki storage below 518 m RL on wetland hydrology and associated ecological values. The principal wetland issues concern the Tasman River Delta. The Tasman River Delta wetlands have high or very high ecological value and are connected, directly or functionally, to the lake-level regime.
- 318 We have treated the frequency and extent modelling as central to this assessment, but have kept our evaluation of that modelling in the preceding section to avoid unnecessary repetition. The key point for this section is that wetland effects are directly related to Meridian's proposed management of water stored in Lake Pūkaki and the consequent timing, duration and depth of any lowering below 518 m RL.
- 319 We accept Meridian's clarification, provided in response to the Panel's RFI, that its assessment should be understood on the basis that 518 m RL is the existing environment and that no permitted baseline is applied or determinative. That clarification is important. It means we assess the actual and potential effects of lowering below 518 m RL against the current standard operating environment, while treating the existing WAP and emergency/shortage-of-supply pathways as relevant planning context rather than as excluding effects from consideration.
- 320 The Applicant's evidence is that 17 wetlands have been identified as hydrologically connected to Lake Pūkaki. Sixteen of those wetlands are assessed as having low hydrological connectivity and interacting with the lake at about 525 m RL and above. On that evidence, we accept that temporary drawdown below 518 m RL is unlikely to materially affect the hydrology of most of the identified wetlands. The Tasman River Delta is different. It is the wetland with high hydrological connectivity to the lake and is the main wetland feature requiring closer consideration.
- 321 We accept that the Tasman River Delta turf wetland communities are ecologically important and sensitive to lake-level dynamics. The evidence from DOC, particularly Dr Walker's comments, usefully explains that wetland turf communities depend on a dynamic sequence of inundation and exposure. Periodic inundation can suppress taller invasive plants and reset substrates, while exposure allows indigenous turf species to re-establish. That means effects cannot be assessed only by asking whether lake lowering dries wetlands for a short period. The assessment must also consider whether the operating regime could alter the pattern of inundation and exposure that supports those

communities.

- 322 We accept Meridian's evidence that the proposed eased-access regime is time limited to three years and that modelled drawdown below 518 m RL is expected to be infrequent, shallow and short-lived. The likely scenario is approximately 39 days below 518 m RL over the three-year term, materially less than the four to seven months considered during Plan Change 1; the modelled worst-case scenario is about four months and has an assessed probability of about 1%. We consider that modelled extent, duration and frequency is central to the effects assessment. If the lake were operated below 518 m RL more frequently, for longer, or to lower levels than modelled, the effects profile would be different.
- 323 We give weight to CRC's position that the likely modelled period below 518 m RL is substantially shorter than the four to seven months considered in Plan Change 1, while recognising CRC's concern that a worst-case scenario could extend to about four months. We also accept CRC's concern that historic groundwater information around Lake Pūkaki is limited and that there remains uncertainty about whether lowering below 518 m RL could draw water out of the Tasman Delta, including through subsurface connection.
- 324 We have given careful consideration to the expert advice provided by Dr Jack for CRC and Dr Walker for DOC. We accept their advice that adverse effects are possible, particularly if low lake levels are extended or repeated. We have therefore considered the potential wetland effects alongside the project's regional and national benefits, and alongside the condition package available to manage residual uncertainty.
- 325 We do not accept DOC's position that monitoring of turf communities along the eastern shore is required. These turf communities are connected to the lake within the main operating range and the effects on those communities have been assessed in the context of the consenting of the WPS. We consider that effects on the eastern turf communities are beyond the scope of the current Application's effects.
- 326 We also do not consider environmental compensation or offsetting is required for wetland hydrology effects. The residual effects are expected to be low, temporary and uncertain, and the consent term is short. On that basis, compensation under NPS-REG Policy F(5) is not justified. That conclusion depends on the consent being exercised broadly within the modelled extent, frequency and duration, and on suitable monitoring and reporting conditions being imposed.
- 327 We do not accept Meridian's position that no new monitoring condition is warranted. Monitoring may be difficult over a short term and may not conclusively attribute subtle ecological change to the exercise of this consent. Nevertheless, the Panel is being asked to approve operation below 518 m RL in circumstances where the actual ecological response has not been tested and where both CRC and DOC identify residual uncertainty. In our assessment, a precautionary approach is justified and proportionate monitoring is necessary, not to prove every causal pathway, but to provide transparency, improve the evidential base, and allow any material departure from predicted effects to be identified.
- 328 The monitoring required should focus on the Tasman River Delta, threatened and at-risk flora, and kākī where relevant. It should be triggered by lake levels falling below 518 m RL, with results provided to CRC, DOC and Kā Rūnaka/TRONT. It should also align, where practicable, with Meridian's existing arrangements with DOC, but should not depend solely on a private agreement outside the consent framework.

- 329 In this respect, our conditions go beyond merely retaining the existing Meridian/DOC monitoring arrangement. The consent conditions require a formal wetland management, monitoring and reporting framework so that any adverse effects arising in the Tasman Delta wetland and other sensitive wetland areas can be identified, reported and responded to.
- 330 We find that the effects of eased access on wetland hydrology are likely to be low if the lake lowering occurs in the manner modelled by Meridian: infrequently, for short periods, and generally not to the full 513 m RL lower limit. The main residual risk is that longer, deeper or more frequent drawdown could affect the Tasman Delta by altering inundation/exposure patterns, increasing drying stress, or facilitating weed invasion.
- 331 Overall, we find that the wetland hydrology effects are acceptable subject to conditions. Those conditions should require notification when the lake is forecast to fall below 518 m RL; recording and reporting of the timing, duration and depth of any drawdown; post-event reporting on whether actual lake levels differed from the modelled assumptions; targeted monitoring of the Tasman Delta, including threatened and at-risk flora and kākī where relevant; provision of monitoring results to CRC, DOC and Kā Rūnaka/TRONT; and a mechanism for review or adaptive management if monitoring identifies effects materially greater than those assessed.
- 332 Subject to those conditions, we find that the potential effects on wetland hydrology do not provide a basis for declining the Application. The effects are not expected to be significant or irreversible over the three-year term, but they require transparent management, monitoring and reporting because of the ecological value of the affected wetland systems and the uncertainty identified by CRC and DOC.

26.4 Effects on lakeside structures

Summary of Applicant's Position

- 333 The AEE⁵⁰ identifies six structures located on the lake shoreline with the potential to be affected by the operation of Lake Pūkaki within the range of 518 m RL to 513 m RL. Excluding the Lake Pūkaki outlet and spillway structures, the protection of which are included in the scope of the application, four lakeside structures are identified:
- a. Gabion retaining wall adjacent to SH80 Mount Cook Road
 - b. Boundary Stream Bridge
 - c. Catherine Fields Irrigation intake
 - d. Tekapo B power station, namely the tailrace weir and chute
- 334 The Applicant's assessment⁵¹ of the lakeside gabion retaining wall adjacent to SH80 Mount Cook Road concludes that the structure is unlikely to be directly impacted by a reduced lake level, given that the concrete base of the retaining wall is located at approximately 532.0 m RL, well above the existing operating range.
- 335 Under present operating conditions, the Boundary Stream Bridge piers are partially

⁵⁰ AEE, Section 8.5.

⁵¹ AEE, Section 8.5.4.

submerged at higher lake levels and exposed with no inundation of the stream channel or bridge piers at lower lake levels. The AEE⁵² identifies no additional risk of stream scour is anticipated from a lake level operated below 518.0 m RL.

- 336 The Catherine Fields Irrigation intake was constructed circa 2017 and is the only identified lakeside structure that was designed and installed since Plan Change 1 (dated 2012). The intake consists of twin DN710 pipelines, with internal pumps, supported and tied to concrete pedestals. The lowest elevation pedestal supports a stainless-steel intake screen allowing abstraction down to approximately 518.42 m RL. Lowering the lake below 518 m RL will expose the intake screen foundation to wave action, which may not have been anticipated in the original design. The existing intake system is physically inoperable at lake levels below 518.42 m RL and the associated resource consent permits abstraction to a minimum lake level of 518.0 m RL
- 337 Meridian's assessment is that detrimental impacts of wave erosion on the Catherine Fields intake are unlikely, because the screen anchoring system appears to use the same pipe support design as other anchor blocks that already experience exposed wave action. Meridian also records that it has an existing agreement with the owners of the intake structure regarding supply of water, or remuneration for lack of supply, when lake levels are below 518.42 m RL.
- 338 The Tekapo B tailrace weir and rock chute was designed and constructed as a temporary structure to enable the operation of the Tekapo B power station for a 20 month period in 1977 and 1978 before Lake Pūkaki was raised to its current operating range. The tailrace weir and chute has remained submerged since November 1978. The applicant commissioned Damwatch Engineering Limited (**Damwatch**) to complete assessment of the weir and chute structure.
- 339 The Applicant asserts that the Tekapo B tailrace weir and chute remains structurally stable and consistent with its functional requirements, despite having been designed as a temporary structure and submerged since late 1978. This claim is based on key outcomes from specific studies and responses commissioned by the Applicant⁵³, as follows:
- a. Review of construction documentation, field reporting, and technical publications provided inputs assessments to review and modelling. The hydraulic review (October 2025) was followed by an addendum report (5 December 2025), condition assessment (19 March 2026), and response to questions (28 April 2026), all authored by Damwatch for the Applicant.
 - b. Hydraulic studies completed by Damwatch⁵⁴ assessed the impacts of operating the

⁵² AEE, Section 8.5.5.

⁵³ AEE, Appendix L, including Appendix B (Hydraulic review of weir and chute, Damwatch Engineering, 28 October 2025); Tekapo B PS Temporary Tailrace Weir and Rock Chute; Hydraulic Review of Weir and Chute – Addendum Report. Damwatch Engineering Memorandum, 5 December 2025; Tekapo B Power Station tailrace weir and chute – condition assessment and review of bathymetric survey data. Damwatch Engineering Memorandum, 19 March 2026; Pūkaki Fast-Track Application: Tekapo B Power Station Tailrace Weir & Chute Response to Questions from Review Panel. Damwatch Engineering Memorandum, 28 April 2026.

⁵⁴ AEE, Appendix L; Tekapo B PS Temporary Tailrace Weir and Rock Chute; Hydraulic Review of Weir and Chute – Addendum Report. Damwatch Engineering Memorandum, 5 December 2025; Tekapo B Power Station tailrace weir and chute – condition assessment and review of bathymetric survey data. Damwatch Engineering Memorandum, 19 March 2026;

weir and chute at lake levels between 518.0 and 513.0 m RL. The studies included assessment of the stability of the rock chute under conditions of ramp-like flow, the effects of sediment deposition on flow behaviour down the rock chute, and the effects of wind-generated waves on the lining of the rock chute.

- c. Reporting concludes that the rock-lined chute can convey power station discharges up to 115 m³/s if the level of Lake Pūkaki is drawn down to 513 m RL, and that the existing rip-rap lining is sufficient to resist scour. Reporting concludes that potential damage to the concrete sills embedded in the chute would be localised rather than cascading or global.
 - d. Based on results of a bathymetric survey commissioned in February 2026⁵⁵, the Applicant asserts that the geometry of the structure remains broadly consistent with its as-built records.
 - e. Additional reporting by Damwatch⁵⁶ addressed foundation stability of the tailrace weir and chute for lake levels between 518 m RL and 513 m RL⁵⁷, based on construction records, visual condition assessment, and modelled maximum lake draw-down rates of 0.05 to 0.2 m per day. Based on the geotechnical assessment undertaken using construction records and observed performance of the structure to date, Damwatch concludes that it is unlikely that the filter (foundation) layers have degraded under long-term submergence since 1978, and that the tailrace channel has sufficient stability for the proposed lake lowering operations.
- 340 The Applicant proposes a reactive risk management strategy, involving visual monitoring of the tailrace weir and chute during drawdown events along with the maintenance of on-site rock and gravel stockpiles and plant to facilitate rapid repairs. Based on historical experience from 1977 where a significant scour hole was repaired within a single day, the Applicant argues that any operational damage can be remediated within 1 to 2 days, making pre-emptive structural works unnecessary.

Comments received and Applicant's response

- 341 Comments in relation to effects on existing lakeside structures were received from Genesis, NZTA, and CRC.
- 342 NZTA is not opposed to the Application. However, NZTA consider that appropriate conditions should be included to ensure adequate monitoring of state highway infrastructure (both baseline and additional monitoring), along with management of gravel aggradation resulting from the proposed change to lake operations that may impact state highway infrastructure.
- 343 CRC notes that Section 8.5.4 of the AEE states that the monitoring of the gabion wall adjacent to SH80 Mount Cook Road should be undertaken; however, no requirement for monitoring is included in the Applicant's proposed conditions. CRC proposes inclusion of

⁵⁵ Tekapo B Power Station tailrace weir and chute – condition assessment and review of bathymetric survey data. Damwatch Engineering Memorandum, 19 March 2026

⁵⁶ Pūkaki Fast-Track Application: Tekapo B Power Station Tailrace Weir & Chute Response to Questions from Review Panel. Damwatch Engineering Memorandum, 28 April 2026.

⁵⁷ Appendix B to Appendix L of Substantive Application: Hydraulic review of weir and chute, Damwatch Engineering, 28 October 2025.

a consent condition requiring periodic inspections of the rock gabion wall.

- 344 In response, the Applicant confirms that it is agreeable to NZTA's proposal and offers provisions for base-line survey, additional winter inspection, and development and implementation of a programme of remedial works. These provisions are proposed via party-to-party agreement that aligns with the existing agreement between Meridian and NZTA in relation to the WPS (dated 9 September 2021)⁵⁸.
- 345 Genesis provided extensive evidence regarding potential adverse impacts associated with the Tekapo B tailrace weir and chute structure. Genesis states that a failure of the weir to maintain the 518 m RL tailwater level would force an immediate outage at Tekapo B to protect the turbine runners, which were replaced in 2022 and are not designed for lower heads. Because Tekapo A and B are linked by a canal, an outage at B forces an outage at A, stopping inflows from the Tekapo scheme into Lake Pūkaki. Genesis models the potential national system costs of such a failure at up to \$2.5 billion.
- 346 Genesis engaged WSP to provide additional evidence regarding the condition of, and potential risk to, the 'temporary' tailrace weir and chute structure. The position of Genesis is summarised as follows:
- a. The original control weir and rock chute structure was designed and constructed as an inexpensive temporary facility and is perceived to have a high risk of failure.
 - b. WSP was engaged to undertake an assessment of the Tekapo B tailrace weir and chute. This assessment included bathymetric survey, visual condition inspection, structural condition assessment, and hydraulic assessment, along with review of the hydraulic assessment undertaken by Damwatch⁵⁹.
 - c. A bathymetric survey completed for Genesis in September 2025 identified deterioration of the structure, including 1 metre drops in the chute invert, indicating movement of the rock lining since construction. Exposure of concrete and reinforcement was observed as a result of movement of the chute rip-rap. Visual inspection identified silt deposition in some regions of the chute that obscured observation of the structural condition and potential defects. Based on the bathymetric survey and observed deterioration, Genesis contends that the future risk of chute failure due to proposed lake lowering is higher than during its original design and operation.
 - d. Given the submerged and obscured nature of the tailrace weir and chute foundations, Genesis claims a significant risk that the foundations are not in "as

⁵⁹ Tekapo Submerged Weir Bathymetric Survey and Hydraulic Assessment, Hydraulic Assessment, Final version 3, 2025, WSP; Tekapo Submerged Weir, Structural Condition Assessment, FINAL v2, 2025, WSP

built" condition and therefore cannot perform their original intended purpose if exposed and returned to service.

- e. WSP generally agrees with the methodology and modelling approach adopted in the hydraulic weir and chute assessment undertaken by Damwatch; however, WSP states technical disagreement with some hydraulic parameters and claims deficits in the modelling of current bathymetry, chute condition, structural deterioration and material degradation. WSP contends that the Damwatch modelling cannot be relied upon to represent future performance of the temporary structure under the Applicant's proposed lake operating regime.
 - f. WSP and Genesis conclude that the tailrace weir and chute structure is degraded, beyond its intended service life, and carries an elevated risk of failure if returned to service without pre-emptive repair and intervention. Ongoing residual risks are identified due to the original temporary design, documented historical performance issues (scour events), and the continuing uncertainty associated with submerged and obscured elements of the structure.
 - g. Based on evidence outlined by Mr Balme and WSP, Genesis contends that the proposed changes to lake operation materially change the risk profile associated with the temporary structure. Rather than leaving New Zealand exposed to a reactive failure scenario, Genesis argues for conditions that expressly provide for proactive repairs of the weir and chute structure in advance of drawdown below 518 m RL, along with regular operational investigations and maintenance.
- 347 In response, the Applicant characterises Genesis' national system modelling of costs associated with failure of the weir to maintain the 518 m RL tailwater level as "fanciful" and based on implausible triple-contingency scenarios. Meridian also relies on the history of earlier lake-lowering processes. It says Genesis did not oppose the 2012 Plan Change 1 process on the basis that lowering the lake minimum from 518 m RL to 513 m RL for emergency electricity generation was unlikely to physically affect its operations. Meridian further records that, in the 2018 process for operation to 515 m RL during a Security of Supply Alert, Genesis sought monitoring of the Tekapo B tailrace structures and payment for any required remediation if erosion occurred as a result of operation below 518 m RL. Meridian agreed to that approach, and says that agreement remains in place.
- 348 The Applicant notes that historical springs identified in 1977 are located below the proposed 513 m RL drawdown level and do not pose a foundation risk. More broadly, Meridian submits that the present application marginally increases the likelihood and duration, but not the extent, of lake level incursions below 518 m RL. On that basis, Meridian says the issue is the additional risk to Genesis' infrastructure from that changed operating probability, not a new or different physical exposure. Meridian relies on Dr Webby's and Mr Lal's evidence that the credible risk of damage is small, that pre-emptive works are not required, and that any damage that does occur should be capable of straightforward remediation. Damwatch also relies on the structure's observed historical performance after initial scour repairs in 1977, its satisfactory operation during 1978, and its assessment that the chute would remain stable for Tekapo B discharges up to 115 m³/s at a lake level of 513 m RL.
- 349 Despite this strong response, Meridian nevertheless proposes a mitigation package directed at Genesis' risk. It has offered Genesis an indemnity intended to make Genesis whole if operation under the Fast-track consent causes damage to the Tekapo B tailrace weir and rock chute. The draft deed appended to Meridian's response provides for

advance notice of reliance on the Fast-track consent, three visual inspections of the tailrace each day during any Fast-track operation, daily sharing of monitoring results, reimbursement of Genesis' reasonable monitoring costs, and indemnities for preventative works, failure costs and associated lost revenue matters. In response to the Panel's further information request, Meridian accepted that it has no formal easement or access right over Genesis' land for surveillance or maintenance and that a condition cannot compel Genesis to provide access. It maintained, however, that conditions requiring surveillance, stockpiling of repair material, and meeting the reasonable costs of repairs are appropriate mitigation measures for Genesis' benefit, provided Genesis agrees to access where access is required.

Panel assessment and findings

- 350 The Panel has evaluated the fundamentally divergent engineering assessments regarding the structural integrity and risks associated with the Tekapo B tailrace weir and chute. We record that this was one of the most strongly contested matters before us. Genesis' comments were supported by detailed operational, hydraulic, structural and market evidence, while Meridian provided detailed Damwatch engineering evidence and proposed commercial and consent-based mitigation. We have treated the disagreement as a substantive evidential conflict, not as a matter capable of being resolved by preference for one party's commercial position. We find that the Applicant's reliance on historical data is significantly challenged by WSP's evidence of material changes to the structure and identification of present-day uncertainties. The structure has remained submerged for nearly 50 years and the Panel considers that the transition to discretionary lake-level operation by the Applicant would introduce an increased risk profile relative to that associated with the current operating constraints where draw-down below 518 m RL is permitted by the SO only under rare SSA or OCC triggers.
- 351 We have considered the arguments regarding the structure's intended service life. While we accept the Applicant's point that exceedance of design life does not automatically render a structure unfit, we find that the combination of observed defects and inherent uncertainties warrants a cautious approach. The Panel considers that, without appropriate mitigation, the Application would introduce credible risks to the Tekapo B weir and chute, including risks associated with the original temporary design, documented historical performance issues, and significant uncertainties associated with submerged and obscured elements of the structure. We do not need to finally resolve every technical disagreement between Damwatch and WSP to reach that conclusion. Given the nationally significant function of the Tekapo Power Scheme, and the system consequences that could follow from an avoidable outage, the relevant planning response must be proportionate to both likelihood and consequence. The high potential consequence of failure to the national grid outweighs the Applicant's preference for a purely reactive (i.e. monitor and repair) management strategy.
- 352 Accordingly, unless Meridian and Genesis reach an alternative agreement that appropriately manages the relevant risk, the Panel has adopted conditions requiring the appointment of a Suitably Qualified and Experienced Practitioner (**SQEP**) and preparation of a formal Repair Strategy and Associated Works Programme. That programme must be prepared following consultation with Genesis and must address the condition, function and protection of the Tekapo B temporary tailrace, weir and chute. It must identify the investigations, works, monitoring and controls necessary to ensure that operation of Lake Pūkaki below 518.0 m RL under this consent does not create an unmanaged material risk to the Tekapo B temporary tailrace, weir, chute or Tekapo B operations.
- 353 Our final conditions (see Part M) do not adopt Meridian's original reactive monitoring and

repair approach. Nor, however, do they require every possible investigation or repair item to be completed before any lowering below 518.0 m RL. We accept Meridian's later advice and evidence⁶⁰, consistent with the evidence for Genesis⁶¹, that some investigation, repair or stabilisation work may only be practicable when lake levels are sufficiently low to expose the relevant parts of the structure. It would not be proportionate to require Meridian to lower Lake Pūkaki solely to enable engineering works if that lowering would be inconsistent with prudent hydrological or market management.

- 354 The final conditions therefore require the Repair Strategy and Associated Works Programme to distinguish between works or measures that are necessary before first lowering below 518.0 m RL and works that can only practicably be undertaken as lower lake levels expose the relevant structure. Any works or measures identified by the SQEP as necessary before first lowering must be completed and certified before the consent is exercised. Works that cannot practicably be completed before first lowering may be staged during the consent term as lake levels allow, but only where that staging is expressly justified and certified by the SQEP and accompanied by monitoring, contingency and response measures sufficient to maintain the protective objective.
- 355 We have also considered the access issue. The conditions do not (indeed, could not) compel Genesis to grant Meridian access to Genesis land or infrastructure and do not impose obligations on Genesis as if it were the consent holder. Meridian remains responsible for obtaining any necessary access or approvals before undertaking works on land or infrastructure it does not own or control. If access issues arise, they do not alter the conditions imposed by the Panel or authorise Meridian to exercise the consent without complying with any applicable preconditions. Those matters are for Meridian and Genesis to resolve, or for the relevant consent authority to consider if a compliance issue later arises.
- 356 For the other lakeside structures, we find that effects will be acceptable. The Catherine Fields intake is unlikely to experience detrimental wave-erosion effects, and Meridian has an existing agreement with the relevant owners addressing water supply or remuneration when lake levels are below the intake operating level. To ensure operational security of adjacent state highway infrastructure, the Panel has also included the state highway monitoring and remediation conditions sought by NZTA and the rock gabion wall inspection requirements recommended by CRC.
- 357 The Panel is satisfied that these measures manage the potential adverse effects on lakeside structures. For the Tekapo B temporary tailrace, weir and chute, that satisfaction depends materially on the expert-led Repair Strategy and Associated Works Programme, SQEP certification, completion of any pre-lowering works identified as necessary by the SQEP, staged implementation of any works that can only practicably occur as lower lake levels allow, and the ongoing monitoring, tailwater level and intervention requirements imposed by the conditions.

⁶⁰ Meridian Energy Limited, Legal Submissions re Draft Conditions, 19 June 2026; Damwatch Memo, 18 June 2026.

⁶¹ Technical Advice – Structural Engineering, Jan Stanaway, 25 March 2026, Sections 3.2.1 and 3.2.2.

26.5 Effects on air-quality (lake lowering)

Summary of Applicant's Position

- 358 The air quality assessments undertaken by GHD⁶² and included in the AEE considered the effects of particulate matter (dust) emissions related to the two discrete aspects of the Application. The first aspect, the impact of dust discharges caused by lowering of Lake Pūkaki below 518m RL, was assessed taking into account the additional river delta and lake shoreline area exposed to wind erosion.
- 359 With regard to lake lowering effects, GHD calculated that reducing the lake level from 518m to 513m RL would result in an additional lake shoreline of approximately 9.6km² being exposed, with approximately 6km² of this area being in the Tasman River Delta. The Applicant noted that the highest risk of dust storms occurs during the spring/summer period, while the lowest lake levels would typically occur from the end of winter to early spring. GHD stated that dust mitigation options for lake lowering are very limited, given the scale of the additional shoreline and delta exposed. The Applicant considered that a Dust Management Plan (**DMP**) for lake lowering would not be useful, preferring consent conditions requiring notification of nearby parties prior to lake lowering and recording of any complaints.
- 360 GHD identified the key sensitive receptors that may be affected by dust emissions. With regard to lake lowering, Tasman Downs Station and Braemar Station were identified as potentially affected due to location downwind of the Tasman River Delta during prevalent winds from the northwestern quarter.
- 361 With regard to emissions from lake lowering during the three-year period, the air quality experts for Meridian considered that the effects of additional discharges from the exposed lakeshore and delta would be acceptable. Mr Stacey noted⁶³ that a large area of the Tasman Delta is already exposed during the current operating regime when the lake operates between 532.5 - 518m RL. The additional area exposed by lowering the lake to 513m RL is less than a 20% increase above the existing authorised exposure. He concluded⁶⁴ that the likelihood of exceedances of the National Environmental Standard for Air Quality (**NESAQ**) for PM₁₀ at receptor locations arising from additional lake lowering, relative to existing conditions, is low and not materially different from existing conditions.

Comments received and Applicant's response

- 362 Comments relating to air quality were received from CRC and NZTA. No comments were received from parties residing near to the shoreline of Lake Pūkaki, the Tasman River delta or the rock armouring works area. CRC was the only party that commented on the potential effects of dust discharges arising from intermittent lake lowering over the term of the proposed consent. The CRC air quality experts, Mr Noonan and Ms Cawood, were comfortable with the updated qualitative dust assessment provided by the Applicant, given the uncertainties associated with dispersion modelling of this type of discharge. The matters raised by the CRC were addressed in the evidence of Mr Stacey.

Panel assessment and findings

- 363 With regard to the effects of dust discharges associated with lake lowering, we are

⁶² AEE, Appendices F and G.

⁶³ Ibid, para 34

⁶⁴ Ibid, para 39.

conscious that additional wind-blown emissions from exposed shoreline and delta areas would occur for brief periods during the three-year term of consent. The Panel is satisfied by the evidence of Mr Stacey that nuisance dust effects and any adverse health effects associated with this discharge are acceptable.

- 364 Overall, we find that adverse effects on air quality caused by lowering of Lake Pūkaki are not likely to be significant and are not out of proportion to the regional and national benefits of the Project. The advice from the air quality experts for the Applicant and CRC is that practical dust control options for this type of discharge are very limited. The proposed conditions require communication with potentially affected landowners regarding lake lowering events. They also require recording and responding to any dust complaints received. We do not see a reasonable basis to impose any specific dust mitigation conditions in relation to this potential effect.

26.6 Effects on shoreline geomorphology

Summary of Applicant's Position

- 365 An overview of the geomorphological processes and morphological response of Lake Pūkaki to fluctuating lake levels is set out in Appendix K, the Lake Processes and Geomorphology report. That report uses historic morphological change and contemporary lake processes to assess the likely effects of lowering Lake Pūkaki below 518.0 m RL. It relies in part on earlier assessment work, Meridian's modelling and recent NIWA analysis.
- 366 The Geomorphology report states that Lake Pūkaki has an erodible lakeshore and dynamic associated landforms. The location and characteristics of vulnerable areas within the lake environment have been identified on location maps. The shoreline is dominated by natural erosional processes and will continue to erode. For that reason, erosion protection structures are likely to require ongoing management and monitoring to ensure they are performing effectively and that future conditions, including projected climate change scenarios, are considered.
- 367 Meridian's key assessment is that adverse effects on lake geomorphology associated with operation below 518.0 m RL will be limited by the short duration of proposed low lake-level events. While no change is expected to external lake processes, the location of the shoreline and beach/berm would fluctuate with lake levels, affecting where those processes act. Broad-scale lake morphology has a prolonged adjustment time to a new regime, between approximately 5 and 100 years, so broad-scale morphological adaptation to a short period of outlying lower lake levels is not anticipated.
- 368 The Applicant accepts that storm event-driven morphological change may occur below the current active shoreline of 518.0 m RL. In areas of identified erosion, erosion may occur at lower elevations, potentially affecting lower sections of bluffs and the beach/berm. Greater shoreline extent may also be exposed to surface processes such as uncontrolled overland flow erosion and ice-related heave, particularly around artificial structures. Deltaic and alluvial fan sediment deposition may occur at lower elevations within the lake area.
- 369 The Geomorphology report states that the likelihood of these impacts depends on storm events coinciding with low lake levels. Low lake levels are projected mainly in spring months, whereas geomorphologically effective storms are characteristic of summer and winter months. The likelihood of adverse impact is therefore assessed as low. If minor morphological change occurs, Meridian expects subsequent storm events to result in a reversion toward pre-change conditions.

- 370 The Geomorphology report recommends that the ongoing lakeshore monitoring programme be maintained, focused on site-specific assessments of vulnerable areas. That programme has established a baseline and trends at identified erosional and depositional landforms along the Lake Pūkaki shoreline over approximately 37 years. While the risk of additional adverse impacts from lower lake operation is assessed as low, the monitoring programme will assist in identifying and quantifying any effects that occur.
- 371 The Geomorphology report also notes that the proposed dam and abutment stabilisation works are anticipated to have a minor localised impact during construction, when excavation is required. Those impacts will be managed through construction timing to avoid high-energy wave events and appropriate erosion and sediment controls. Following construction, the newly installed rip-rap is expected to stabilise the shoreline adjacent to the Pūkaki Dam and abutments, with greater erosion resilience along the protected shoreline.
- 372 Overall, the Geomorphology report concludes that the proposed 2026-2028 operating regime is within the approved Plan Change 1 operating range conditions, which required rigorous assessment, and that the proposed restriction easing is not expected to fundamentally change geomorphological processes or driving variables, particularly wave climate and sediment characteristics. It concludes that lowering the lake below 518 m RL will have insignificant adverse impacts on geomorphological processes and morphological response.

Comments received and Applicant's response

- 373 CRC's comments record that lowering Lake Pūkaki to lower levels will result in adverse effects, as recognised in Plan Change 1 to the WAP, but that those effects were considered to be outweighed by the national benefits of access to water for hydro-electric generation. CRC's geomorphology review was undertaken by its Principal Science Advisor, with more detailed technical advice not considered necessary after review of the GHD assessment. CRC did not identify shoreline geomorphology as an unresolved issue requiring decline or substantial additional mitigation.
- 374 NZTA does not oppose lowering Lake Pūkaki, but raises state highway-related concerns. It is concerned that lower lake levels could further expose cliff faces near SH8 and SH80, and that increased or changed wave energy may exacerbate existing erosion-prone areas. NZTA also raises uncertainty about whether gravel aggradation from streams entering Lake Pūkaki, including streams associated with state highway structures, may increase or decrease during lowered lake periods. It recommends baseline monitoring when lake levels first drop below 518.0 m RL, additional winter monitoring while levels are between 513.0 m RL and 518.0 m RL, and remediation if scour or erosion could affect state highway infrastructure.
- 375 Meridian responds by relying on the GHD Lake Processes and Geomorphology report and the Engineering Structures Assessment. It says the likelihood of adverse shoreline impacts is low, any minor morphological changes are likely to be short-lived, and significant or long-term shoreline aggradation of gravels is not expected. It also says the engineering structures assessment found it highly unlikely that there would be detrimental impacts on relevant state highway structures.

Assessment and panel findings

- 376 We have carefully considered the Application, the comments received and the Applicant's response. The principal issue is whether temporary operation of Lake Pūkaki between 518.0 m RL and 513.0 m RL is likely to cause adverse shoreline geomorphology effects,

including erosion, instability, changes to the submerged lake terrace, gravel aggradation, or effects on infrastructure adjacent to the lake.

- 377 We accept that Lake Pūkaki has an erodible and dynamic shoreline. We also accept that the lake has been substantially modified by the Waitaki Power Scheme and has long been operated within a variable lake-level regime. Lake levels determine the wave-impact zone around the shoreline, and the lake edge has been adjusting to the raised and managed lake regime over a long period.
- 378 We accept Meridian's evidence that broad-scale morphological response to changing lake conditions is slow, with change occurring over years to decades and, in some respects, over longer periods. Short periods of operation below 518.0 m RL are therefore not expected to trigger large-scale morphological adaptation.
- 379 We also accept that short-term and localised event-driven morphological change may occur during storm events. That risk is most relevant to the shoreline and submerged terrace at elevations below 518.0 m RL. However, the evidence indicates that storm events and low lake levels are not expected to coincide frequently, and that any minor morphological change that occurs is likely to be short-lived and may be reversed or moderated by subsequent storm events.
- 380 We accept the Applicant's contention that the lake is resilient to change, and that this resilience is largely due to rapid localised adaptation to changing conditions, long lags in broad-scale morphological adaptation, and historically experienced seasonal fluctuations in lake level. We also place weight on CRC's position that shoreline geomorphology is not a matter requiring decline or substantial additional mitigation.
- 381 NZTA raises legitimate risk-management issues because its concerns relate to public infrastructure and safety. However, NZTA does not oppose the Application and its concerns are capable of being addressed through monitoring and remediation conditions. We accept Meridian's response that significant or long-term shoreline aggradation of gravels is not expected and that detrimental effects on relevant state highway structures are highly unlikely.
- 382 There remains some uncertainty because Lake Pūkaki has not yet been operated under the proposed eased access approach, and actual effects will depend on the timing and duration of low lake levels, storm events, wind and wave conditions, and sediment supply from tributaries. That uncertainty does not require decline, but it supports a monitoring and response framework.
- 383 Overall, we find that the effects of lake lowering on shoreline geomorphology are likely to be low, localised and temporary. We do not find that the proposal will cause large-scale shoreline instability, significant erosion, or significant long-term gravel aggradation.
- 384 We concur with the Applicant's proposal to maintain the ongoing lakeshore monitoring programme, with continued focus on site-specific assessments of vulnerable areas. The established baseline and trends at identified erosional and depositional landforms along the Lake Pūkaki shoreline will assist in identifying and quantifying any effects that occur. We have reflected this requirement, and NZTA-related state highway monitoring and remediation, in appropriate conditions.

26.7 Landscape and visual effects

Summary of Applicant's Position

- 385 Meridian's position is that temporary lake lowering from 518 m RL to 513 m RL will not materially affect the broad-scale landscape and visual values of Lake Pūkaki. The AEE identifies Lake Pūkaki as an important gateway to Aoraki / Mount Cook National Park, within the Mackenzie Basin ONFL, and recognises the lake's high visual amenity, openness, glacial character and iconic mountain backdrop. It also records that Lake Pūkaki is a modified natural lake and part of the Waitaki Power Scheme, with fluctuating operating levels already forming part of the existing landscape character.
- 386 The LEA⁶⁵ relies on the 2012 Rough + Milne assessment for Plan Change 1 as its starting point. That assessment concluded that the additional 5 m drawdown from 518 m RL to 513 m RL would have minor effects on natural character, landscape and visual amenity. The updated assessment revisited 21 viewpoints, used comparative photography and visual simulations for 518 m RL and 513 m RL, and concluded that changes since 2012 are generally negligible and do not alter the PC1 conclusions.
- 387 The Applicant accepts that lowering the lake will expose additional shoreline. The LEA records that reducing the lake from 518 m RL to 513 m RL would expose additional lake shoreline, with the water-surface reduction estimated at approximately 9.55 km² compared with 518 m RL. However, because lake levels already fluctuate over a wide range, it concludes that the change in visible shoreline is unlikely to be particularly obvious except to people familiar with specific lake-edge locations.
- 388 The Applicant's ultimate conclusion is that any adverse landscape effect of temporary lowering to 513 m RL will be negligible. It relies on the temporary and infrequent nature of the lowering, the scale of the lake, the persistence of the key visual attributes — lake scale, turquoise water, basin openness and the Aoraki / Mount Cook backdrop — and the conclusion that any geomorphological change and corresponding landscape impact over the three-year period will be negligible.

Comments received and Applicant's response

- 389 CRC was the only commenter to provide substantive landscape-specific comments. CRC records that the Applicant provided a detailed landscape assessment, including 2025 photographic viewpoints, comparison with historic 2012 photographs, comparative water-level photographs and visual simulations showing lake levels at 513 m RL and 518 m RL. CRC's landscape reviewer agreed with the general methodology, including the use of the NZILA seven-point scale and site visits at different lake levels.
- 390 The CRC comments nevertheless record outstanding concerns. Its landscape reviewer sought greater clarity on natural character and amenity effects, particularly how "moderate" or "high" values were assessed. He considered the application light on detail about effects on the natural character of shorelines, queried how the exposed lakebed would appear at 513 m RL, and disagreed with describing Lake Pūkaki simply as a "working lake" or "utilitarian landscape", given its ONFL status and its recreational, biodiversity, viewshaft and identity values.
- 391 CRC considered that lowering Lake Pūkaki will likely have adverse effects on landscape values that cannot readily be avoided, remedied or mitigated. It also notes that people visit Lake Pūkaki with different expectations of anticipated lake levels, and that

⁶⁵ AEE, Appendix N.

understanding a low lake level as being associated with an electricity shortage may reduce some landscape effects. CRC ultimately considers that the application is generally consistent with the relevant RMA policy framework and will not result in adverse effects sufficiently significant to be out of proportion with the project's benefits, subject to conditions.

- 392 The PCE does not provide specific landscape evidence, but makes a general amenity point. The Commissioner notes that local environmental impacts include amenity effects, and that Lake Pūkaki lies at the foot of an iconic tourist attraction where the natural environment is one reason people come to the area. However, the Commissioner expressly states that he is not an expert in local ecology or amenity.

Panel assessment and findings

- 393 We accept that Lake Pūkaki is part of the Mackenzie Basin Outstanding Natural Feature and Landscape and has very high landscape and visual amenity values. Those values include the scale and openness of the lake and basin, the lake's distinctive colour, its glacial setting, the surrounding high-country landforms, and the iconic views toward Aoraki / Mount Cook and the Main Divide. We also accept that Lake Pūkaki is a significant visitor and recreation landscape and an important part of the public experience of travelling through the Mackenzie Basin.
- 394 At the same time, Lake Pūkaki is not an unmodified lake. It forms part of the Waitaki Power Scheme and has long been subject to managed and visible fluctuations in lake level. The dam, outlet works, canals, visitor infrastructure, roads and fluctuating shoreline are part of the present-day landscape context, particularly at the southern end of the lake. We consider that context relevant, but we do not treat it as diminishing the lake's outstanding landscape status or the need to carefully assess further effects.
- 395 The LEA relies on the 2012 Plan Change 1 assessment as the starting point. That assessment concluded that lowering Lake Pūkaki from 518 m RL to 513 m RL would have minor effects on natural character, landscape and visual amenity. The updated assessment revisited the 21 viewpoints used in 2012, considered changes since that time, and used comparative photography and visual simulations to assess the difference between 518 m RL and 513 m RL. The Applicant concludes that the further drawdown will expose additional shoreline but will not materially alter the broad-scale landscape and visual values of the lake.
- 396 We accept that lowering the lake to 513 m RL will expose more shoreline, gravels and lakebed margins than would be visible at 518 m RL. That exposure may be noticeable at some lake-edge locations, particularly to regular users or people viewing the lake from closer vantage points. It may also affect perceptions of natural character and amenity during low-lake periods. We therefore do not describe the effect as non-existent.
- 397 However, we accept the Applicant's evidence that the key visual attributes of Lake Pūkaki will remain intact at lower lake levels. The scale of the lake, its colour, the openness of the basin, and the backdrop of Aoraki / Mount Cook and the Main Divide will continue to dominate the visual experience. We also accept that lake-level fluctuation is already a familiar and accepted feature of this landscape, and that the proposed additional lowering is temporary and limited to a three-year period.
- 398 We give weight to CRC's comments. CRC accepts the general landscape assessment methodology but raises legitimate concerns about the description of Lake Pūkaki as a "working lake" or "utilitarian landscape", and about the need to recognise natural

character, amenity, biodiversity, recreation, viewshaft and ONFL values. We agree that those descriptions should not be used to understate the landscape importance of Lake Pūkaki. In our assessment, the more balanced position is that Lake Pūkaki is both an outstanding and highly valued landscape, and a modified lake within an operating hydro-electricity system.

- 399 We also accept CRC's point that different visitors may have different expectations of lake levels and different responses to exposed shoreline. The fact that the lake is low for electricity-system reasons may reduce adverse perception for some people, but it will not necessarily do so for all visitors. The PCE's comments reinforce the same general caution: local amenity matters because the natural setting of Lake Pūkaki is one of the reasons people visit the area.
- 400 However, we reject the notion that the landscape and visual effects of lake lowering are materially adverse at the scale of the Mackenzie Basin ONFL. In our view, the evidence does not show that temporary lowering to 513 m RL will materially diminish the iconic visual relationship between Lake Pūkaki and Aoraki / Mount Cook, materially reduce the lake's visual amenity from SH8, SH80, Hayman Road or key visitor stops, or cause lasting adverse landscape change. Nor does the evidence show that the changes since the 2012 PC1 assessment have made the landscape more vulnerable to this specific effect.
- 401 We consider the residual landscape effect to be limited, temporary and reversible. There may be localised adverse visual and natural character effects from exposed shoreline during low-lake periods, but those effects are incremental in the context of existing lake-level fluctuation and the scale of the lake. The geomorphology evidence also supports the view that any physical shoreline change during the three-year period is likely to be limited.
- 402 Overall, we find that the landscape and visual effects of lake lowering will be low. We would not characterise the effects as wholly neutral, because additional shoreline exposure will occur and may affect localised amenity and natural character perceptions. However, we accept that the adverse effects will be temporary, limited in scale, and not materially impact the broader outstanding landscape values of Lake Pūkaki and the Mackenzie Basin.

26.8 Socio-economic effects of lake lowering

Summary of Applicant's position

- 403 With respect to the eased access to Lake Pūkaki storage aspect of the proposal, the AEE considers that it will have a neutral socio-economic effect overall. The SEIA assessed the socio-economic themes of access and connectivity, amenity and character, recreation, environment and livelihood, and concluded that the only potentially adverse socio-economic impact of lowering lake levels related to environmental effects, principally dust, with those effects largely concentrated at the northern end of the lake away from most sensitive receptors.
- 404 For access and connectivity, the Applicant's position is that the lowering of lake levels will not materially affect public access or movement around the lake. That is, the main access issues arise from rock armouring works, not the lowered lake level itself.
- 405 For amenity and character, the Applicant's landscape evidence is that the further 5 m drawdown to 513 m RL exposes additional shoreline, but does not materially change the broad-scale landscape values that make Lake Pūkaki iconic. The main visual attributes — lake scale, turquoise water, openness of the basin and mountain backdrop including

Aoraki / Mount Cook — are said to remain intact at lower lake levels.

- 406 For recreation, the SEIA records that the lowering of the lake levels will not affect recreation activities such as fishing, bird watching or hunting, and that the amenity enjoyed by hikers and cyclists using trails will also not be impacted.
- 407 For environment/health and wellbeing, the SEIA identifies dust as the main potential socio-economic impact pathway. It records that visitors expect good air quality when camping, hiking or cycling, and that lower lake levels could increase dust events due to more exposed lake shore being available for wind erosion. The SEIA records that the Air Quality Assessment found the effects are mostly concentrated at the northern end of the lake, away from most identified sensitive receptors, and that there is negligible difference between effects enabled under the existing framework and the proposal. The SEIA rates this environmental socio-economic impact as slight negative.
- 408 For livelihood, the SEIA distinguishes the broader electricity-price and security benefits from local business/tourism effects. It records that tourism businesses could theoretically be affected if changes to the Lake Pūkaki environment reduced visitor experience, but concludes that because recreation activities and amenity will not be impacted, and because lowering would typically occur in the quiet season, there will be no impact on tourist numbers or visitor spend. It rates livelihood effects as neutral.

Comments received and Applicant's response

- 409 The CRC did not identify local socio-economic effects as a separate issue in its comments, but raises matters that have socio-economic relevance, particularly dust, effects on adjacent property owners, and effects on landscape values. CRC's comments' summary records that drawing Lake Pūkaki to lower levels will result in adverse effects, although those effects were considered in Plan Change 1 and were outweighed by national benefits of hydro-electric generation.
- 410 CRC records that effects on adjacent property owners with respect to dust are potential adverse effects, and that management plans, including Dust Management Plans, are essential in this regard. CRC also recommends monitoring of Kākī and threatened/at-risk flora on the Tasman Delta if the application is approved and exercised.
- 411 NZTA does not oppose lower lake levels, but raises operational effects on state highway infrastructure. NZTA is concerned that lower lake levels could expose erosion-prone cliff faces near SH8 and SH80, and that sediment exposed in the lake bed could become a dust issue during high winds. NZTA recommends baseline and additional monitoring during winter periods, remediation where scour or erosion could affect the state highway, and dust monitoring/management where dust could create a state highway safety effect.
- 412 The PCE raises general local environmental and amenity concerns. The Commissioner notes that lower lake levels will have local environmental impacts, including physical and amenity effects, and that Lake Pūkaki is at the foot of an iconic tourist attraction where the natural environment is one reason people come to the area. The PCE does not provide specific local amenity or tourism evidence, and states that he is not an expert in local ecology or amenity.
- 413 Meridian's response maintains that local effects from lake lowering are limited and manageable. In its response to comments, Meridian submits that this is not a proposal requiring the Panel to balance a national benefit against a substantial local cost. It states that adjacent landowners did not raise amenity, dust or visual impacts, that matters with

Kā Rūnaka are resolved by consent conditions, and that outstanding matters with CRC are limited to conditions.

Panel assessment and findings

- 414 We accept that Lake Pūkaki is a major visitor, recreation and landscape resource for the Mackenzie Basin and wider region. We also accept that the potential local socio-economic effects of eased access are principally effects on amenity, recreation, air quality and health, road safety, and local livelihood. We have assessed those matters separately from the wider electricity-system benefits and costs of the proposal, which are addressed elsewhere in this decision.
- 415 The evidence before us does not show that temporary lower lake levels will materially restrict public access, prevent recreational activities such as walking, cycling, fishing, bird watching or hunting, or materially reduce tourism visitation or visitor spend in the Mackenzie Basin. We accept the applicant's assessment that recreation and livelihood effects are neutral. That conclusion was not materially contradicted by the comments we received.
- 416 We also accept that the landscape and visual amenity effects of the further 5 m drawdown will be limited. Lake Pūkaki is already an actively managed hydro storage lake with fluctuating operating levels. The additional drawdown will expose further shoreline for temporary periods, but the wider values that contribute to the visitor experience of Lake Pūkaki, including the scale of the lake, its colour, the openness of the basin and the Aoraki / Mount Cook backdrop, will remain.
- 417 The main local socio-economic risk from lake lowering is dust from exposed lakebed and delta areas. That risk has potential implications for amenity, public health, recreational use of the eastern shoreline, adjacent landowners and, in some circumstances, road safety. CRC and NZTA both identify dust as a matter requiring management, and the applicant's own SEIA assesses the environmental socio-economic component as slight negative. We agree with that assessment.
- 418 We give weight to CRC's and NZTA's comments on dust and monitoring. We accept that lower lake levels have not yet been tested under the proposed operating approach and that actual effects will depend on exposed sediment conditions, wind conditions, public use patterns and the duration of lake lowering. That uncertainty supports conditions requiring communication, monitoring, complaint response, reporting and practicable corrective actions.
- 419 We do not, however, treat the existence of dust risk as meaning that the socio-economic effects of eased access are unacceptable. The record indicates that the higher dust risk is localised, concentrated toward the northern end and delta areas, likely to occur only when meteorological conditions align, and capable of being addressed through appropriate management measures.
- 420 We have also considered the intersection between socio-economic effects, cultural effects and mana whenua values. In particular, mahinga kai, taonga species, nohoanga, cultural monitoring and the role of the Lake Pūkaki environment in maintaining customary connection are relevant to how local effects are experienced and assessed. Kā Rūnaka and Te Rūnanga o Ngāi Tahu support the application subject to agreed conditions and continuing engagement. We give that position significant weight. We consider the proposed conditions addressing reporting, notification, cultural values, mahinga kai, nohoanga and accidental discovery are matters that are important to the acceptability of

the proposal.

- 421 We do not accept that the local socio-economic effects of eased access are materially adverse at the district or regional tourism level. There is no evidence before us that temporary lower lake levels will materially diminish the visitor experience to the point of reducing visitor numbers, visitor spend or local business viability. The PCE's comments are relevant as a caution about local amenity and tourism values, but they were expressly not based on local amenity or tourism expertise.
- 422 Overall, we find that the direct local socio-economic effects of eased access are limited. The effects are temporary, intermittent and localised. We assess the dust-related amenity, health, recreation and road-safety effect as slight negative, rather than neutral, but find that the remaining local socio-economic effects are neutral.

26.9 Natural hazard and dam safety effects

Summary of Applicant's Position

- 423 Meridian's position is that temporary lake lowering below 518.0 m RL will not increase natural hazard risk. Section 8.14 of the AEE relies on Appendix K, which concludes that the Lake Pūkaki shoreline is continuing to adapt to the construction and operation of the Waitaki Power Scheme, but that broad-scale response is slow, occurring over decades or a century, and short periods below 518.0 m RL are not expected to trigger large-scale morphological adaptation. Meridian accepts that short-term, localised event-driven change could occur during storms, but says storm events typically occur in summer and winter whereas the modelled low lake levels are expected during spring, so the likelihood of adverse impact is low. Meridian also records that no areas of concern, such as large-scale land instability, have been identified through long-running shoreline monitoring.
- 424 On dam safety, Meridian's position is that matters relating to Pūkaki Dam safety are addressed under the Building Act 2004 and Building (Dam Safety) Regulations 2022, not through RMA resource consents. The AEE records that all Waitaki Power Scheme dams, including Pūkaki Dam, are covered by that regulatory regime, and that CRC confirmed during WPS consenting that this approach was appropriate. Meridian also relies on the need for rock armouring to improve the resilience of the Pūkaki Dam to wave action at lower lake levels. Appendix K records wave modelling at 513.0 m RL and notes that waves can break against the main dam face at that level, supporting the need for dam protection works.

Comments received and Applicant's response

- 425 CRC does not oppose Meridian's approach to Pūkaki Dam safety. In pre-lodgement feedback, CRC accepted that detailed dam safety obligations sit under the Building Act, but suggested that a brief dam safety memo would be useful from an RMA effects perspective to summarise credible failure modes and key controls. Meridian responded that the failure modes were covered in the new dam safety section and that GHD would add a section focusing on dam safety controls. CRC also agreed with the applicant's conclusions regarding the need for rip-rap armouring and the benefits of operational flexibility for energy security.
- 426 CRC also addresses Genesis' concerns about the Tekapo B tailrace weir and chute. CRC records that Genesis is concerned that lowering Lake Pūkaki to 513 m RL may cause that infrastructure to become operational again when the lake is drawn down to around 514 m RL, and that Genesis has concerns about how the structure will perform. CRC notes Meridian's commissioned report stating that the infrastructure is structurally stable with no major degradation, with localised scour under high flows being the key risk, but CRC's

technical experts did not review that report. CRC also notes that PC1 modelled between four and seven months below 518 m RL, whereas Meridian's current modelling shows a worst-case scenario of four months, and CRC considers effects on Genesis' infrastructure are unlikely to be beyond those provided for under Rule 17 WAP.

- 427 NZTA does not oppose lowering Lake Pūkaki from 518.0 m RL to 513.0 m RL, and supports rock armouring to protect Pūkaki Dam, including because SH8 sits on top of the dam. However, NZTA is concerned that lower lake levels may expose erosion-prone cliff faces near SH8 and SH80 and that changes in wave energy may exacerbate those areas. It also raises uncertainty about gravel aggradation at streams entering Lake Pūkaki, including streams crossed by state highway structures, and potential safety effects if lower lake levels allow livestock to move around fences and onto the state highway. NZTA seeks baseline monitoring when levels first fall below 518.0 m RL, additional monitoring during winter periods between 513.0 m RL and 518.0 m RL, remediation if scour or erosion could affect the state highway, dust monitoring for road safety, further assessment of gravel aggradation risks, and fencing extensions where necessary.
- 428 Genesis raises the most significant dam/infrastructure safety concerns, focused not on Pūkaki Dam itself but on the Tekapo B temporary tailrace weir and chute. We have assessed effects on the tailrace weir and chute earlier in this decision.
- 429 Meridian's response to NZTA is that existing monitoring, together with further proposed conditions, can address state highway risks. Meridian proposes pre- and post-construction condition surveys for relevant SH8 pavement, repair of construction-related damage, and follow-up inspection of pavement repairs.

Panel assessment and findings

- 430 We have considered the natural hazard and dam safety effects of lowering Lake Pūkaki below 518.0 m RL to 513.0 m RL. The main issues are shoreline stability and erosion, possible effects on state highway infrastructure, and the safety and resilience of Pūkaki Dam.
- 431 The Applicant's evidence is that Lake Pūkaki's shoreline is continuing to adapt to the historic raising and managed operation of the lake as part of the Waitaki Power Scheme. Broad-scale geomorphological response is expected to occur over decades or longer, and short periods below 518.0 m RL are not expected to trigger large-scale morphological adaptation. We accept that evidence. We also accept that short-term, localised shoreline change could occur during storm events, but the evidence indicates that the likelihood of significant adverse natural hazard effects from temporary lowered lake levels is low.
- 432 We accept that Meridian has monitored shoreline erosion and adaptation for many years and that no areas of large-scale land instability have been identified. On the evidence before us, temporary eased access is not likely to materially increase natural hazard risk around the lake. The flood hazard overlay in the Mackenzie District Plan does not materially alter that conclusion, because the proposal does not involve new critical infrastructure in the relevant sense.
- 433 We also accept Meridian's position that detailed Pūkaki Dam safety obligations are regulated under the Building Act 2004 and the Building (Dam Safety) Regulations 2022. The Panel's role is not to duplicate that regime. However, dam safety remains relevant to our effects assessment to the extent that lake lowering and associated works may create environmental, public safety or infrastructure risks. In that respect, we accept the evidence that rock armouring is required to improve the resilience of the Pūkaki Dam and

abutments to wave action when the lake is operated at lower levels. We regard that as a positive infrastructure resilience effect of the project.

- 434 We give weight to CRC's position. CRC accepted that detailed dam safety matters sit under the Building Act, while appropriately seeking assurance that credible failure modes and key controls had been considered from an RMA effects perspective. CRC also agreed with the applicant's conclusions regarding the need for rip-rap armouring and the benefits of operational flexibility for energy security. We consider that supports the applicant's position that the Pūkaki Dam safety aspects of the proposal are capable of being appropriately managed.
- 435 NZTA raises legitimate concerns about state highway infrastructure. Lower lake levels may expose erosion-prone cliff faces near SH8 and SH80, and there is some uncertainty about whether wave energy, scour, dust from exposed lakebed, gravel aggradation in streams, or changed fencing effectiveness could affect state highway safety or maintenance. NZTA does not oppose the proposal, but seeks monitoring, remediation and management conditions. We accept those concerns as practical implementation matters requiring conditions, rather than as reasons to decline consent.
- 436 We find that conditions should require baseline monitoring when lake levels first fall below 518.0 m RL, additional monitoring during periods when the lake is between 513.0 m RL and 518.0 m RL, reporting of erosion, scour, dust or gravel aggradation matters that may affect SH8 or SH80, and remediation where effects attributable to the exercise of the consent create risks to state highway infrastructure. Conditions should also require Meridian to assess and manage any fencing gaps created by lower lake levels where those gaps could allow livestock to access the state highway.
- 437 Overall, we find that the natural hazard and dam safety effects of lake lowering are acceptable subject to conditions. The evidence does not establish a significant risk of large-scale shoreline instability, material natural hazard risk, or unacceptable effects on Pūkaki Dam safety. The rock armouring works will improve the resilience of Pūkaki Dam at lower lake levels.

PART H: NATIONAL AND REGIONAL BENEFITS OF THE PROJECT

- 438 Section 3 of the FTAA states that the purpose of the Act is to facilitate the delivery of infrastructure and development projects with *significant regional or national benefits*, with such purpose having primacy in the decision-making framework. To this end, as noted above in Part C, section 81(4) specifically requires us to consider the extent of the project's regional or national benefits.
- 439 There is no specific definition of significant regional or national benefits in the context of listed projects. Section 22, which relates to the criteria for assessing a referral application, provides the following:
- (2) For the purposes of subsection (1)(a), the Minister may consider—
 - (a) whether the project—
 - (i) has been identified as a priority project in a central government local government, or sector plan or strategy (for example, in a general policy statement or spatial strategy), or a central government infrastructure priority list:
 - (ii) will deliver new regionally or nationally significant infrastructure or enable the continued functioning of existing regionally or nationally significant infrastructure:

- (iii) will increase the supply of housing, address housing needs, or contribute to a well-functioning urban environment (within the meaning of policy 1 of the National Policy Statement on Urban Development 2020):
- (iv) will deliver significant economic benefits:
- (v) will support primary industries, including aquaculture:
- (vi) will support development of natural resources, including minerals and petroleum:
- (vii) will support climate change mitigation, including the reduction or removal of greenhouse gas emissions:
- (viii) will support climate change adaptation, reduce risks arising from natural hazards, or support recovery from events caused by natural hazards:
- (ix) will address significant environmental issues:
- (x) is consistent with local or regional planning documents, including spatial strategies:

440 In the case of the Application, the issue is whether temporarily easing access to Lake Pūkaki storage below 518 m RL, down to 513 m RL, would produce significant regional or national benefits for the purposes of the FTAA, and how those claimed benefits should be weighed against potential economic costs and security of supply risks.

27. Summary of Applicant's Position

- 441 Meridian's position is that eased access would make approximately 545 GWh of currently constrained hydro storage available to the electricity system during the three-year consent period. Meridian says this would reduce wholesale electricity prices, reduce price volatility, lower electricity costs to consumers, reduce reliance on thermal generation and demand response, lower carbon emissions, and reduce spill. The AEE records Meridian's claimed key benefits as including an average wholesale price reduction of \$10/MWh or 7%, a \$437 million per annum or 7% reduction in overall electricity costs to consumers, 157 GWh or 59% lower demand response, 196 kT CO₂ equivalent per annum or 9% lower emissions, and 346 GWh or 23% lower hydro spill.
- 442 Meridian's benefits claims rely on Dr Brent Layton's Economic Benefits and Costs Report⁶⁶. Dr Layton identifies dry-year risk as a persistent issue for New Zealand's hydro-dominated electricity system and states that the 2024 dry year, combined with gas shortage, resulted in significantly elevated spot prices and reduced or ceased output from some large industrial users. Dr Layton's report states that easing access would provide a material increase in the market's perception of available storage in a dry year and that the proposal would thereby reduce wholesale spot prices, contracted forward prices, price volatility, hydro spill, demand response and carbon emissions.
- 443 In its briefing to the Panel, the Applicant's power system summary, prepared by Grant Telfar, states that the WPS is a key component of the New Zealand power system, contributing about 8 TWh of annual generation and 1,735 MW of flexible hydro capacity. It states that constraints on access to the full storage range make the total system solution more expensive and introduce conservatism into lake management, increasing system costs.
- 444 Meridian also relies on modelling comparing the current restricted regime with eased access. It says the current regime requires it to manage Lake Pūkaki as if the contingent storage below 518 m RL is not available unless SO triggers are met. In Meridian's case, this leads to inefficient conservation of water and use of higher-cost resources before lower-cost hydro.

⁶⁶ AEE, Appendix A.

- 445 Meridian's supporting economic evidence also states that, while the proposal would make
545 GWh of Pūkaki storage more readily accessible, other contingent storage would
remain in Lakes Tekapo and Hāwea, and unless Lake Pūkaki had been drawn to 513 mRL
there would still be Pūkaki storage available if a later thermal plant failure occurred.

28. Comments received and Applicant's response

- 446 CRC did not undertake its own peer review of Meridian's economic assessment but
accepts that Meridian's identified positive effects are likely to result from the proposal.
Based on the Applicant's information, it accepted that the proposal will likely result in
regional and national benefits and would thus meet the purpose of the FTAA.
- 447 The EA supports the eased access proposal in qualified terms, confirming to us that it
considers the project should increase competition for contingent energy resources,
improve efficiency by enabling more flexible management of low hydro inflow periods,
and potentially improve reliability by giving the system more risk management options.
The EA identifies the main benefit as lower system cost, including SO modelling of \$38
million per year because less coal is burned, while acknowledging uncertainty as to the
degree to which that benefit flows through to consumers.
- 448 In its later RFI⁶⁷ response, after being requested to review the detailed comments on
Application benefits, costs and risks provided to the Panel by Transpower and Genesis,
the EA confirmed that it does not depart from its earlier assessment. It considers the
Transpower and Meridian models are directionally similar and that both show significant
benefits on average from eased access, although they measure benefits differently. The
EA says Meridian's additional system cost calculations indicate system costs of \$87 million
to \$107 million per year for a central scenario, compared with John Culy's saved system
cost figure of \$38 million to \$43 million.
- 449 The PCE does not take a final position for or against the Application. He characterises the
proposal as primarily an electricity system and market issue rather than a local resource
management issue, and says it involves a trade-off between affordability and resilience.
The Commissioner accepts that short-term market optimisation of the resource would
likely lower national electricity system costs in most years, but emphasises the potential
cost of reduced resilience in dry-year or black swan events.
- 450 The PCE's recommendation is that the Panel consider the views of both Transpower and
the EA, and consider independent electricity market expertise. If the Panel favours
placing a value on resilience, the PCE suggests a price trigger for access to contingent
storage, with revenue potentially used to offset local environmental and amenity
externalities. He also recommends that, if granted, access be limited to three years to
avoid creating a precedent.
- 451 The Minister for South Island initially commented in support, noting alignment with
priorities relating to exports, GDP contribution and reliable, resilient infrastructure. In a
later addendum, he asked that any assessment of claimed economic benefits be
considered in light of Transpower's security of supply concerns, including low inflows,
major generation outages and reduced contingent storage during high-impact events.
- 452 Genesis opposes the Application. It describes Lake Pūkaki contingent storage as a "fuel
of last resort" and argues that unrestricted access would increase nationally significant

⁶⁷ Request for Information, 4 May 2026.

system risk, implement a material change to the access regime without comprehensive regulatory scrutiny, and create a risk of prolonged loss of Tekapo A and B generation if the Tekapo B tailrace weir and chute were compromised. Genesis says failure of that structure could result in system costs of up to \$2.5 billion in a worst-case scenario, depending on outage duration, storage, inflows and system conditions.

- 453 Genesis submits the proposal would materially change the risk profile by converting an exceptional, system-triggered operating condition into an unconditioned discretionary operating regime. It also says that if the temporary structure fails, degrades, or cannot maintain the required tailwater, Genesis may need to cease generation at Tekapo B, and because Tekapo A and B are connected by a canal, generation at Tekapo A would also cease.
- 454 Transpower opposes the type of unrestricted access sought by Meridian. It says the existing contingent storage arrangements provide important electricity generation “fuel of last resort” for stressed system conditions, and that changing them for three years would affect security of supply policy and risk management arrangements across the electricity sector. Transpower considers the current restrictions are likely to be unnecessary by around 2035 and may diminish sooner as the system evolves, but remain important in the near term.
- 455 Transpower’s modelling identifies potential annual public welfare benefits from reduced fuel and direct costs of up to \$38 million per annum over 2026–2028, with a modelling error of plus or minus \$12 million, and likely only around half that amount on more realistic use assumptions. Against that, it identifies a low-probability but high-impact double-contingency scenario involving low inflows and a major long-term plant outage, with modelled electricity system costs in the order of \$440 million.
- 456 The Minister for Energy also does not support the Application. Although the Minister accepts that, on average, access to current contingent water storage should lower generation costs by allowing more hydro and less coal generation, he considers those benefits must be weighed against risks in adverse conditions, such as a dry year combined with plant outage, particularly given declining gas production, the likely exit of Māui, and the ageing thermal generation fleet. The Minister cautions that drawing down contingent storage would reduce the volume reserved for rare but critical system stress and may affect incentives to invest in alternative firm or stored energy.
- 457 Meridian’s legal response is to submit that the EA’s view should be given greater weight than Transpower’s because the Authority has the broader statutory role of promoting competition, reliable supply and efficient operation for the long-term benefit of consumers, whereas Transpower’s SO role is narrower and focused on forecasting security of supply and managing emergencies. Meridian rejects Transpower’s suggestion that the Panel should apply a different economic benefits test from that applied by the EA when assessing electricity system benefits and costs.
- 458 Meridian responds to Genesis by saying Genesis had previously accepted that lowering Lake Pūkaki to 513 m RL for emergency electricity generation was unlikely to physically affect its operations, and that a later 2018 agreement addressed monitoring and remediation if the lake was operated below 518 m RL to 515 m RL. Meridian says the current proposal marginally increases the likelihood and duration, but not the extent, of incursions below 518 m RL.

- 459 Meridian rejects Genesis' \$2.5 billion figure as unsupported and says Genesis has not provided evidence on the likelihood of the tailrace weir or chute failing as a consequence of the proposed operation. Meridian says the 180-day outage scenario modelled by Mr Weaver lacks a compelling engineering basis and should be given no weight.
- 460 Meridian responds to the PCE's suggested access charge by submitting that there is no lawful basis for such a condition, that a financial contribution would need to meet the requirements of the RMA, and that adding a fee would run counter to the purpose of the Application, which is to bring forward cheaper hydro energy to reduce wholesale prices.
- 461 Meridian's evidence responds that the current arrangements are not a centrally designed strategic reserve, but rather arise from historical consenting decisions. Mr Blundell says the SOSFIP is a monitoring and information framework, not a regime that regulates or reserves specific fuels as a "fuel of last resort", and that consent changes are the proper mechanism to alter consent-derived contingent storage arrangements.
- 462 Meridian's evidence⁶⁸ also responds that removing a fuel constraint should improve market operation, because the same physical resources remain available but can be prioritised more efficiently. Meridian says easing access would not "eliminate" storage but would allow lower-cost hydro storage to compete with other resources, and would reduce spill, which Transpower accepts.
- 463 In response to the Minister for Energy, Meridian says the Minister's comments do not materially change the task or the information before the Panel, and are not supported by detailed analysis that advances the assessment. Meridian says the proposal has been advanced with express knowledge of falling gas production, a possible LNG import facility and the age of the Huntly Rankine units. Dr Layton's further response advises that, given the EA's independent statutory role and the different role of Transpower as SO, the Panel should prefer the Authority's view on national benefits and risks.

29. Assessment and Panel's findings

- 464 We have considered whether the project will provide significant regional or national benefits for the purposes of the FTAA. The principal claimed benefits arise from temporarily easing access to Lake Pūkaki storage below 518 m RL, down to 513 m RL, for a three-year period. The claimed benefits include lower wholesale electricity prices, lower system costs, reduced price volatility, reduced reliance on thermal generation and demand response, lower carbon emissions, reduced spill, improved operational flexibility and increased resilience of access to hydro storage through the associated dam armouring works.
- 465 The WPS, and Lake Pūkaki in particular, is nationally significant electricity infrastructure. Lake Pūkaki is New Zealand's largest hydro storage lake and forms a material part of the electricity system's flexible renewable generation capacity. The ability to manage that storage efficiently is therefore a matter of national importance, particularly during periods of low hydro inflows, gas supply constraint, elevated wholesale prices and increasing reliance on renewable generation.
- 466 We accept that Meridian's modelling and supporting evidence identifies substantial potential benefits from eased access. Those benefits are not confined to Meridian. The evidence indicates that making the constrained storage more readily available is likely,

⁶⁸ Statement of Evidence of Rory Blundell, dated 15 April 2026, paragraphs 28-29

on average, to reduce system costs, reduce the need to use higher-cost thermal generation and demand response, lower wholesale price pressure, reduce emissions and reduce spill.

- 467 We place particular weight on the EA comments and further information. The Authority supports the proposal in qualified terms and considers that eased access should increase competition for contingent energy resources, improve efficiency by enabling more flexible management of low hydro inflow periods, and may improve reliability by increasing the system's risk-management options. The Authority's later response is important because it considers the Meridian and Transpower modelling to be directionally similar, and because it maintains its overall assessment after reviewing the further modelling material.
- 468 We do not treat the modelling as precise prediction. The estimates of benefit vary materially depending on the modelling approach and assumptions used. Meridian's claimed benefits are materially higher than Transpower's estimate of public welfare benefits. The Authority also acknowledges uncertainty about the extent to which lower system costs flow through to consumers. We therefore treat the quantified benefits with caution. However, we are satisfied that the direction of effect is clear: on average, eased access is likely to reduce electricity system costs and improve operational efficiency over the consent period.
- 469 We have considered the contrary positions of Genesis, Transpower, the PCE, the Minister for South Island's later addendum, and the Minister for Energy in detail. Those parties raise a serious and legitimate concern: that storage currently treated as contingent or last-resort storage provides resilience in rare but high-impact events, and that earlier discretionary use may reduce the buffer available in a dry year combined with major plant outage or other system stress. We accept that this is the central trade-off in the benefits assessment. The project is not a simple case of benefits without risk. It involves a choice between more efficient use of hydro storage in ordinary and moderately stressed conditions, and preserving more storage for rare but severe system stress.
- 470 We give weight to Transpower's concern that the existing arrangements have security of supply value in the near term, even if that value may reduce over time as the generation mix changes. We also give weight to the Minister for Energy's concern that declining gas production, the potential exit of Māui, and the ageing thermal fleet increase the importance of careful risk management during the next three years. In our view, those matters qualify, but do not displace, the benefits case.
- 471 We do not accept Genesis' and Transpower's position to the extent it would require us to treat Lake Pūkaki contingent storage as incapable of being accessed except under the present SO trigger regime. The current access arrangements arise through resource consent and planning instruments, as well as electricity-sector settings. The Panel's task is to decide the approvals sought under the FTAA, applying the statutory framework before it. We do not need to determine the optimal long-term electricity market design or the final form of any future national strategic reserve mechanism.
- 472 Nor do we accept that the proposal removes storage from the electricity system. The same physical water resource remains available, but the proposal changes who may decide when it is used and the conditions under which it may be used. That distinction matters. It means the proposal may reduce the amount of water held back for rare events, but it does not physically eliminate the resource. The risk is one of timing, incentives and system management, not physical loss of generation fuel.

- 473 We consider that the EA's views should be given significant weight when assessing electricity system efficiency, competition, reliability and consumer benefit. The Authority is the specialist regulator with the broad statutory objective of promoting competition, reliable supply and efficient operation for the long-term benefit of consumers. Transpower's SO perspective is also important, particularly on security of supply and emergency management, but it is not the only relevant institutional perspective. Where the Authority and Transpower differ, we consider the Authority's broader statutory role assists us in assessing the overall electricity-system benefits and costs.
- 474 The PCE's comments usefully identify the issue as a trade-off between affordability and resilience. We accept that characterisation. We do not adopt the PCE's suggested access charge or price-trigger mechanism. Meridian disputes the legal basis and utility of such a condition, and the material before us does not provide a sufficiently developed basis for imposing a financial contribution or market-price trigger as part of this approval. We do, however, accept the PCE's caution that any approval should be time-limited and should not be treated as resolving the long-term regulatory treatment of contingent hydro storage.
- 475 We find that the three-year duration is important to the benefits assessment. It materially reduces the risk of the approval pre-empting longer-term electricity market or security of supply policy development. It also aligns the approval with the near-term period in which the evidence indicates the electricity system faces particular gas, thermal generation and renewable transition pressures. We might have had more difficulty accepting the benefits case if unrestricted eased access were sought on a long-term or permanent basis.
- 476 We have considered the risk raised by Genesis concerning the Tekapo B tailrace weir and chute. That issue is relevant to the assessment of potential economic cost and security of supply risk. We accept that Tekapo A and B are nationally significant assets and that a prolonged outage could have serious system consequences. However, we do not accept the worst-case \$2.5 billion figure as determinative on the record before us. The risk has been identified, technically assessed and can be addressed through specific monitoring, engagement and contingency conditions. It is not a basis, in itself, to reject the overall national benefits of the project.
- 477 Overall, we find that the project will provide significant regional and national benefits. Those benefits include improved access to flexible renewable hydro generation, lower expected electricity system costs, reduced reliance on higher-cost thermal generation and demand response, reduced emissions, reduced spill, and improved resilience of Pūkaki Dam for operation at lower lake levels. The benefits are nationally significant because they relate to the functioning, cost and resilience of New Zealand's electricity system.
- 478 However, those benefits are subject to important qualifications. The proposal carries residual security of supply and infrastructure risks, particularly in low-probability but high-impact circumstances. Those risks justify time limitation, monitoring, reporting and engagement with relevant electricity-sector and infrastructure parties. They do not, however, outweigh the project's likely national and regional benefits over the three-year consent period.
- 479 We therefore find that the national and regional benefits of the project weigh materially in favour of granting the Application, subject to conditions. The conditions should preserve the temporary nature of the approval, require appropriate lake-level, system-

use and reporting information, manage effects on relevant infrastructure including the Tekapo B tailrace weir and chute, and ensure that any exercise of the approval occurs within the environmental and operational limits assessed in this decision.

PART I: STATUTORY DOCUMENTS ASSESSMENT

480 The AEE addressed the relevant statutory documents and identified relevant provisions. Rather than repeat that assessment, this section addresses the documents and provisions of specific relevance to the Application, and the comments received.

30. National Environmental Standards

481 The following relevant National Environmental Standards were briefly addressed in section 7 of the AEE:

- a. National Environmental Standards for Assessing and Managing Contaminants in Soil to Protect Human Health 2011 (**NES-CS**); and
- b. Resource Management (National Environmental Standards for Freshwater) 2020 (**NES-FW**).

482 The NES-CS sets out planning controls for activities occurring on contaminated or potentially contaminated land. The AEE records that consent is not required under the NES-CS for this application. Notwithstanding this, the Application includes a proposed accidental discovery condition in relation to contaminated land.

483 The NES-FW sets out requirements for carrying out activities that pose risks to freshwater and freshwater ecosystems, including natural inland wetlands. The AEE records that resource consent under the NES-FW regulations is not required as there is no land disturbance, nor the taking, use, and discharge of water, within 100 m of a natural inland wetland.

484 Neither the CRC, nor any other commenting party, contradicted this advice and we find accordingly.

31. National Policy Statements

485 Applicable National Policy Statements were addressed in section 10 of the AEE. The following are relevant to the Application:

- a. National Policy Statement for Renewable Electricity Generation (**NPS-REG**)
- b. National Policy Statement for Freshwater Management 2020 (**NPS-FM**); and
- c. National Policy Statement for Indigenous Biodiversity 2023 (**NPS-IB**).

31.1 National Policy Statement for Renewable Electricity Generation

486 The NPS-REG sets out a framework that enables the sustainable management of renewable electricity generation (**REG**).

487 The objective of the NPS-REG is to⁶⁹:

- a. ensure the national, regional and local benefits of REG are provided for;
- b. enable REG capacity and output to significantly increase;
- c. enable REG to support the social, economic and cultural wellbeing of people and communities, and for their health and safety;
- d. enable REG to provide greater security of electricity supply, and resilience to supply disruptions to all people and communities;
- e. enable REG to support achieving New Zealand's emission reduction target and implementation of the emissions reduction plan under the Climate Change Response Act 2002; and
- f. ensure REG is developed and operated in a safe, efficient and effective manner while managing the adverse effects from or on REG activities.

488 The AEE assesses the Application against the objective and policies of the NPS-REG and concludes that both the eased access and the rock armouring works will enable the sustainable management of renewable energy generation resources while balancing environmental, social and cultural impacts.

489 CRC generally agreed with this assessment of the NPS-REG. It drew particular attention to the December 2025 amendments to the NPS-REG, including the direction that decision-makers must enable renewable electricity generation assets and activities, and to the need to consider residual adverse effects that cannot be avoided, remedied or mitigated, including through offsetting measures or environmental compensation where relevant. We have taken that comment into account in our assessment of the project's benefits and residual effects.

490 We conclude that the Application is consistent with the objective and policies of the NPS-REG.

31.2 National Policy Statement for Freshwater Management 2020

491 The NPS-FM sets out a framework under which local authorities are to manage freshwater (including groundwater)⁷⁰.

492 The objective of the NPS-FM is to ensure that natural and physical resources are managed in a way that prioritises the⁷¹:

- a. health and well-being of water bodies and freshwater ecosystems;
- b. health needs of people (such as drinking water); and
- c. ability of people and communities to provide for their social, economic, and cultural

⁶⁹ NPS-REG clause 2.1.

⁷⁰ NPS-FM clause 1.5.

⁷¹ NPSFM clause 2.1.

well-being, now and in the future.

- 493 This objective reflects the hierarchy of obligations in Te Mana o te Wai⁷².
- 494 The NPS-FM requires that there is no further loss of extent of natural inland wetlands, their values are protected, and their restoration is promoted⁷³.
- 495 The AEE assesses the project against the objective and policies of the NPS-FM, and concludes that any adverse effects generated by the eased access and the rock armouring works will be low and thus consistent with the outcomes anticipated under the NPS-FM.
- 496 The CRC agreed that the project has had regard to the NPS-FM policies, while noting that section 104(2F) of the RMA prevents the Panel from having regard to the hierarchy of obligations in Te Mana o te Wai and the sole objective of the NPS-FM for this resource consent application. We have approached the NPS-FM on that basis.
- 497 We concur that the proposal is substantially consistent with the NPS-FM, but have imposed conditions to protect the ecological values of the Tasman Delta inland wetland when the lake is lowered below 518 m RL (refer part N).

31.3 National Policy Statement for Indigenous Biodiversity 2023

- 498 The objective of the NPS-IB is:
- (a) to maintain indigenous biodiversity across Aotearoa New Zealand so that there is at least no overall loss in indigenous biodiversity after the commencement date; and
 - (b) to achieve this:
 - (i) through recognising the mana of tangata whenua as kaitiaki of indigenous biodiversity; and
 - (ii) by recognising people and communities, including landowners, as stewards of indigenous biodiversity; and
 - (iii) by protecting and restoring indigenous biodiversity as necessary to achieve the overall maintenance of indigenous biodiversity; and
 - (iv) while providing for the social, economic, and cultural wellbeing of people and communities now and in the future.
- 499 The NPS-IB does not apply to the development, operation, maintenance or upgrade of REG assets and activities and electricity transmission network assets and activities⁷⁴.
- 500 DOC's comments on indigenous biodiversity were principally relevant to the separate WA approval and the conditions for lizard management and compensation. Those matters are addressed elsewhere in this decision. They do not alter our view that the NPS-IB does

⁷² NPSFM clause 1.3.

⁷³ NPSFM clause 2.2, Policy 6

⁷⁴ NPS-IB, Clause 1.3.

not apply to the RMA approvals for these REG assets and activities. Accordingly, further consideration of the NPS-IB by the Panel is not required.

PART J: REGIONAL PLANNING DOCUMENTS

501 As required by Schedule 5, clause 5(1)(h), an assessment of the relevant statutory plans was included within the AEE.

502 The Panel has considered this assessment and the comments provided by CRC, as the only commenting party who provided a detailed review of the relevant statutory plans and the Applicant's assessment of them. In this regard, we record its view that the proposal is generally consistent with the relevant RMA policy framework, subject to recommended conditions, and that the principal environmental issues are effects on Lake Pūkaki ecosystems, the Tasman Delta, landscape values and dust.

32. Canterbury Regional Policy Statement (CRPS)

503 The CRPS provides an overview of the significant resource management issues facing the region, including issues of resource management significance to Ngāi Tahu. The purpose of the CRPS is to achieve the integrated management of the natural and physical resources of Canterbury⁷⁵.

504 A wide range of objectives and policies are relevant, including those contained within the following chapters:

- Chapter 5: Land Use and Infrastructure
- Chapter 7: Freshwater
- Chapter 9: Ecosystems and Indigenous Biodiversity
- Chapter 10: Beds of Rivers and Lakes and their Riparian Zones
- Chapter 12: Landscape
- Chapter 14: Air Quality
- Chapter 16: Energy
- Chapter 17: Contaminated Land; and
- Chapter 18: Hazardous Substances.

505 The project seeks access to the 'contingent storage' at Lake Pūkaki and the establishment of rock armouring to protect the integrity of the dam structure when lake levels are low. The activities promote the reliable and resilient use of existing renewable energy generation⁷⁶.

506 The Mackenzie Basin is identified as an Outstanding Natural Landscape (ONL) in the CRPS⁷⁷. The AEE concludes that the outstanding natural landscape of the Mackenzie Basin

⁷⁵ CRPS, Chapter 1.

⁷⁶ Objective 16.2.2 and Policies 16.3.3 and 16.3.5.

⁷⁷ Objective 12.2.1 and Policy 12.3.1.

within which Lake Pūkaki is located will continue to be recognised and protected. The eased access and rock armouring maintains the natural character and intrinsic values of the lake and surrounding area, noting that the lake is a modified environment⁷⁸.

- 507 The AEE identifies one wetland (Tasman Delta) as being potentially impacted by the proposed eased access activity⁷⁹, but concludes that it will not impact on the life supporting capacity, mauri, ecosystem processes and indigenous species of the Lake Pūkaki environment and the Tasman Delta wetland, given the short-term nature of the activities and the adaptability of local ecology to fluctuating lake levels⁸⁰.
- 508 Air quality assessments undertaken in support of the Application also conclude that given the short-term duration of lowering events, any increase in the duration or intensity of dust storms will be low. Further, discharges associated with the rock armouring works are to be mitigated using a range of dust management techniques set out in a proposed DMP⁸¹.
- 509 The Applicant proposes conditions that require reporting to the Waitaki Rūnaka following each lowering event, including details of the scenario that led to the lowering event⁸². The construction methodology for the rock armouring has been amended to avoid disturbance of the Lake Pūkaki Nohoanga following consultation with the Waitaki Rūnaka⁸³.
- 510 Overall, the proposal provides further resilience to nationally and regionally significant infrastructure while maintaining the overall quality of the environment⁸⁴. The Application includes specific mitigation measures including erosion and sediment control, dust management and lizard management⁸⁵.
- 511 CRC accept that the project is likely to have regional and nationally significant benefits, but consider that adverse effects on lake ecosystems, the Tasman Delta, landscape values and dust still require careful conditions. We have therefore not treated consistency with the CRPS as turning only on the energy and infrastructure provisions; our conclusion also depends on the effects findings and the conditions imposed for wetland monitoring, erosion and sediment control, dust management, cultural engagement and construction management.
- 512 We conclude that the project is consistent with the overarching objectives and policies of the CRPS, particularly those relating to the sustainable management of freshwater resources, the protection of the Mackenzie Basin ONL, and the resilience of REG. That conclusion is subject to the qualifications above, including the need to manage residual ecological, dust and cultural effects through conditions.

⁷⁸ Objective 7.2.1 and Policy 7.3.1; Objective 7.2.3 and Policy 7.3.2.

⁷⁹ Objectives 9.2.1, 9.2.2 and 9.2.3, Policy 9.3.5.

⁸⁰ Objective 7.2.4 and Policy 7.3.4; Objectives 9.2.1, 9.2.2 and 9.2.3.

⁸¹ Objective 14.2.1 and Policy 14.3.1; Objective 14.2.2 and Policy 14.3.5.

⁸² Objective 7.2.4 and Policy 7.3.13.

⁸³ Objective 10.2.4 and Policy 10.3.5.

⁸⁴ Objective 5.2.1 and Policy 5.3.2; Objective 5.2.2 and Policy 5.3.9; Objectives 10.2.2 and 10.2.3 and Policy 10.3.3.

⁸⁵ Objective 5.2.1 and Policy 5.3.2; Objectives 9.2.1, 9.2.2 and 9.2.3.

33. Canterbury Land and Water Regional Plan (CLWRP)

- 513 The purpose of the CLWRP is to identify the resource management objectives for managing land and water resources in Canterbury.
- 514 The objectives of the CLWRP are set in Section 3 and the relevant policies in Section 4, respectively:
- Nationally and regionally significant infrastructure is enabled and is resilient⁸⁶.
 - Water is recognised as essential to all life and respected for its intrinsic values⁸⁷.
 - The quality and quantity of water in freshwater bodies and their catchments is managed to safeguard the life-supporting capacity of ecosystems and ecosystem processes⁸⁸.
 - The significant indigenous biodiversity values of rivers, wetlands and hāpua are protected⁸⁹.
 - Wetlands that contribute to cultural and community values, biodiversity, water quality, mahinga kai, water cleansing and flood mitigation are maintained⁹⁰.
 - Natural character values of freshwater bodies, including braided rivers and their margins, wetlands, hāpua and coastal lagoons, are protected⁹¹.
 - All activities operate at good environmental practice or better to optimise efficient resource use and protect the region's freshwater resources from quality and quantity degradation⁹².
- 515 CRC notes that the CLWRP provides for many of the rock armouring works as a permitted activity (being for the use and maintenance of a lawfully established dam). The consents before us are therefore focused on those components that are not otherwise permitted, including discharges and associated bed disturbance. That context supports the Applicant's assessment, but does not remove the need to impose conditions for the construction activities that are sought to be authorised by the Application.
- 516 The proposed rock armouring activity will involve incidental discharges to water. Mitigation measures are to be established to minimise the impact of these discharges, including limiting the work in or immediately adjacent to the lake, directing stormwater away from the lake and the implementation of erosion and sediment controls.
- 517 Following the Panel's request for further information, the air quality experts and planners for Meridian and CRC reached agreement on revised dust conditions and the matters to be included in the project DMP and advised that there were no outstanding points of

⁸⁶ Objective 3.3.

⁸⁷ Objective 3.6 and Policy 4.5.

⁸⁸ Objective 3.8 and Policy 4.18.

⁸⁹ Objective 3.17 and Policy 4.101.

⁹⁰ Objective 3.18 and Policy 4.85.

⁹¹ Objective 3.19 and Policy 4.86.

⁹² Objective 3.24 and Policies 4.19, 4.88, 4.90.

difference between them. We have taken that agreement into account in assessing consistency with the CLWRP and Canterbury Air Regional Plan (**CARP**).

- 518 The AEE notes that it is necessary to undertake some work in standing water to complete rock armouring. The amount of time required for this aspect of the work will be minimised and site management practices put in place to mitigate any potential effects. This includes inspecting machinery to ensure it is clean and free of spill residue prior to it entering the lake and minimising the number of entry/exit points from the lake.
- 519 One wetland (the Tasman Delta) is identified as being potentially impacted by the proposed lake lowering activity⁹³, however the AEE concludes that the easing of access will not impact on the cultural, community and biodiversity values of this wetland. We have evaluated and made findings on this claim, as a principal issue in contention with the Application, in Part G above.
- 520 The construction methodology for the rock armouring has been amended to avoid disturbance of the Lake Pūkaki Nohoanga following consultation with the Waitaki Rūnaka. Further, the Waitaki Rūnaka and Te Rūnanga o Ngāi Tahu have worked with the Applicant on conditions that mitigate the effects of the activity on the ability of Ngāi Tahu Whānui to use the Lake Pūkaki nohoanga.
- 521 We conclude that the project is consistent with the relevant objectives and policies of the CLWRP. The project provides for nationally and regionally significant infrastructure, protects the natural character of Lake Pūkaki, and the rock armorings will be undertaken in accordance with environmental practices that protect freshwater resources from degradation. We place weight on the permitted activity context for dam maintenance works, the agreed construction management conditions, and the monitoring conditions we have determined to impose for the Tasman Delta wetland when the lake is lowered below 518 m RL (refer Part M).

34. Waitaki Catchment Water Allocation Regional Plan (WAP)

- 522 The WAP provides for the allocation of water in the Waitaki catchment and addresses issues relating to landscape, water quality, soil and bank erosion, wetlands, operational management of beds and rivers and the management of floods.
- 523 The relevant objectives and policies are set out in Chapters 5A, 6 and 7, respectively:
- The extent to which it is feasible and dependable that any adverse effect on the life supporting capacity of fresh water and of any associated ecosystem resulting from the change would be avoided⁹⁴.
 - The loss of extent of natural inland wetlands is avoided, their values are protected, and their restoration is promoted⁹⁵.
 - To sustain the qualities of the environment of the Waitaki River and associated beds, banks, margins, tributaries, islands, lakes, wetlands and aquifers⁹⁶.

⁹³ Objectives 9.2.1, 9.2.2 and 9.2.3, Policy 9.3.5.

⁹⁴ Policy 5A2.

⁹⁵ Policy 5A3.

⁹⁶ Objective 1 and Policy 1.

- To enable people and communities to provide for their social, economic and cultural wellbeing and their health and safety, by providing for water for hydro-electricity generation⁹⁷.
- Setting minimum lake levels that recognise the iconic nature and the mana of Lakes Tekapo, Pūkaki and Ōhau, and enable appropriate access to water for hydro-electricity generation⁹⁸.
- Providing for temporary lowering of Lakes Tekapo and Pūkaki for the purpose of electricity generation only in times of national or South Island power shortage as established by the Electricity Commission⁹⁹.
- Providing for the temporary lowering of Lakes Tekapo, Pūkaki and Ōhau where necessary for the purposes of maintenance or rehabilitation of electricity generation infrastructure¹⁰⁰.

524 The AEE concludes that the values and functions associated with the local ecosystems will be protected by the short-term duration of the proposed activities and the mitigation proposed. The EcIA identifies one wetland (Tasman Delta) as being potentially impacted by the proposed activity. However, this wetland is considered to be adaptable to the existing fluctuations in lake level, with its extent varying each year.

525 The Application seeks approval to temporarily lower Lake Pūkaki without a power shortage being established by the "Electricity Commission", which we take to be an outdated reference to the SO. This is directly contrary to Policy 36 of the WAP, which is achieved (in the RMA sense) by prohibited activity Rule 12 that the Application principally conflicts with. Following our findings on the national benefit achieved by the project, and appreciating the decision-making directives we are obliged to follow under the FTAA, there is little more we can do but acknowledge the existence of this policy and the role it fulfils within the WAP.

526 The CRC identified two important qualifications to the Applicant's WAP assessment. First, CRC considered that Policies 5A.3A and 5A.5 should be disregarded because, in its view, those provisions were not lawfully inserted into the WAP through the NPS-FM insertion process. Second, CRC considered Policy 5A.3 remains relevant and that the anticipated effects on the Tasman Delta mean the proposal is inconsistent with that policy. CRC also agreed that the proposal is contrary to Policy 36 because it would allow temporary lowering for electricity generation without the specified power shortage trigger.

527 After considering these matters, we conclude that project can be implemented consistently with most of the relevant objectives and policies of WAP. Importantly, it recognises the iconic nature and the mana of Lake Pūkaki and enables appropriate access to water for hydro-electricity generation. We acknowledge the conflict with Policy 36 and the qualified position identified by CRC in relation to Policy 5A.3 and the Tasman Delta. We do not consider these policy tensions materially weigh against approval when considered alongside the project's benefits, the existing permitted and consented framework for lowering Lake Pūkaki in defined circumstances, the temporary nature of

⁹⁷ Objective 2 and Policy 3.

⁹⁸ Objectives 1 and 2, Policy 35.

⁹⁹ Objectives 1 and 2, Policy 36.

¹⁰⁰ Objectives 1 and 2, Policy 37.

the eased access approval, and the conditions imposed to address wetland monitoring and adaptive response.

- 528 The Panel notes that no mitigation is proposed to protect the values of natural inland wetlands¹⁰¹. However, our decision imposes monitoring and response requirements for the Tasman Delta so that any material adverse change associated with the exercise of the consent can be identified and addressed (refer Part N).

35. Canterbury Air Regional Plan (CARP)

- 529 The CARP sets out the framework to manage discharges to air in the best practicable manner. Its principal purpose is to maintain air quality where it provides for people's health and cultural wellbeing, or to improve it if it does not.

- 530 The relevant objectives and policies are set out in Chapters 5 and 6, respectively:

- Air quality protects the mauri and life supporting capacity of the environment¹⁰².
- Competing demands for the use of the air resource of Canterbury are accommodated while unacceptable degradation of ambient air quality is avoided¹⁰³.

- 531 The AEE concludes that any impacts associated with the eased access will be comparable to those that exist at present and specifically limited to any dust storm events. With respect to rock armouring work, while some discharges are unavoidable, mitigation is proposed to ensure that human health and wellbeing is protected as is the mauri and life supporting capacity of ecosystems, plants and animals.

- 532 We are satisfied that CRC's initial concern about dust effects from the exposed lakebed and the rock armouring works has been addressed further through expert conferencing and the information response provided to the Panel. The agreed approach relies on a certified DMP, good practice dust controls, water availability for dust suppression, on-site weather monitoring, visual monitoring triggers and, if required, PM₁₀ monitoring for subsequent works.

- 533 Overall, we find that the Application is consistent with the objectives and policies of CARP.

36. Conclusion regarding consistency with the regional planning framework

- 534 For the reasons outlined above, we are satisfied that the Application is substantially consistent with the regional planning framework. This is not a finding of complete consistency with each individual provision. It recognises the identified tensions with parts of the WAP and the need for conditions to manage residual effects.

¹⁰¹ Statement of Evidence of Amy Callaghan, 15 May 2026, para.6.

¹⁰² Objective 5.1 and Policy 6.1.

¹⁰³ Objective 5.3 and Policy 6.14.

PART K: IWI AUTHORITY DOCUMENTS

535 An application for a resource consent must include an assessment of the activity against any relevant provisions of a planning document recognised by a relevant iwi authority and lodged with a local authority¹⁰⁴.

37. Waitaki Iwi Management Plan 2019 (WIMP)

536 The WIMP has been developed by Te Rūnanga o Arowhenua, Te Rūnanga o Waihao and Te Rūnanga o Moeraki as an expression of rakatirataka and in fulfilment of their kaitiaki responsibilities within the Waitaki Catchment.

537 The WIMP sets out objectives and policies for how land, water, biodiversity, and cultural resources in the Waitaki catchment should be managed, respectively:

- The mauri of water is protected, restored and enhanced throughout the Waitaki catchment¹⁰⁵.
- The Manawhenua values of lakes Takapō, Pūkaki and Ōhau are recognised and provided for¹⁰⁶.
- Mahika kai species and their habitats are protected, restored and enhanced¹⁰⁷.
- Riparian wetlands are fully protected and operate in their natural state supporting flourishing populations of taoka species¹⁰⁸.
- Wāhi tūpuna are protected and the relationship Manawhenua have with these landscapes is enhanced¹⁰⁹.
- The direct discharge to waterways of contaminants, nutrients and wastewater is avoided¹¹⁰.

538 The supporting EcIA identifies one wetland (Tasman Delta) as being potentially impacted by the proposed activity. This wetland is recognised as being adaptable to the existing fluctuations in lake level, with its extent varying each year.

539 The construction methodology for the rock armouring has been amended to avoid disturbance of the Lake Pūkaki Nohoanga following consultation with the Waitaki Rūnaka. Further, the Waitaki Rūnaka and Te Rūnanga o Ngāi Tahu have worked with the Applicant on conditions that mitigate the effects of the activity on the ability of Ngāi Tahu Whānui to use the Lake Pūkaki nohoanga.

540 The proposed activity will involve incidental discharges to water associated with rock armouring. Mitigation measures are proposed to minimise the impact of these discharges,

¹⁰⁴ Schedule 5, clause 5(1)(h) and clause 5(2)(g).

¹⁰⁵ Chapter 2, Strategic Objectives; Policy 5.1.3.

¹⁰⁶ Policy 5.3.2.

¹⁰⁷ Chapter 2, Strategic Objectives.

¹⁰⁸ Policy 5.2.7.

¹⁰⁹ Chapter 2, Strategic Objectives.

¹¹⁰ Policy 5.2.5.

including limiting the work in or immediately adjacent to the lake, directing stormwater away from the lake and the implementation of erosion and sediment controls. In addition, site management techniques, including inspecting machinery to ensure it is clean and free of spill residue prior to it entering the lake and minimising the number of entry/exit points from the lake, will be adopted.

- 541 On the basis of these proposed measures, we are satisfied that the project can be implemented consistent with the relevant objectives and policies of the WIMP. The Application recognises and provides for the mana whenua values of Lake Pūkaki and avoids the direct discharge of contaminants to the lake.

38. Treaty settlements

- 542 As noted in Part D, sections 7 and 8 FTAA state:

7 Obligation relating to Treaty settlements and recognised customary rights

- (1) All persons performing and exercising functions, powers, and duties under this Act must act in a manner that is consistent with—
 - (a) the obligations arising under existing Treaty settlements; and
 - (b) customary rights recognised under—
 - (i) the Marine and Coastal Area (Takutai Moana) Act 2011;
 - (ii) the Ngā Rohe Moana o Ngā Hapū o Ngāti Porou Act 2019.
- (2) To avoid doubt, subsection (1) does not apply to a court or a person exercising a judicial power or performing a judicial function or duty.
- (3) In this section, **existing Treaty settlements** means Treaty settlements that exist at the time the relevant function, power, or duty is performed or exercised (rather than only those that exist at the commencement of this Act).

- 543 The Panel understands¹¹¹ that the Ngāi Tahu Treaty Settlement Act (and associated Treaty settlement deed) is of relevance to the Application area.

- 544 Part F provides an overview of the relevance of this treaty settlement to the Application area. As noted in Part F the Panel directed the EPA to seek comments from the iwi authority, Treaty settlement entities and other Māori groups with relevant interests in the Application.

- 545 Comments were received from the iwi authority and Treaty settlement entities. Representatives for the Waitaki Rūnaka have worked with the Applicant to agree on changes to the consent conditions

- 546 The Panel also directed the EPA to seek comment from the Minister for Māori Crown Relations under section 72 FTAA. The Minister encouraged the Panel to:

- Consider whether the taonga species found at Lake Pūkaki are likely to be impacted by the application, and if so, what remedies or mitigation strategies are appropriate (if any); and
- Consider the Ngāi Tahu nohoanga entitlement in relation to potential effects on cultural values including any impacts on overlap of works and entitlement period.

¹¹¹ Based on the Ministry for the Environment Treaty Settlements and other obligations [section 18 report](#).

- Give reasonable consideration to the comments provided by relevant Māori groups, including those relating to appropriate triggers for low lake levels, plan integrity and precedent, and cultural monitoring programmes.

547 The Panel has adopted the conditions proposed by the Waitaki Rūnaka, and imposed conditions to protect the life supporting capacity, mauri, and ecosystem processes of the Tasman Delta wetland.

548 We have considered carefully the request by the Waitaki Rūnaka for lake lowering triggers to be incorporated into any consent, but have ultimately come to the same view as the Applicant. Any simple hydrological trigger would be difficult to design and apply in a dynamic electricity system where dry-year response depends on more than inflows alone. We also agree with Meridian that such a trigger would risk reintroducing the same type of operational constraint the Application seeks to suspend. We have therefore adopted the Applicant's proposed condition framework based on prior notification, weekly reporting while below 518 m RL, recording of lake levels, and post-event explanation of the circumstances, duration, extent and mitigation measures associated with any lowering event.

549 The Panel is not aware of any additional conditions that may be required in order to recognise or protect the Ngāi Tahu Treaty settlement under section 84 FTAA.

PART L: EVALUATION AND FINDINGS ON PRINCIPAL ISSUES IN CONTENTION

550 In paragraph 82, we identified the principal issues in contention with the Application and where they would be addressed in this decision. In the interests of efficiency, we have addressed a number of these issues in earlier sections of this decision when discussing the application and the comments received. In this section we address the principal issues not yet (or to be) considered in other parts of this decision.

39. Scope (duration) of water take application

551 In its comments on the Application, Genesis argued strongly that the project referred under the FTAA was time-limited to water takes "over three consecutive winters from winter 2026". It relied on the section 28 notice and submitted that "winter" should be given its natural and ordinary meaning. On that basis, Genesis said Meridian's substantive application is outside scope because it sought year-round authorisation through to 31 December 2028, rather than drawdown limited to the winters of 2026, 2027 and 2028. In support of this contention, Genesis pointed to Meridian's modelling, which considered lake levels outside winter months, including scenarios where lake levels may fall below 518 m RL in September and not return above 518 m RL until December. It submitted that, if consent is granted, it must be confined to the winter-only project described in the section 28 notice.

552 Genesis repeated this position in its late memorandum¹¹², submitting that the "winter only period must be imposed as that is the very 'project' sought by Meridian".

553 Meridian's response was that Genesis' scope objection was misdirected. It accepted that the section 28 notice refers to water takes over "three consecutive winters from winter 2026", but says the EPA has already made the statutory scope decision under section 46. Meridian submitted that the EPA determined on 26 November 2025 that the substantive

¹¹² Genesis Energy Limited, Memorandum of Counsel, 29 June 2026.

application complied with section 46 and related solely to the referred project, and that this decision was supported by a memorandum expressly concluding that the substantive application was within the Minister's notice of decision.

- 554 Meridian further submitted that the EPA's scope decision has not been challenged and is not open for reconsideration by the Panel. On Meridian's analysis, any challenge to that statutory decision would have needed to be brought by judicial review, not re-run before the Panel. Meridian also says the Panel's decision-making role under section 81 is to grant the approvals sought, subject to conditions, or decline them on the grounds available under section 85; it is not to revisit the EPA's section 46 scope determination.
- 555 Meridian's later response in relation to Genesis' proposed conditions also addressed the practical consequence of Genesis' position. Meridian says the Application sought consent to 31 December 2028, its modelling and effects assessment were undertaken on that basis, and there is no scope issue with that expiry date. It says a 1 September 2028 expiry, or a June–August only restriction, would materially undermine the ability to exercise the consent in 2028 because lake levels cannot be managed with certainty around fixed calendar dates. Meridian repeated in response to Genesis' late memorandum that the EPA scope decision was made under section 46, was not challenged, and that Genesis' proposed operating-month restriction is "fundamentally impractical" and would undermine the project benefits.
- 556 The Panel agrees with Meridian's response to Genesis' scope argument. Genesis' concern is understandable given the wording of the section 28 notice, but we do not consider it provides a basis for treating the substantive application, or a consent term to 31 December 2028, as outside scope. The EPA made the statutory completeness and scope decision under section 46. That decision confirmed that the substantive application related solely to the referred project and has not been challenged. We do not consider it is for this Panel, in determining the substantive application under section 81, to revisit that statutory scope decision in the manner advanced by Genesis.
- 557 We also accept Meridian's evidence that a winter-only operating window, or an expiry date that effectively prevents reliable use of the consent through winter 2028, would not reflect the way lake levels are managed in practice and would materially constrain the benefits assessed in the application. The project is temporary and confined to the 2026–2028 period. On the material before us, we find that granting the lake operating consent to 31 December 2028 is within scope and is not precluded by Genesis' interpretation of the section 28 notice. Accordingly, we decline to impose Genesis' requested winter-only limitation.

40. Electricity system management and security of supply

- 558 A number of participants in this FTAA process have roles in the NZ electricity system and its management, including in relation to securing adequate electricity supply for NZ consumers. The views of these participants about the Application differed to considerable degrees. It became clear to the Panel that to give appropriate weight and relevance to those views it was important to understand the specific roles of the persons giving them. We endeavour to do this in the Table below.

Party	Role in the electricity system	Relevance to this application
Meridian	Generator/retailer and market participant. Owns and operates the Waitaki Power Scheme, including Lake Pūkaki storage and Pūkaki Dam.	Applicant. Seeks temporary eased access to Lake Pūkaki storage below 518 m RL. Meridian is not the national system manager, but its asset-management and

Party	Role in the electricity system	Relevance to this application
	Responsible for operating its assets, managing its water within consent and market settings, and making generation available in response to prices, risk and regulatory obligations.	offer decisions materially affect national supply, prices and dry-year risk.
Genesis	Generator/retailer and market participant. Owns and operates generation assets including Huntly and the Tekapo Power Scheme (including Tekapo B). Responsible for its own assets, generation offers, fuel arrangements and contractual obligations.	Commenter. Raises system-risk and infrastructure-risk concerns, particularly about the Tekapo B 'temporary' tailrace weir and chute. Genesis defers to Transpower on contingent storage/system operation, but is not itself the system manager or regulator.
Transpower	State-owned enterprise. Owns and operates the national grid. Separately performs the System Operator function under the EIA/Code. As System Operator, provides information and short- to medium-term security-of-supply forecasting and manages supply emergencies, including SOSFIP-related functions.	Important expert commenter on security of supply and system operation. Transpower is not the electricity regulator and, on the record, is not responsible for ensuring adequate generation offers over the medium to long term.
Electricity Authority	Independent Crown entity and electricity regulator. Sets/administers the Code and has the statutory objective of promoting competition, reliable supply and efficient operation of the electricity industry for the long-term benefit of consumers, plus a consumer protection objective.	The statutory regulator with the broadest system-wide perspective across competition, reliability, efficiency and consumer benefit. Its view is central when assessing overall electricity-system effects.

- 559 We have considered the respective roles of Meridian, Genesis, Transpower and the EA in the management of New Zealand's electricity system, and in particular the issue of who is responsible for managing the system as a whole and ensuring security of supply nationally.
- 560 New Zealand's electricity system is not managed through a single generator or asset owner. It operates through a market-based framework in which generators and other market participants are responsible for building, maintaining and making available generation and demand response in response to price signals, commercial incentives and regulatory obligations. That is an important starting point for our assessment. Meridian and Genesis are both significant market participants, but neither is responsible for managing the electricity system as a whole.
- 561 Meridian owns and operates the WPS, including Lake Pūkaki and Pūkaki Dam. It is responsible for operating those assets in accordance with its consents, market obligations and asset-management responsibilities. Its decisions about Lake Pūkaki storage are nationally important because Lake Pūkaki is a major hydro storage resource. However, Meridian remains a generator and market participant. It is not the national regulator, the SO, or the entity charged with determining electricity-sector policy for security of supply.
- 562 Genesis is also a significant generator and market participant. Its assets include Huntly and the Tekapo Power Scheme. Genesis is responsible for the operation, maintenance and commercial use of its own assets, and its evidence raises important infrastructure and system-risk issues. However, Genesis does not have a system-wide statutory role in

determining how national security of supply is to be managed. Its perspective is relevant and entitled to weight, particularly where its own assets may be affected, but it is not determinative of the national security of supply question.

- 563 Transpower has two relevant roles. It owns and operates the national grid, and it also performs the SO function under the Electricity Industry Act and Code. In its SO role, Transpower provides information and short- to medium-term forecasting on security of supply and manages supply emergencies. Those functions are important and mean that Transpower's evidence on operational security of supply is highly relevant. We give Transpower's comments weight for that reason.
- 564 However, we do not accept that Transpower is responsible for ensuring the adequacy of generation offers to meet demand over the medium to long term. Nor do we accept that Transpower, as SO, has a proprietary or regulatory entitlement to determine how a generator's water storage is to be held or used except through the applicable market, Code, planning and consent frameworks. The record is clear that Transpower's SO role is focused on coordination, forecasting, information and emergency management, not on owning, procuring or allocating generation fuel.
- 565 The EA has the broadest statutory responsibility for the electricity industry. It is the independent regulator and is responsible for the Code framework. Its statutory objective requires it to promote competition in, reliable supply by, and efficient operation of the electricity industry for the long-term benefit of consumers. It also has a consumer protection objective. In our assessment, that statutory remit gives the Authority a broader perspective than any individual market participant or the SO alone.
- 566 We therefore give significant weight to the EA's view on the overall electricity-system implications of the proposal. That does not mean Transpower's concerns are disregarded. Rather, it means that where the issue involves the balance between competition, efficiency, reliability, security of supply and consumer benefit, the Authority's statutory role is particularly important.
- 567 We also find that there is no current statutory or Code-based strategic reserve mechanism that requires Lake Pūkaki contingent storage to be preserved as a national "fuel of last resort" in all circumstances. The present access arrangements arise from an uncoordinated combination of resource management instruments and electricity-sector security-of-supply triggers. The consequence is that the current regime operates with significant system implications, but it should not be treated as if it were a complete and deliberately procured national strategic reserve scheme. The fact that a significant management feature of it is to be found in a regional plan promulgated under the RMA, whose purpose is different in kind to that found in the Electricity Act, is beguiling, to say the least.
- 568 That finding is important to this contentious issue. The Panel is not deciding the optimal long-term national policy for contingent hydro storage. Nor is the Panel assuming the role of the EA or the SO. The Panel's task is to determine the approvals sought under the FTAA, including whether the proposal will deliver significant regional or national benefits and whether the associated adverse effects and risks are acceptable.
- 569 In undertaking that task, we find that responsibility for national security of supply is shared through the statutory and market framework. Market participants, including Meridian and Genesis, are responsible for making generation and demand response available. Transpower, as SO, is responsible for real-time coordination, security-of-supply

information and emergency management. The EA is responsible for the overall regulatory framework and for balancing competition, reliable supply, efficient operation and consumer benefit.

- 570 We do not accept submissions that effectively treat Transpower as the sole decision-maker on the national security of supply consequences of this proposal. Equally, we do not accept that Meridian's commercial judgement alone resolves those matters. The correct approach is to assess the proposal within the wider statutory and market framework, giving weight to the EA's system-wide regulatory view, Transpower's operational security expertise, and the asset-specific evidence of Meridian and Genesis.
- 571 Overall, we find that the electricity system is managed through a decentralised market framework under independent regulation. The Authority has the broadest statutory mandate for the system as a whole. Transpower has an important but more specific SO role. Meridian and Genesis are significant market participants whose asset decisions affect system outcomes, but they are not responsible for managing the national system as a whole.
- 572 On that basis, we give greatest weight on the overall system-balance issue to the EA's assessment (supported by Mr Blundell's evidence¹¹³), while giving substantial weight to Transpower's operational security concerns and Genesis' infrastructure-specific risk evidence. That approach best reflects the respective statutory, regulatory and commercial roles of the parties. It also supports the conclusion that any approval should be time-limited and subject to monitoring, reporting, infrastructure-risk and engagement conditions, rather than treated as a permanent redesign of national security of supply arrangements.

41. The weight to be given to WAP Rule 12

- 573 On the issue of the weight to be given to prohibited activity Rule 12 in the WAP, Meridian argues that it should be given little because the environmental effects of lowering the lake below 518 m RL are "essentially the same" whether lowering occurs with an SSA/OCC trigger or without one. Meridian further asserts that it is unclear why prohibited activity status was selected in Rule 12 of the WAP, and that the original section 32 RMA analysis does not explain the rationale for that choice or assess the relative costs and benefits of prohibited status compared with another activity status.
- 574 In summary, Meridian submits that we should not treat the prohibited activity rule as a strong indicator that the activity is inherently unacceptable. Rather, it contends that we should give it limited weight in the FTAA balancing exercise.
- 575 Genesis was the only commenting party that expressly addressed the weight or significance to be given to WAP Rule 12.¹¹⁴ Its position was that operation below 518 m RL outside the current contingent storage release boundary is a prohibited activity, and that this status is "not lightly applied" under the RMA. Genesis accepted that the Panel may grant approval for a prohibited activity under the FTAA, but submitted that the prohibited status reinforces the need for "rigorous scrutiny and a cautious approach". It also said that the fact the lake-lowering approval is otherwise for a prohibited activity

¹¹³ Evidence of Rory Blundell, 15 April 2026.

¹¹⁴ Genesis Energy Limited, Legal Submissions (Comments), 8 April 2026.

should weigh in favour of decline when exercising the FTAA discretion.

- 576 Genesis also made a related point that the Panel should give significant weight to the fact that operation below Lake Pūkaki's current operating range is presently tightly constrained by externally controlled, system-triggered and time-limited arrangements.
- 577 CRC addressed the WAP framework, but only indirectly. It noted that Meridian already holds consent to draw the lake to 515 m RL and that the WAP provides for further lowering to 513 m RL during Declared Electricity Supply Emergency situations. It also said consideration should be given to those existing permissions when assessing effects. CRC further stated that Rule 17 WAP is particularly important because the permitted baseline plays an important role when considering effects.
- 578 In response, counsel for Meridian expressly addressed Genesis' submission that prohibited activity status is "not lightly applied" and should lead to rigorous scrutiny and a cautious approach. His response was that the prohibited status was one reason the FTAA pathway was used, but that Genesis overstated its significance. Meridian submitted that the WAP already contemplates and provides for the effects of lowering Lake Pūkaki below 518 m RL, with the difference between the permitted/discretionary pathways and the prohibited pathway being the likelihood or trigger for occurrence, not a materially different effects profile. Meridian therefore submitted that care is needed before making too much of prohibited activity status.
- 579 Meridian also responded to Genesis' reliance on Rule 3(3). It accepted that Rule 3(3) means temporary lowering below the Table 4 minima is not prohibited when it is for maintenance or rehabilitation of electricity generation infrastructure. However, Meridian said that rule does not provide for the activities sought in this application because the primary purpose of the Application is eased access to stored water below 518 m RL for electricity generation in the national interest, not lowering the lake to undertake dam resilience work. It also recorded Meridian's advice that Rule 3(3) cannot be relied on for activities on the lake bed below the dam structure.
- 580 Ms Callaghan in her planning response evidence also addressed Genesis' prohibited activity point. The response records that Meridian reviewed the WAP section 32 report and the WAP decisions document, and says the section 32 report considered prohibited status but did not assess the costs or benefits of alternative activity statuses. It then says the Board's reasoning in the decisions document raises a question as to whether prohibited status was in fact intended, although Meridian accepts that the formal activity status is prohibited.
- 581 The planning response concludes that the justification for prohibited status is weak, that prohibited status is not of itself a reason to decline under Schedule 5 clause 17(4), and that the existence of Rule 3(3), Rule 3(1), and discretionary Rule 17 gives confidence that prohibited status is not premised on a risk of unacceptable adverse effects.
- 582 Genesis accepted that the FTAA sets a high threshold for decline, and that even where adverse impacts are out of proportion to benefits, the Panel retains a discretion whether to decline. However, Genesis' case was that this application meets that threshold. It submitted that the adverse impacts are sufficiently significant to be out of proportion to the project's benefits under s 85(3), and that the Panel should exercise its discretion to decline.
- 583 We accept that Rule 12 of the WAP is a relevant part of the statutory and planning context

and that its prohibited activity status cannot be ignored. We also accept Genesis' submission that prohibited activity status is not lightly applied under the RMA and ordinarily signals a strong policy judgment. However, in the particular circumstances of this application, we do not consider Rule 12 should be treated as a determinative or strongly adverse indicator against approval under the FTAA. The FTAA expressly enables approval to be granted for an activity that would otherwise be prohibited under an RMA planning instrument. The prohibited status is therefore a matter to be weighed, rather than a jurisdictional bar or a presumption of decline.

584 On the evidence before us, we prefer Meridian's submission that limited weight should be given to Rule 12 in the overall FTAA balancing exercise. We consider it material that the WAP already contemplates Lake Pūkaki being lowered below 518 m RL in defined circumstances, including to 513 m RL during a Declared Electricity Supply Emergency, and that existing consented and plan-enabled pathways already provide for materially similar physical lake-lowering effects. The principal difference with this Application is not the nature of those effects, but the trigger and decision-making pathway for accessing the same lower lake levels. We also accept Meridian's point that the record before us does not clearly demonstrate why prohibited activity status was selected for Rule 12, or that it was based on a conclusion that the effects of lowering below 518 m RL are inherently unacceptable in all circumstances. It is a nonsense to suggest that the effects on the environment of lake lowering would be different, depending on who was controlling that lowering.

585 For those reasons, while we have had careful regard to Rule 12 and to Genesis' concerns, we give the prohibited activity status limited weight in our final assessment. We do not consider that Rule 12, either alone or in combination with the other matters raised by Genesis, provides a sufficient basis to decline the Application. Overall, and having considered the evidence, comments, applicant's responses, relevant statutory framework and proposed conditions, we have found no basis to conclude that the adverse impacts of the project are sufficiently significant to be out of proportion to its regional or national benefits, or that approval should otherwise be declined under the FTAA.

PART M: CONDITIONS

42. FTAA general requirements for conditions

586 Section 81 provides that the Panel must set any conditions to be imposed on the approval. The statutory requirements on what conditions are set is determined by what approvals are being sought.

587 Section 83 must be complied with and provides:

83 Conditions must be no more onerous than necessary

When exercising a discretion to set a condition under this Act, the panel must not set a condition that is more onerous than necessary to address the reason for which it is set in accordance with the provision of this Act that confers the discretion.

588 How the Panel has complied with this section is discussed below in relation to the conditions that have been set.

589 If a Treaty settlement, the Marine and Coastal Area (Takutai Moana) Act 2011, or the Ngā Rohe Moana o Ngā Hapū o Ngāti Porou Act 2019 is relevant to an approval then section 82 applies. This section provides:

82 Effect of Treaty settlements and other obligations on decision making

- (1) This section applies if a Treaty settlement, the Marine and Coastal Area (Takutai Moana) Act 2011, or the Ngā Rohe Moana o Ngā Hapū o Ngāti Porou Act 2019 is relevant to an approval.
- (2) If the settlement or Act provides for the consideration of any document, the panel must give the document the same or equivalent effect through the panel's decision making as it would have under any relevant specified Act.
- (3) The panel must also consider whether granting the approval would comply with section 7.
- (4) In this section, **document**—
 - (a) means any document, arrangement, or other matter; and
 - (b) includes any statutory planning document amended as a result of the settlement or Act referred to in subsection (1).

43. FTAA requirements for conditions

590 For a resource consent the following clauses of Schedule 5 apply:

18 Conditions on resource consent

When setting conditions on a consent, the provisions of Parts 6, 9, and 10 of the Resource Management Act 1991 that are relevant to setting conditions on a resource consent apply to the panel, subject to all necessary modifications, including the following:

- (a) a reference to a consent authority must be read as a reference to a panel; and
- (b) a reference to services or works must be read as a reference to any activities that are the subject of the consent application.

591 For the grant of a wildlife authority the following clause of Schedule 7 apply:

6 Conditions

- (1) A panel may set any conditions on a wildlife approval that the panel considers necessary to manage the effects of the activity on protected wildlife.
- (2) In setting any condition under subclause (1), the panel must—
 - (a) consider whether the condition would avoid, minimise, or remedy any impacts on protected wildlife that is to be covered by the approval; and
 - (b) where more than minor residual impacts on protected wildlife cannot be avoided, minimised, or remedied, ensure that they are offset or compensated for where possible and appropriate; and
 - (c) take into account, as the case may be, the New Zealand Threat Classification System or any relevant international conservation agreement that may apply in respect of the protected wildlife that is to be covered by the approval.

592 Generally speaking, a resource consent condition must:¹¹⁵

- a. be for a resource management purpose, not an ulterior one;
- b. fairly and reasonably relate to the development authorised by the resource consent or designation; and
- c. not be so unreasonable that a reasonable planning authority, duly appreciating its statutory duties could not have approved it.

¹¹⁵ *Newbury District Council v Secretary of State for the Environment* [1980] 1 All ER 731 (HL), at 739.

593 The underlying purpose of the conditions of a resource consent is to manage environmental effects by setting outcomes, requirements or limits to that activity, and how they are to be achieved¹¹⁶. Conditions must also be certain and enforceable¹¹⁷.

594 A condition must also not delegate the making of any consenting or other arbitrary decision to any person, but may authorise a person to certify that a condition of consent has been met or complied with or otherwise settle a detail of that condition¹¹⁸. Such authorisation is subject to the following:

- a. The basis for any exercise of a power of certification must be clearly set out with the parameters for certification expressly stated in the relevant conditions.
- b. This power of certification does not authorise the making of any waiver or sufferance or departure from a policy statement or plan except as expressly authorised under the Act (s 84 of the RMA).
- c. This power of certification does not authorise any change or cancellation of a condition except as expressly authorised under the FTAA (s 127 of the RMA).

44. Project conditions

595 A copy of the Panel's draft conditions¹¹⁹ were circulated on 5 June 2026 to the invited parties.

596 Comments on the Panel's draft conditions were received from:

- a. Canterbury Regional Council;
- b. Minister for Land Information;
- c. Department of Conservation;
- d. Transpower;
- e. Kā Rūnaka/TRONT;
- f. Genesis; and
- g. NZTA.

597 The Applicant provided its response to the comments made on the draft conditions on 12 June 2026.

598 Shortly before the Panel was scheduled to produce its final decision on the Application, Genesis filed a late memorandum of counsel in relation to Meridian's response to Genesis'

¹¹⁶ *Summerset Village (Lower Hutt) Ltd v Hutt City Council* [2020] MZEnvC 31 at [156].

¹¹⁷ *Bitumix Ltd v Mt Wellington Borough Council* [1979] 2 NZLR 57.

¹¹⁸ *Turner v Allison* (1970) 4 NZTPA 104.

¹¹⁹ Section 70(2), FTAA.

comments on the Panel's draft conditions. As noted earlier, we accepted the late further comment¹²⁰, but also offered Meridian an opportunity to respond, which it did by further memorandum on 30 June 2026.

- 599 In its memorandum, Genesis submitted that the draft conditions process should not be treated as a further evidential stage and that Meridian's further material submitted with its response on draft conditions should be disregarded to the extent it advanced new or supplementary opinion evidence rather than addressing the wording, implementation or workability of draft conditions. Meridian responded to this jurisdictional challenge that section 70 of the FTAA provides a sequential process for comments on draft conditions and an applicant response to those comments, and that there is no prescribed form for such responses.
- 600 We have considered both memoranda. We do not accept that Meridian's response gives rise to a jurisdictional issue. The material was filed in response to the Panel's draft conditions and to comments made by other parties on those conditions. However, we have been careful not to treat the draft conditions process as a general reopening of the merits of the Application, particularly as our draft decision clearly indicated the Panel's decision to approve the project. We have considered the post-draft condition material only to the extent it assists us with the wording, practicality, workability, enforceability and implementation of the final conditions. Our substantive findings on the effects of the proposal and the need for conditions remain grounded in the Application, comments received, responses to comments, responses to requests for information, and the evidence otherwise before us.
- 601 The Panel has considered the positions advanced by Meridian, CRC, DOC, Genesis, Transpower, NZTA, LINZ and Kā Rūnaka / TRONT. The principal outstanding drafting issues are addressed below. We have not repeated matters of detail where the parties' drafting positions are agreed or where changes are consequential only.
- 602 In evaluating the final condition set, we have applied section 83 and the ordinary RMA condition principles. Our focus has been on whether each disputed condition is necessary to manage an effect or implementation risk, is within the scope of the Application and the approvals sought, is workable and enforceable, and is no more onerous than necessary. We have also considered whether a proposed condition would materially alter the grant by reintroducing the same operational constraints that the Application seeks to suspend.
- 603 The final conditions in Appendix A1 and Appendix A2 reflect the Panel's conclusions on these matters. Where a requested condition has not been included, that does not mean the underlying concern was disregarded. Rather, in several instances we have addressed the concern through a narrower notification, reporting, monitoring or management-plan requirement, or through reasons in this decision rather than by imposing a further operational constraint.

44.1 Expiry date for water permit CRC262540

- 604 **Positions:** Draft Condition 1 for CRC262540 provided for expiry on 1 September 2028. CRC and Meridian sought an expiry date of 31 December 2028. Meridian's position was that the substantive application sought authority through to 31 December 2028, and that

¹²⁰ Panel Minute 8.

the modelling and effects assessment were undertaken on that basis. Meridian submitted that a 1 September expiry would materially reduce the practical utility of the consent in 2028, because the consent could not confidently be exercised during winter or spring 2028 if there was a risk that lake levels would not recover above 518 m RL by the earlier expiry date. Genesis supported the 1 September 2028 date.

- 605 **Panel evaluation and finding:** We have amended the expiry date to 31 December 2028. That date is consistent with the temporal scope of the Application as assessed, and with the evidence and modelling before us (see Section 39 above). We do not consider that retaining a 1 September 2028 expiry would materially reduce any identified adverse environmental effect. Rather, it would create operational uncertainty and reduce the utility of the approval for part of the final year for which the Application was assessed. In the absence of an effects-based justification for the shorter date, we consider that a 1 September 2028 expiry would be more restrictive than necessary.
- 606 **Condition implication:** Condition 1 for CRC262540 is to provide for expiry on 31 December 2028, unless surrendered or cancelled earlier.

44.2 Genesis' proposed winter-only limitation

- 607 **Positions:** Genesis initially sought conditions limiting any lowering below 518 m RL to June, July and August in 2026, 2027 and 2028, and only where the SO confirmed that security of supply necessitated the lowering, or where lowering was necessary for Tekapo B temporary tailrace repair, remediation or maintenance works. In its comments on the Panel's draft conditions, Genesis amended that position. Reflecting the Panel's draft decision to grant approval subject to conditions, Genesis removed the earlier proposed electricity-shortage trigger. Its final condition position was that the water take consent should be limited to the months of June, July and August in each of 2026, 2027 and 2028, together with provision for lowering where necessary to undertake Tekapo B temporary tailrace repair, remediation or maintenance works.
- 608 Meridian opposed that limitation. It submitted that the consent sought was for temporary eased access during the relevant consent period, and that limiting access to three winter months each year would materially narrow the approval, make the consent fundamentally impractical, and undermine the operational flexibility and certainty that the Application seeks to provide.
- 609 **Panel evaluation and finding:** We do not accept Genesis' proposed winter-only limitation. We acknowledge that Genesis no longer seeks a separate SO confirmation or electricity-shortage trigger. The issue for us is therefore whether the approval should be confined to June, July and August in each year, subject to any lowering required for Tekapo B temporary tailrace works.
- 610 In our assessment, that limitation would still materially narrow the approval and would be inconsistent with the project benefits we have accepted. The Application has been assessed on the basis of temporary eased access to Lake Pūkaki storage below 518 m RL over the consent term, down to 513 m RL, subject to the conditions imposed. The benefits we have accepted arise principally from increased operational flexibility, improved certainty of access, and the ability to manage hydro storage more efficiently over a short and time-limited period. Those benefits would be materially reduced if Meridian could only exercise the consent during three specified calendar months each year.

- 611 We also do not consider that a winter-only limitation is necessary to manage any adverse environmental effect identified in the record. The effects assessment has proceeded by reference to the frequency, duration and extent of potential lowering, rather than on the basis that adverse effects are acceptable only during June, July and August. The conditions we impose address the relevant effects through expiry, minimum lake level, notification, reporting, ecological management, dust response, and specific Tekapo B protection conditions. We therefore consider that a winter-only limitation would be more restrictive than necessary.
- 612 **Condition implication:** No winter-only condition is included. No SO confirmation condition is included, because Genesis did not maintain that requirement in its final condition position and, in any event, we do not consider such a trigger necessary or appropriate. The consent remains subject to its expiry date, the minimum lake level, and the notification, reporting, environmental management and Tekapo B protection conditions imposed elsewhere in the condition set.

44.3 Notice and reporting to Genesis and Transpower

- 613 **Positions:** Genesis and Transpower sought to be added to various notification and reporting conditions. Genesis also sought at least 15 working days' notice before any individual lowering event or when lake levels reach 519 m RL, whichever is earlier. Meridian accepted notifying Genesis and Transpower when lake levels reach 519 m RL, but opposed a fixed 15-working-day notice requirement. Meridian also opposed providing Genesis and Transpower with the weekly and post-event environmental and cultural reporting required for CRC and Kā Rūnaka, on the basis that those conditions were developed to address environmental and cultural effects and may involve commercially sensitive hydro utilisation and electricity market information.
- 614 **Panel evaluation and finding:** We accept a limited notification role for Genesis and Transpower, but do not consider that the wider reporting sought is necessary. Genesis and Transpower have legitimate interests in being alerted when the lake approaches the 518 m RL threshold, particularly given the electricity-system and Tekapo B issues raised in their comments. However, the evidence does not support imposing a fixed 15-working-day advance-notice requirement. Lake levels will depend on inflows, rainfall, generation outflows and market conditions. A condition premised on planned lowering events would not reflect the way the lake is operated and may not be practically achievable.
- 615 We also do not consider that Genesis or Transpower require the same weekly and post-event reporting as CRC and Kā Rūnaka. Those reports are directed to environmental and cultural effects, including cultural values, mahinga kai and wetland/ecological responses. Genesis and Transpower have not demonstrated a specific non-commercial information need for that level of reporting. The more proportionate approach is to require notification at 519 m RL, while retaining environmental and cultural reporting to CRC and Kā Rūnaka.
- 616 **Condition implication:** Genesis and Transpower are to receive notification when lake levels reach 519 m RL. The 15-working-day notice requirement and broader weekly/post-event reporting to Genesis and Transpower are not included.

44.4 Tekapo B temporary tailrace conditions and timing of works

- 617 **Positions:** Genesis raised significant concerns regarding the potential effects of lake lowering on the Tekapo B Power Station temporary tailrace, weir and chute. Its primary position was that the Application should be declined because, in its view, the potential

consequences of failure or degradation of the temporary structure were nationally significant and were not adequately managed by Meridian's proposed conditions. As a fallback position, Genesis relied on Dr Mitchell's proposed conditions¹²¹. Those conditions were directed to reducing the probability of failure or operational impairment by requiring a condition-precedent process before any before any lowering below 518 m RL occurred under the consent.

- 618 Dr Mitchell's proposed condition package required the appointment of a suitably qualified and experienced practitioner, preparation of a Repair Strategy and Associated Works Programme, consultation with Genesis, identification of any approvals required, completion of repair or remediation works, SQEP certification, and ongoing monitoring and intervention requirements. Genesis' position was that this proactive condition framework was necessary given the temporary nature of the structure, the uncertainties associated with submerged and obscured elements, the potential effect on Tekapo B operations, and the wider electricity system consequences if Tekapo B and, consequentially, Tekapo A were unavailable.
- 619 Meridian did not accept Genesis' assessment of the level of risk. Meridian relied on the Damwatch evidence that the credible risk of damage from lowering Lake Pūkaki below 518 m RL was small and that any damage should be capable of remediation. Meridian's preferred approach was materially narrower than Genesis' condition-precedent package. It proposed monitoring and surveillance of the Tekapo B rock chute and weir when Lake Pūkaki is below 518 m RL, daily reporting to Genesis, and the availability of repair material to enable rapid response if damage occurred. Meridian submitted that those measures were appropriate, responsible and directed to Genesis' risk.
- 620 The Panel's draft conditions adopted a more precautionary approach than Meridian proposed, and substantially reflected the structure of the conditions sought by Genesis. Genesis supported those draft conditions and submitted that they should not be substantively weakened. Meridian accepted that, because no agreement had been reached with Genesis outside the consent process, the Panel's draft conditions represented a reasonable, albeit conservative, outcome. However, Meridian sought refinements to Conditions 20 and 22, relying on Damwatch advice that some investigation, repair or stabilisation work may require access to the structure "in the dry" and may not be practicably completed within 12 months or before first lowering, depending on lake levels, hydrology and market conditions.
- 621 A further issue concerns access. Genesis owns the relevant land and infrastructure. Meridian does not have an access right over the Tekapo B temporary tailrace and weir. Genesis has acknowledged that Meridian would need Genesis' agreement to undertake works on that land or infrastructure. Genesis has stated that, if the conditions it sought were imposed, it would grant access subject to prior notice, compliance with Genesis policies and statutory requirements, consultation on staging and scheduling, emergency operation arrangements, and prompt provision of investigation data, reports and related information. Genesis maintained that access position in its comments on the Panel's draft conditions and reiterated it in its later memorandum.
- 622 Meridian accepts that a consent cannot compel Genesis, as a third party, to grant access. It submits, however, that the conditions should not be drafted so as to give Genesis an unqualified discretion to determine whether Meridian can comply with the consent.

¹²¹ Evidence of Dr Phil Mitchell, 8 April 2026.

Rather, it argues that, if Genesis refuses reasonable access for measures imposed for Genesis' benefit, Meridian may be unable to complete those measures. Meridian suggested that an advice note could record that non-performance should be excused if Genesis refuses reasonable access.

- 623 **Panel evaluation and finding:** We consider that conditions addressing the Tekapo B temporary tailrace, weir and chute are necessary. We accept that Genesis has identified potentially significant consequences if the temporary tailrace, weir or chute were adversely affected. We do not need to resolve every engineering disagreement between WSP and Damwatch to reach that conclusion. The combination of the temporary nature of the structure, the uncertainties associated with submerged or obscured elements, and the operational importance of Tekapo B justifies a cautious condition framework.
- 624 We do not accept Meridian's original reactive approach as sufficient. A condition package based only on monitoring and post-damage response would not adequately reflect the potential consequence of failure or operational impairment. The conditions must require an expert-led assessment of the structure, identify any works or measures necessary to ensure the exercise of the consent does not adversely affect the Tekapo B temporary tailrace or Tekapo B operations, and require appropriate certification, monitoring and response measures.
- 625 At the same time, we accept Meridian's point that conditions must be practical, enforceable and capable of implementation. A rigid condition requiring all possible works identified in the Repair Strategy and Associated Works Programme to be completed before any lowering below 518 m RL may not be workable if some works can only practicably occur when lower lake levels expose the relevant parts of the structure. It would also be disproportionate to require Meridian to lower Lake Pūkaki solely to create dry access for engineering works if that would be inconsistent with prudent hydrological or market management of the lake.
- 626 We therefore adopt a staged condition approach. The protective objective remains that the exercise of the consent must not create an unmanaged material risk to the Tekapo B temporary tailrace, weir, chute or Tekapo B operations. Before Meridian may first operate Lake Pūkaki below 518 m RL under this consent, it must appoint a SQEP and prepare a Repair Strategy and Associated Works Programme following consultation with Genesis. That strategy must identify the investigations, works, monitoring and controls necessary to satisfy the protective objective.
- 627 The strategy must distinguish between works or measures that are necessary before first lowering below 518 m RL and works that can only practicably be undertaken as lower lake levels expose the relevant structure. Any works or measures identified by the SQEP as necessary before first lowering must be completed and certified before the consent is exercised. Works that cannot practicably be completed before first lowering may be staged during the consent term as lake levels allow, but only where that staging is expressly justified and certified by the SQEP and accompanied by monitoring, contingency and response measures sufficient to ensure the exercise of the consent does not create an unmanaged material risk to Tekapo B operations.
- 628 We have also considered Genesis' conditional access position. The conditions do not and cannot compel Genesis to grant Meridian access to Genesis land or infrastructure. Nor do they impose obligations on Genesis as if it were the consent holder. Meridian remains responsible for obtaining any necessary access or approvals before undertaking works on land or infrastructure it does not own or control. Equally, we do not consider it appropriate

to frame the consent so that Genesis has an unqualified ability to determine the content of the conditions or whether the consent may be exercised. The conditions therefore require consultation with Genesis, provision of information to Genesis, and SQEP certification, but do not make compliance dependent on Genesis' approval except where Meridian and Genesis reach an alternative agreement.

- 629 If access issues arise, they do not alter the conditions imposed by the Panel or authorise Meridian to exercise the consent without complying with any applicable preconditions. Those matters are for Meridian and Genesis to resolve, or for the relevant consent authority to consider if a compliance issue later arises. We have not included Meridian's suggested advice note that non-performance should be excused if Genesis refuses reasonable access. That would risk prejudging future factual and legal issues. The more appropriate course is to impose clear conditions on Meridian, recognise the need for third-party access where relevant, and leave any future access or compliance dispute to be addressed on its facts.
- 630 **Condition implication:** Conditions 14–27 are retained in substance but refined. The final conditions require an expert-led Repair Strategy and Associated Works Programme, consultation with Genesis, SQEP certification, completion of any pre-lowering works identified as necessary by the SQEP, and staged implementation of any works that can only practicably occur as lower lake levels expose the relevant structure. The conditions also maintain ongoing monitoring, tailwater level and intervention requirements. The advice note has been amended so that it accurately records Genesis' land ownership and the need for Meridian to obtain any necessary access, without suggesting that Genesis has given unconditional access permission or that Meridian is excused from compliance if access is not obtained.

44.5 DOC's proposed lake operating regime conditions

- 631 **Positions:** DOC sought new lake operating regime conditions requiring, among other matters, a main operating range of 525–531 m RL, continuous variation within that range, an annual mean within that range, a maximum of 39 consecutive days below 518 m RL, and a minimum 240-day interval between drawdowns below 518 m RL. Meridian opposed those conditions as outside the scope of the Application, operationally unworkable, inconsistent with the recently confirmed operating conditions for Lake Pūkaki, and likely to sterilise a substantial part of the normal operating range.
- 632 **Panel evaluation and finding:** We do not include DOC's proposed lake operating regime conditions. We accept that DOC's concerns about the Tasman Delta wetland values are legitimate and have been considered in our effects assessment. However, the Application is for a temporary approval to ease access below 518 m RL, not to reset the wider Lake Pūkaki operating regime above 518 m RL. Conditions that prescribe a new main operating range, annual mean level, maximum duration below 518 m RL, and fixed minimum interval between drawdowns would go well beyond managing the incremental effects of this approval. They would materially alter the way the WPS is operated under other consents and would risk undermining the project benefits we have accepted.
- 633 We also consider the proposed 39-day and 240-day controls too blunt for the effects and operational context. The evidence indicates that any use below 518 m RL is expected to be limited and temporary, and the approval itself is time-bound. Residual ecological uncertainty is better addressed through the Tasman Delta Wetland Ecological Management Plan (**WEMP**), monitoring, notification and reporting conditions than

through prescriptive operating limits that may not respond to actual hydrological or ecological conditions.

- 634 **Condition implication:** DOC's proposed new lake operating regime conditions are not included.

44.6 Wetland Ecological Management Plan - Tasman Delta and wider lake-edge wetlands

- 635 **Positions:** DOC sought amendments to the WEMP conditions to include eastern lakeshore turf communities and other wetlands, rather than limiting the WEMP to the Tasman Delta. Meridian supported some minor technical amendments but opposed extending the WEMP beyond the Tasman Delta. Meridian's position was that the only wetland connected to the lake below 518 m RL is the Tasman Delta, and that eastern lakeshore turf communities sit within the main operating range and have been assessed through the WPS consenting.

- 636 **Panel evaluation and finding:** We have confined the WEMP to Tasman Delta wetland ecological values. The Tasman Delta is the only wetland feature directly linked to the incremental lake-level effects of the temporary approval below 518 m RL. While DOC raised broader concerns about eastern lakeshore turf communities and other wetlands, we have not accepted the evidence put forward to establish a hydrological link between them and this Application. The conditions for this approval should focus on effects that are sufficiently connected to the activities being authorised. We are not satisfied that the evidence justifies using this consent to impose a wider monitoring and management regime for lake-edge turf communities within the normal operating range or addressed under the wider WPS consent framework.

- 637 This finding does not dismiss the ecological significance of the eastern lake margin turf communities. Rather, we consider that those values are not appropriately managed through a WEMP condition attached to this short-term eased-access consent. The final WEMP conditions should therefore focus on monitoring, management responses and reporting for Tasman Delta values when lake levels are forecast to fall below, or do fall below, 518 m RL.

- 638 **Condition implication:** The WEMP applies to Tasman Delta wetland ecological values only. DOC's proposed extension to eastern lakeshore turfs and other wetlands is not included.

44.7 Wildlife Act (WA) approval conditions

- 639 **Positions:** DOC proposed a range of amendments to the WA approval conditions. Meridian accepted several technical amendments, including species naming and alignment with the LMP, but opposed a number of substantive additions. The remaining issues concerned the CMP, review and survey frequency, lizard fence inspection, and rehabilitation of disturbed areas.

- 640 **Compensation Management Plan:** DOC sought certification of the CMP as a separate document so that it could be separately updated without the LMP having to be varied. Meridian opposed a certification process or wording that would extend compensation beyond what had been agreed. We agree with DOC that the CMP should exist outside of the LMP and needs to be certified separately for that to be achieved. We also find that DOC should be engaged on the final details of the compensation proposed before the

plan is lodged. That engagement is important given DOC's technical role and its involvement in the identified compensation area. However, we do not require further engagement on the quantum of compensation – as that has been offered by Meridian and is not reviewable by us or DOC. The final condition should require meaningful DOC engagement on the implementation of compensation measures, while leaving the final responsibility for preparing and implementing the plan with the approval holder subject to the conditions.

- 641 **Review and survey frequency:** DOC sought five-yearly review or survey requirements aligned with threat classification reviews. Meridian supported the Panel's 10-yearly review approach, with additional surveys at 20 and 30 years, and opposed five-yearly surveys as unjustified. We retain the 10, 20 and 30-year review approach. That provides periodic checks across the life of the 35-year approval while recognising that the works themselves are expected to occur over a materially shorter construction period. In our assessment, five-yearly review would be more onerous than necessary on the evidence before us.
- 642 **Lizard fence inspection:** DOC sought herpetologist inspection after installation and after new rock is introduced, plus annual inspection. Meridian opposed the additional inspection steps on the basis that the fence has already been designed by a herpetologist and annual inspection is provided for. We accept Meridian's position. The annual inspection requirement, together with the LMP requirements, is sufficient to manage the risk. We do not consider additional herpetologist inspection after installation or after each introduction of new rock is necessary.
- 643 **Rehabilitation:** DOC sought a further condition requiring rehabilitation of all disturbed areas to provide lizard habitat. Meridian opposed that new condition. We accept Meridian's position. The conditions already require lizard management, exclusion, salvage where necessary, compensation and ongoing review. A further broad rehabilitation condition directed to all disturbed areas would not be sufficiently tied to the specific residual lizard effects identified and would risk duplicating or cutting across the LMP and compensation requirements.
- 644 **Condition implications:** The WA approval conditions are to require DOC engagement on compensation locations and methods before lodgement of the Compensation Management Plan, but no certification requirement. The 10, 20 and 30-year review approach is retained. DOC's additional lizard fence inspection and rehabilitation conditions are not included.

44.8 NZTA traffic management and SH8 pavement conditions

- 645 **Positions:** NZTA identified that a previously offered pavement survey and repair condition had not been included in the draft conditions. NZTA sought conditions requiring temporary traffic management through an authorised Traffic Management Plan for SH8, pre- and post-construction condition surveys for SH8 pavement, kerbs and channels used by heavy construction vehicles, and repair of any construction-related damage within one month. NZTA also sought an advice note about Corridor Access Request requirements. No substantive Meridian opposition to those requirements was identified in the conditions material reviewed.
- 646 **Panel evaluation and finding:** We include the NZTA traffic management and pavement condition requirements. The rock-armouring works will involve heavy vehicle movements and construction activity in proximity to SH8. Conditions requiring an authorised traffic

management process, baseline and post-works condition surveys, and repair of any construction damage are practical, effects-based and enforceable. They are also consistent with NZTA's role as road controlling authority for the state highway network and with the need to manage construction traffic effects safely.

- 647 **Condition implication:** The agreed NZTA conditions and advice note are to be included in the appropriate condition set, subject to final drafting alignment with CRC262543 and any other relevant consent conditions.

44.9 LINZ notification for Crown land, Pines Camp and Nohoanga access

- 648 **Positions:** The Minister for Land Information sought amendment to CRC262543 Condition 5a requiring LINZ to be notified at least 10 working days before commencement of works. The request was made because temporary works and closures for the left abutment may affect LINZ-managed land, including Pines Camp and a Ngāi Tahu Nohoanga site. No substantive Meridian opposition was identified in the conditions material reviewed.

- 649 **Panel evaluation and finding:** We include the LINZ notification requirement. The condition is narrow, practical and directed to implementation effects on land and access interests that sit alongside, but are not fully resolved by, the FTAA approval. Early notice to LINZ will assist coordination of any temporary works or closures affecting Crown land, Pines Camp and Nohoanga access. The condition does not alter the scope of the approval or impose a substantive operational constraint on lake lowering or construction methodology.

- 650 **Condition implication:** CRC262543 is to include a requirement to notify LINZ at least 10 working days before commencement of relevant works, with final drafting to avoid duplication with TRONT / Kā Rūnaka notification requirements and to include the correct contact details.

44.10 Kā Rūnaka / TRONT air-discharge condition refinements

- 651 **Positions:** Kā Rūnaka and TRONT sought two minor refinements to CRC262542: restoring the previous structure of Condition 4 so that campsite/campervan closure notification is separate from the 10-working-day pre-start notification, and adding TRONT to Condition 5 for notification when works recommence after discontinuance. No substantive Meridian opposition was identified.

- 652 **Panel evaluation and finding:** We accept these refinements. They are consistent with the cultural and access matters addressed elsewhere in the decision and conditions, and they improve clarity in the operation of the air-discharge condition set. Separating closure notification from general pre-start notification will make the condition easier to administer, and adding TRONT to recommencement notification appropriately reflects its interest in ongoing engagement and awareness of works affecting the Lake Pūkaki area.

- 653 **Condition implication:** CRC262542 is to be amended to restore the separate notification structure for campsite/campervan closures and to add TRONT to the recommencement notification requirement.

44.11 Overall conditions finding

- 654 For these reasons, we are satisfied that the final RMA and WA condition sets are appropriately tailored to the approvals granted. The conditions respond to the key environmental, cultural, engineering, traffic and implementation matters raised through comments on draft conditions, while avoiding operational controls that would materially undermine the project benefits or extend beyond the scope of the temporary eased-access approval.
- 655 We are also satisfied that the final conditions are no more onerous than necessary for the purposes of section 83 and meet the requirements of section 84. In particular, we have rejected proposed conditions that would reintroduce SO trigger requirements, impose a new broader Lake Pūkaki operating regime, or extend monitoring and management obligations beyond the effects sufficiently connected to the approved activities. Conversely, we have included additional or refined conditions where they provide necessary safeguards, including for Tekapo B, SH8 traffic and pavement effects, LINZ notification, Kā Rūnaka / TRoNT notification, Tasman Delta wetland management, and lizard compensation implementation.
- 656 Subject to those conditions, and for the reasons set out in the preceding parts of this decision, we find that the conditions adequately avoid, remedy, mitigate, monitor or otherwise manage the adverse effects and implementation risks associated with the approvals granted.
- 657 To the extent the final set contains minor errors, the Panel notes it has powers under section 89 to make minor corrections.

PART N: RMA 1991

- 658 Schedule 5, clause 17 of the FTAA requires us, for the RMA approvals, to take into account the purpose of the FTAA, giving that purpose the greatest weight, together with the relevant RMA decision-making provisions, including sections 5, 6 and 7. We have approached that assessment on the basis set out in Part E of this decision. That approach does not require us to disregard the RMA framework. It requires us to assess the RMA matters through the modified FTAA decision-making framework, and to give greatest weight to the FTAA purpose where any tension arises.
- 659 On the facts of this Application, we do not consider there is any material tension between the purposes of the two statutes. The project enables more efficient and flexible use of an existing renewable hydro-electricity storage resource for a limited period, and provides permanent resilience works to protect the Pūkaki Dam when lower lake levels occur. In that respect, it enables the use and development of natural and physical resources in a way that supports the social and economic wellbeing of people and communities, while also supporting the health and safety interests associated with secure electricity supply and resilient dam infrastructure.
- 660 We have assessed the principal adverse effects of the project in detail. For the rock-armouring works, we have found that dust, water quality, lizard, traffic, recreational access, landscape and socio-economic effects are capable of being avoided, remedied, mitigated, monitored or compensated through the final conditions. For lake lowering, we have found that effects on cultural values, groundwater users, wetland hydrology, lakeside structures, lakebed dust, shoreline geomorphology, landscape and visual values, socio-economic values, natural hazards and dam safety are acceptable in the context of

the temporary approval, the existing working hydro-storage environment, the effects already contemplated by the existing consent and plan framework, and the safeguards capable of being achieved by conditions.

- 661 In reaching that view, we have had particular regard to the matters in sections 6 and 7 RMA that are engaged by the Application. The decision recognises the relationship of Kā Rūnaka and Ngāi Tahu with Lake Pūkaki and associated cultural values, the statutory acknowledgement and Nohoanga context, the ecological and landscape values of the lake and Tasman Delta, the efficient use and development of renewable electricity infrastructure, the benefits to be derived from the use and development of renewable energy, and the need to manage finite water and ecological resources carefully. The final conditions reflect those matters through notification, management plan, monitoring, traffic, lizard compensation and wetland management requirements.
- 662 We are satisfied that the project promotes sustainable management for the purposes of section 5 RMA. It provides for important national and regional social and economic wellbeing outcomes through improved electricity system flexibility, potential electricity cost and emissions benefits, and improved dam resilience. At the same time, the adverse effects identified have either been avoided, remedied, mitigated, monitored or compensated, or are of a scale and duration that we consider acceptable having regard to the receiving environment, the existing hydro-electricity operating framework and the final conditions.
- 663 For the same reasons, the project also achieves the purpose of the FTAA. It is an infrastructure and development project with significant regional and national benefits. The FTAA purpose is not achieved merely because the project has benefits. It is achieved because those benefits are substantial, the project is directed to existing nationally significant electricity infrastructure, and the adverse effects and implementation risks do not materially detract from the delivery of those benefits.
- 664 We therefore find that the RMA approvals are consistent with Part 2 of the RMA, as modified by Schedule 5, clause 17, and that the project achieves the purposes of both the RMA and the FTAA.

PART O: FTAA, SECTION 3

- 665 The Panel's decision is subject to the purpose of the FTAA, contained in section 3, namely to facilitate the delivery of infrastructure and development projects with significant regional or national benefits.
- 666 The Panel finds that the project will deliver development with significant national and regional benefit (refer Part H).

PART P: OVERALL ASSESSMENT

- 667 Section 81 requires us to decide whether to grant or decline each approval sought. In doing so, we must apply the applicable assessment provisions and may decline an approval only in accordance with section 85. Section 85 does not require decline simply because adverse effects exist, or because an activity is inconsistent with or contrary to a statutory instrument or planning document. The relevant discretionary decline question is whether there are one or more adverse impacts and whether those adverse impacts are sufficiently significant to be out of proportion to the project's regional or national

benefits, taking into account conditions and any proposed mitigation, offsetting or compensation.

- 668 Our assessment of that question draws together the findings made throughout this decision. We have found that the project will deliver significant regional and national benefits. Those benefits include the more efficient and flexible use of Lake Pūkaki storage within the WPS, support for electricity system reliability and competition during a period of near-term system pressure, potential reductions in electricity system costs and emissions, and the permanent improvement of dam resilience through the rock-armouring works. Those benefits are connected to existing nationally significant renewable electricity infrastructure and are central to the purpose for which the project was referred under the FTAA.
- 669 We have also found that the adverse effects of the project do not materially weigh against those benefits. It is temporary in relation to eased access to lower lake levels, and permanent only in relation to the physical dam resilience works. The receiving environment is a modified working hydro-storage lake within the WPS. Some effects are unavoidable if lower lake levels occur, particularly in relation to exposed lakebed, landscape change, wetland hydrology and ecological values. However, we have not found those effects to be of a scale, duration or consequence that would outweigh or be out of proportion to the national and regional benefits of the project.
- 670 The matters most strongly advanced against approval were the electricity system risk issues raised by Genesis and Transpower, the Tekapo B tailrace risk, effects on Tasman Delta wetlands and ecological values, dust, lizard effects, and the implications of WAP Rule 12. We have addressed each of those matters in the body of this decision. In summary, we have preferred the evidence supporting eased access as delivering system benefits over the short approval period; we have imposed conditions to manage the Tekapo B risk to the extent necessary and proportionate; we have required ecological, lizard, dust and construction management measures; and we have taken WAP Rule 12 into account without treating it as determinative under the modified FTAA framework.
- 671 The condition set is material to our overall assessment. We are satisfied that the final conditions are appropriately directed to the effects and risks of the approved activities and are no more onerous than necessary. The conditions do not remove all risk or all effects. That is not the statutory test. They do, however, provide a practical and enforceable framework for notification, monitoring, adaptive management, construction controls, ecological management, lizard compensation, traffic management, Tekapo B risk management and engagement with parties whose interests may be affected by implementation.
- 672 Having weighed the project's benefits and adverse impacts as a whole, we find that the project achieves the purpose of the FTAA. The approvals will facilitate delivery of an infrastructure project with significant national and regional benefits. The residual adverse impacts are not sufficiently significant to be out of proportion to those benefits, either individually or cumulatively, after taking into account the final conditions. We therefore find that there is no basis to decline the RMA approvals or the WA approval under section 85.
- 673 For those reasons, and subject to the final conditions in Appendices A1 and A2, we grant the approvals sought.

PART R: FINAL DECISION

- 674 The Panel has considered the Application and supporting information as well as the comments received on it and on the draft conditions, as well as the further information provided as a result of comments received from other participants and the subsequent refinement of the Application. We thank all those who commented for their contributions.
- 675 Overall, the Panel is satisfied that the matters set out in section 81 have been addressed appropriately and that the purpose of the FTAA is achieved. In reaching that view, the Panel has had regard to the actual and potential effects on the environment of allowing the proposal as set out above. The Panel has also had regard to the relevant planning documents.
- 676 The Panel determines to grant the RMA approvals sought subject to the Conditions attached as Appendix A1 to this Decision, and to approve the WA Act approval sought subject to the Conditions attached as Appendix A2.
- 677 As required by section 99 the persons listed in that section are entitled to appeal and must commence any appeals within the 20-working day period from the day this Decision is published under section 88(3).



Kitt R M Littlejohn
(Chair)



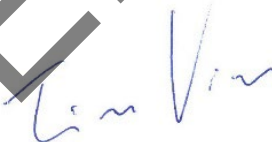
Dr Kaley Crawford-Flett
(Member)



Tony Cussins
(Member)



John Iseli
(Member)



Tim Vial
(Member)

APPENDIX A1: CONDITIONS OF RMA CONSENTS

SUPERSEDED

CRC262540 – Section 14 Consent to take and use water for hydroelectricity generation (Operation of Lake Pūkaki below 518 m RL)

SCOPE

Note: This consent authorises the taking and using of water in Lake Pūkaki from between 518.0 m RL and 513 m RL for hydroelectricity generation purposes.

This consent is in addition to consent CRC240441 held by the consent holder, which also allow it to operate Lake Pūkaki between a Maximum Consented Storage Level of 532.5 m RL and a Normal Consented Minimum Lake Level of 518 m RL and an Alert Minimum Control Level (Security Supply Alert) of 515.0 m RL.

It is also in addition to the consent holder's ability to 'operate Lake Pūkaki down to 513.0 m RL as a permitted activity under Rule 3, Table 4(ii)(b) and Rule 17 of the Waitaki Catchment Water Allocation Regional Plan.

GENERAL CONDITIONS

1. This consent will expire on 31 December 2028 unless surrendered or cancelled at an earlier date.
2. At any time the consent holder is exercising this consent it shall also comply with all conditions of CRC240441 with the exception of conditions relating to minimum lake level.
3. The consent holder must advise Canterbury Regional Council (Attention: Manager Compliance), Te Rūnanga o Moeraki, Te Rūnanga o Arowhenua, and Te Rūnanga o Waihao, Transpower New Zealand Limited and Genesis Energy Limited when lake levels reach 519.0 m RL (i.e. before Lake Pūkaki is reduced below the Minimum Lake Level of 518.0 m RL provided for in CRC905321.7.
4. Whenever the level of Lake Pūkaki is below 518 m RL pursuant to the exercise of this consent, the consent holder must advise Canterbury Regional Council (Attention: Manager Compliance), Te Rūnanga o Moeraki, Te Rūnanga o Arowhenua, and Te Rūnanga o Waihao weekly of:
 - a. the strategies adopted to restore Lake Pūkaki to the Normal Consented Minimum Lake Level of 518 m RL; and
 - b. the lake level at the end of each reporting week;
 - c. the estimated timeframe for returning Lake Pūkaki to the Normal Consented Minimum Lake Level; and
 - d. the measures adopted to mitigate adverse effects of operating the lake below the Normal Consented Minimum Lake Level, including effects on cultural values and mahinga kai.
5. The lake level measurement and reporting under this consent shall be the same as is required under the main operating consent CRC240441.
6. Every time the consent holder exercises this consent to operate Lake Pūkaki below 518 m RL, the consent holder must, no later than eight weeks following the completion of each lowering event, provide Canterbury Regional Council (Attention: Manager Compliance), Te Rūnanga o Moeraki, Te Rūnanga o Arowhenua, and Te Rūnanga o Waihao with the following information:
 - a. the date and time at which the lake was lowered below 518 m RL;

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- b. the levels at which the Lake Pūkaki was managed over the duration of the lowering event;
 - c. the duration of the lowering event;
 - d. a written description of the circumstances leading to and applying during the lowering event; and
 - e. a written description of the measures adopted to mitigate adverse effects of operating the lake below the Normal Consented Minimum Lake Level, including effects on cultural values and mahinga kai.
7. If the information provided in condition 5 indicates that the timing, duration, frequency and extent of any lowering operation is different to what was predicted in application FTAA-2510-1120, then the consent holder shall provide a detailed explanation of the differences and the circumstances of their occurrence to the Canterbury Regional Council (Attention: Manager Compliance) within 3 months of the lowering event.

KAKI MONITORING

8. The consent holder shall notify the Department of Conservation when the lake water level is forecast to drop below 518 m RL and request them to undertake Kaki monitoring in accordance with the agreement between the Department of Conservation and the consent holder dated 30th August 2012. The results of any monitoring shall be provided to the Canterbury Regional Council.

ECOLOGICAL MANAGEMENT

9. Before the first exercise of this consent, the Consent Holder must engage a Suitably Qualified and Experienced Person to prepare an overarching Wetland Ecological Management Plan (**WEMP**) for the Tasman Delta in accordance with Condition 10 to 12. The WEMP shall be provided to the Canterbury Regional Council (Attention: Manager Compliance) immediately upon completion.
10. The objectives of the WEMP are to:
- a. Detail the ecological management programme that will be implemented to avoid, remedy, or mitigate the impacts on the Tasman Delta wetland ecological values when the lake water level is forecast to drop below 518 m RL;
 - b. Document the management measures that will be adopted by the Consent Holder, including the restoration, management and maintenance of the Tasman Delta wetland ecological features and values; and
 - c. Ensure that any long-term effects are appropriately managed through monitoring, adaptive management where appropriate, and implementation of appropriate responses.
11. The WEMP must outline procedures to address the effects of lowering the lake below 518 m RL on the Tasman Delta wetland ecological values, including measures to:
- a. avoid where practicable, or otherwise minimise, adverse effects on ecological and biodiversity values; and
 - b. achieve the purposes and their expected ecological outcomes.

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12. The WEMP must be prepared in consultation with the Department of Conservation, Te Rūnanga o Arowhenua, Te Rūnanga o Waihao and Te Rūnanga o Moeraki, with at least 15 working days allowed for these parties to provide comments on a full draft of the WEMP prior to submission to the Council.

GABION ROCK WALL INSPECTIONS

13. The consent holder shall inspect the nature of rip-rap adjacent to the gabion rock wall located at SH80 Mount Cook Road (SH 80 RS 17 RP 12.64 – 12.7). Inspections shall be undertaken weekly at any time Lake Pūkaki falls below 518m RL. Where any erosion of the rip-rap is observed, the consent holder shall be responsible for rectifying the situation. The consent holder shall provide a record of inspections, findings and how any erosion was rectified within 8 weeks of Lake Pūkaki returning to 518m RL.

TEKAPO B POWER STATION AND TAILRACE STRUCTURE

14. Unless the consent holder provides the Canterbury Regional Council with the written agreement of Genesis that Conditions 15-27 do not need to be complied with then the consent holder must comply with Conditions 15 to 27 prior to the first exercise of this consent.

Advice note: *The Tekapo B Power Station tailrace, weir and chute ('Tekapo B tailrace') are situated on land and infrastructure owned or controlled by Genesis Energy Limited and not the consent holder. This consent does not authorise the consent holder to enter Genesis land or undertake works on Genesis land or infrastructure without any access permission or approval that may otherwise be required. The consent holder remains responsible for obtaining any necessary access or approval from Genesis or any other relevant landowner before undertaking works on land or infrastructure it does not own or control. Conditions 15 to 27 do not impose obligations on Genesis Energy Limited. If the consent holder and Genesis Energy Limited reach an alternative agreement that manages the potential effects of exercising this consent on the Tekapo B tailrace, the consent holder may provide that agreement to Canterbury Regional Council for the purposes of Condition 14.*

15. Within 20 working days of commencement of this consent, the consent holder must, after consultation with Genesis, identify and provide to Genesis a list of at least three independent persons experienced in the design and construction of hydraulic structures ("Suitably Qualified and Experienced Practitioners" or "SQEP") that the consent holder considers are appropriate to undertake the requirements contained in Conditions 19 to 25 of this consent.
16. Provided that Genesis confirms a preferred SQEP from the list within 5 working days, the consent holder must appoint the SQEP selected by Genesis.
17. If Genesis does not select a SQEP within 5 working days, the consent holder must appoint a SQEP from the list and, within a further 5 working days, inform Genesis who the appointed SQEP is.
18. The consent holder may, as necessary in the circumstances, replace the appointed SQEP with another SQEP, provided that the process set out in Conditions 15, 16 and 17 is repeated.

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19. Prior to the first lowering of Lake Pūkaki below 518.0 m RL in accordance with this consent, and following consultation with Genesis, the consent holder must have engaged the SQEP to prepare a Repair Strategy and Associated Works Programme for the Tekapo B tailrace, the purpose of which is to set out the procedures to be followed and physical works to be implemented to ensure that any lake level lowering authorised by this consent will not adversely affect the Tekapo B tailrace or the operation of the Tekapo B Power Station.

The SQEP may commission further investigations or reports at the consent holder's expense that the SQEP considers reasonably necessary to inform the nature and extent of work included in the Repair Strategy and Associated Works Programme.

20. The Repair Strategy and Associated Works Programme must be prepared by the SQEP following consultation with Genesis and Meridian, and must, as a minimum:
- a. consider all recommendations contained within the WSP memorandum 'Tekapo B Power Station Submerged Weir – Damwatch Document Reviews' dated 26 March 2026 and the WSP report 'Tekapo Submerged Weir Structural Condition Assessment' dated 25 March 2026, including but not limited to:
 - i. reinstatement of damaged areas of the rock lining of the chute;
 - ii. repair of concrete defects;
 - iii. treatment of exposed reinforcement;
 - iv. if the structural integrity is found to be compromised, installation of new steel dowels to provide a positive and reliable connection between the concrete cap and base;
 - v. investigation of unusual sill beam survey results and potential cracking; and
 - vi. removal of silt and vegetation for detailed inspection and concrete testing;
 - b. incorporate any additional requirements considered necessary by the SQEP to satisfy Condition 19;
 - c. provide timeframes and sequencing for the works required by (i) and (ii) above to be completed, including distinguishing between: (i) any works or measures that the SQEP considers necessary before the first lowering of Lake Pūkaki below 518.0 m RL to avoid adverse effects on the Tekapo B tailrace or the operation of the Tekapo B Power Station; and (ii) any works or measures that the SQEP considers cannot practicably be undertaken until lower lake levels expose the relevant structure and may therefore be programmed to occur during the consent term as lake levels allow;
 - d. identify the approvals and resource consents (if any) required to be obtained by the consent holder in order to implement the Repair Strategy and Associated Works Programme;
 - e. set out the post construction monitoring and management measures required to ensure that the lowering of the lake level below 518.0 m RL does not

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- adversely affect the Tekapo B tailrace or the operation of the Tekapo B Power Station;
- f. be certified by the SQEP as satisfying the requirements of this Condition 20; and
 - g. be provided to Genesis and the Canterbury Regional Council (Attention: Manager Compliance) immediately on completion.
21. The Repair Strategy and Associated Works Programme may be amended from time to time, provided that:
- a. Genesis has been consulted regarding the details of any amendment; and
 - b. any amendment has been certified by the SQEP, and a copy provided to Genesis and the Canterbury Regional Council (Attention: Manager Compliance), prior to any amendment being implemented.
22. Before the first lowering of Lake Pūkaki below 518.0 m RL under this consent, the Consent Holder must:
- a. complete the works or measures identified in the Repair Strategy and Associated Works Programme that are required to avoid adverse effects on the Tekapo B tailrace or the operation of the Tekapo B Power Station which can be completed before the first lowering of Lake Pūkaki below 518.0 m RL in accordance with that Strategy and Programme and have them certified by the SQEP once completed; and
 - b. provide Genesis and Canterbury Regional Council (Attention: Manager Compliance) with (i) written confirmation that the requirements of Condition 22(a) have been satisfied, including the SQEP certification; (ii) the monitoring, contingency and response measures stipulated by the SEQP in relation to the completed works; and (iii) the programme for any further staged works to be completed under Condition 23(a).
23. Whenever the level of Lake Pūkaki is below 518.0 m RL in accordance with this consent, the consent holder must:
- a. complete, as lake levels allow, the works identified in the Repair Strategy and Associated Works Programme that are required to avoid adverse effects on the Tekapo B tailrace or the operation of the Tekapo B Power Station but which cannot practicably be undertaken until lower lake levels expose the relevant structure, and have them certified by the SQEP as completed; and
 - b. provide Genesis and Canterbury Regional Council (Attention: Manager Compliance) with (i) written confirmation of the works completed in accordance with Condition 23(a), including the SQEP certification; and (ii) the monitoring, contingency and response measures stipulated by the SEQP in relation to the completed works; and
 - c. ensure that a minimum Tail Water Level ("TWL") of 518.0 m RL is maintained between the Tekapo B Power Station and the Tekapo Tailrace at all times when Tekapo B is operating and water is flowing through the station, as measured at the Tekapo B Power Station or an alternative suitable location certified by

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the SQEP and confirmed in writing to Genesis and Canterbury Regional Council (Attention: Manager Compliance).

24. Monitoring results collected in accordance with Condition 20(e) must be provided to the SQEP, who must be instructed by the consent holder to assess whether the Repair Strategy and Associated Works Programme avoids the adverse effects of lowering Lake Pūkaki below 518.0 m RL on the Tekapo B tailrace or the operation of the Tekapo B Power Station. A copy of that assessment must be provided to Genesis and Canterbury Regional Council (Attention: Manager Compliance) immediately on completion.
25. Should the SQEP advise that the Repair Strategy and Associated Works Programme will not avoid the adverse effects of lowering Lake Pūkaki below 518.0 m RL on the Tekapo B tailrace or the operation of the Tekapo B Power Station, the SQEP must be instructed by the consent holder to determine what intervention is necessary, including timeframes for such intervention. A copy of that assessment must be provided to Genesis and Canterbury Regional Council (Attention: Manager Compliance) immediately on completion.

For the purposes of this condition, intervention may include, but is not limited to:

- a. modifications or repairs to the Tekapo B tailrace and environs;
 - b. additional monitoring;
 - c. changes in operation of the Waitaki Power Scheme; and
 - d. promptly restoring the level of Lake Pūkaki to 518.0 m RL.
26. The consent holder must promptly implement the intervention measures identified by the SQEP in accordance with Condition 25, and Genesis and the Canterbury Regional Council (Attention: Manager Compliance) must be advised, in writing, immediately on completion.
 27. Genesis must be notified immediately, and no later than 24 hours afterwards, of any monitoring or assessment indicating that the required TWL in Condition 23 is not, or may not be, maintained.

DUST

28. The consent holder shall prepare and implement a communication plan to advise landowners adjoining Lake Pūkaki of potential increases in dust when the lake is expected to drop below 518 m RL. The communication plan shall include details of which landowners will be contacted and the required mechanism for contacting them.
29. A record of all complaints relating to dust discharged from the margins or exposed bed of Lake Pūkaki must be maintained and shall include:
 - a. The location where the dust was detected by the complainant;
 - b. The date and time when the dust was detected;
 - c. A description of the wind speed and wind direction when the dust was detected by the complainant;
 - d. The most likely cause of the dust detected; and

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- e. Any corrective actions undertaken by the Consent Holder to avoid, remedy, or mitigate the effects of the dust detected by the complainant.

The complaints record shall be provided to the Canterbury Regional Council (Attention: Compliance Manager) on request.

REVIEW

30. The Canterbury Regional Council may, once per year, on any of the last five working days of May or November, serve notice of its intention to review the conditions of this consent for the purposes of:
- a. Dealing with an adverse effect on the environment occurring as a result of the exercise of this resource consent; or
 - b. Requiring best practicable options to be adopted by the consent holder to remove or reduce any adverse effect on the environment as a result of the exercise of this resource consent; or
 - c. Requiring the consent holder to carry out monitoring and reporting instead of, or in addition to, that required by the resource consent; or
 - d. Requiring the consent holder to comply with a relevant rule in an operative regional plan.

DATE OF GRANT: 3 July 2026 (per FTAA-2510-1120)

CRC262541 – Section 15 Consent to discharge contaminants to land or water

SCOPE

Note: This consent authorises the discharge of contaminants (including sediment-laden water, dust deposition, and incidental hydrocarbon discharges) to land and water arising from dam protection works at Lake Pūkaki between 510.5 and 518.0 m RL associated with the Lake Pūkaki Dam Resilience Works Project.

GENERAL CONDITIONS

1. All discharges to land and water authorised by this consent shall be located at Lake Pūkaki within the area identified as 'works area' on Plan CRC262541 (attached) at or about map reference NZTM 1371515E, 5103020N.
2. Construction sequencing and staging shall occur in general accordance with Section 9.6 of the Rip-rap design and construction methodology report included with application FTAA-2510-1120. Specifically, it shall be as follows:
 - a. Tranche 1 – Main Dam (rip-rap placement 518.6 m RL to 514.5 m RL). Establish a key toe at 513.0 m RL.
 - b. Tranche 1 – left and right abutment (rip-rap placement 517.0 m RL to 513.0 m RL).
 - c. Tranche 2 – Main Dam (rip-rap placement 513.0 m RL to 510.5 m RL).
 - d. Tranche 2 – Abutments (rip-rap placement 513.0 m RL to 510.5 m RL).
3. All practicable measures shall be undertaken to prevent oil and fuel leaks from vehicles and machinery including but not limited to:
 - a. There shall be no storage of fuel or refuelling of vehicles and machinery within 20 metres of flowing water or water bodies.
 - b. Fuel shall be stored securely or removed from the site overnight.
 - c. The pump shall be attended at all times during refuelling.
 - d. Drip trays shall be used at all times during refuelling.
 - e. A spill response kit shall be kept on site at all times.

EROSION AND SEDIMENT CONTROL PLAN

4. The Canterbury Regional Council shall be notified at least ten working days:
 - a. prior to commencement of works; and
 - b. prior to the re-commencement of works, where works have been discontinued for more than 8 days.Notification shall include:
 - c. Consent number.
 - d. Proposed start and end dates.
 - e. Name, address and contact telephone number of the person supervising the works.
5. Before discharging, the consent holder shall provide a copy of this consent to staff and contractors undertaking the activities authorised by this consent and explain to them how to comply with the conditions.

CRC262541 – Section 15 Consent to discharge contaminants to land or water

6. Prior to the first exercise of this consent, the consent holder shall establish and maintain an Erosion and Sediment Control Plan ('ESCP') in accordance with the Canterbury Regional Council Erosion & Sediment Control Toolbox for Canterbury. The objective of the ESCP is to set out the measures to be implemented during construction to minimise as far as reasonably practicable the erosion and the discharge of sediment and other contaminants into Lake Pūkaki and the Pūkaki Riverbed.
7. The ESCP shall include the following information as appropriate to the scale, location and type of earthworks:
 - a. contour information
 - b. erosion and sediment controls including specific design location, dimensions and capacity
 - c. details of measures to control sediment runoff, dust and the removal of soil, debris and other materials from public roads or places.
 - d. catchment boundaries for the sediment controls
 - e. discharge locations for each catchment/sediment control device
 - f. details of measures for managing any contaminated land
 - g. details of construction methods to be employed including timing and duration
 - h. identification of the suitably qualified persons to manage the erosion and sediment controls
 - i. maintenance requirements
 - j. reinstatement provisions
 - k. Provision for monitoring of any discharges including triggers that may warrant further management responses
 - l. practicable measures to be undertaken to prevent the spill of fuel, hydraulic fluid, or other potential liquid contaminants, including but not limited to requirements that:
 - i. No fuel may be stored, or vehicles or machinery refuelled within 20 metres of the lake or flowing water.
 - ii. Fuel, hydraulic fluid and other potential liquid contaminants shall be stored securely or removed from site overnight.

Advice Note: The Canterbury Regional Council Erosion & Sediment Control Toolbox for Canterbury can be found at <http://esccanterbury.co.nz/>

8. Before first exercise of this consent, the consent holder must provide a copy of their proposed ESCP to the Canterbury Regional Council (attention: Manager Compliance) for confirmation that it complies with the conditions of this consent (the 'Approved ESCP'). If no response from Canterbury Regional Council is provided within 20 working days of submitting the plan for certification the consent holder shall proceed as if the plan has been approved.
9. The ESCP may be amended and changed by the consent holder provided such amendments are consistent with the objective of minimising any effects of sediment or construction on the lake environment. An amended ESCP shall be submitted to Canterbury Regional Council (attention: Manager Compliance) for confirmation that it complies with the conditions of this consent.

CRC262541 – Section 15 Consent to discharge contaminants to land or water

10. An updated ESCP must be prepared in accordance with the requirements of Conditions 6 and 7 every five years after the date the Approved ESCP is approved. The updated ESCP must include consideration of any changes to the sensitivity of the receiving environment, and improvements in sediment discharge mitigation and monitoring methods. The updated ESCP shall be submitted to Canterbury Regional Council (Attention: Manager Compliance) for certification that it complies with the conditions of this consent.
11. The consent holder may implement any amended ESCP after 20 working days of it being submitted for certification if Canterbury Regional Council has not notified the consent holder of its decision. If Canterbury Regional Council notifies the consent holder that the amended ESCP does not comply with the conditions of this consent the consent holder shall immediately revert (within 5 working days) to implementing the Approved ESCP.
12. When discharging in and adjacent to water, the consent holder shall, in accordance with the Erosion and Sediment Control Plan (ESCP), ensure that sediment losses to natural water are minimised where practicable and that silt control measures are in place.
13. During the period of the discharges, erosion and sediment controls shall be implemented to mitigate sedimentation effects associated with the construction of the rock armouring in accordance with the ESCP approved as the part of the grant of this consent.

TEMPORARY REINSTATEMENT OF THE SITE

14. In the event the lake is forecast to rise above the works level, and works remain incomplete, the consent holder shall ensure that work areas within the predicted area of inundation are rehabilitated to minimise any loss of material.

FINAL REINSTATEMENT OF THE SITE

15. Within 14 days of the final completion of rock armouring activities at the site:
 - a. All temporary deposits of gravel, sand and other natural material (including reject material) shall be levelled to the natural ground level or removed from site.
 - b. All created access ramps will be removed, and the area shall be reshaped and formed to a state consistent with the surrounding land.
 - c. Any temporary structures and construction materials shall be removed.
 - d. Re-grassing of any remaining areas of bare ground to match the surrounding existing land.
 - e. Rock stockpile areas may be retained for other necessary maintenance works associated with other aspects of the Lake Pūkaki and related engineering structures.
16. In the event that any contaminated soil or material is uncovered by the works that has not been already identified, a contamination discovery protocol must be implemented, including but not limited to the following steps:

CRC262541 – Section 15 Consent to discharge contaminants to land or water

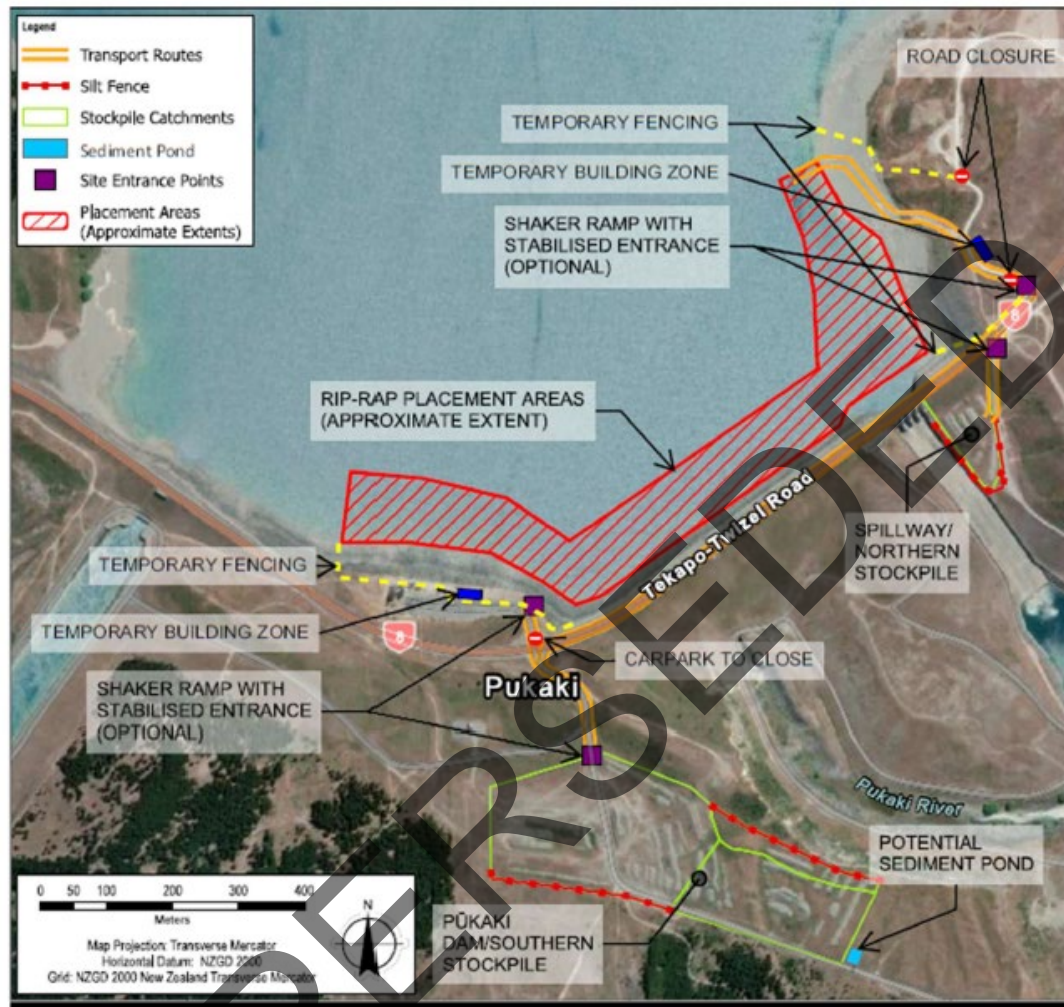
- a. Earthworks within ten metres of discovered contaminant soil or material must cease immediately;
 - b. All practicable steps must be taken to prevent the contaminated material becoming entrained in stormwater. Immediate steps must include, where practicable:
 - i. Diverting any stormwater runoff from surrounding areas away from the contaminated material; and
 - ii. Minimising the exposure of the contaminated material, including covering the contaminants with an impervious cover;
 - c. Notification of the Canterbury Regional Council (Attention: Contaminated Sites Manager), within 24 hours of the discovery;
 - d. Earthworks within ten metres of discovered contaminant soil or material must not recommence until a suitably qualified and experienced contaminated land practitioner (SQEP) confirms to Canterbury Regional Council (Attention: Compliance Manager), that continuing works does not represent a significant risk to the environment; and
 - e. All records and documentation associated with the discovery must be kept and copies must be provided to the Canterbury Regional Council upon request.
17. Any material removed from the site during the works that is potentially or confirmed as contaminated, must be disposed of at a facility authorised to receive such material.
18. The Canterbury Regional Council may, once per year, on any of the last five working days of May or November, serve notice of its intention to review the conditions of this consent for the purposes of:
- a. Dealing with an adverse effect on the environment occurring as a result of the exercise of this resource consent; or
 - b. Requiring best practicable options to be adopted by the consent holder to remove or reduce any adverse effect on the environment as a result of the exercise of this resource consent; or
 - c. Requiring the consent holder to carry out monitoring and reporting instead of, or in addition to, that required by the resource consent; or
 - d. Requiring the consent holder to comply with a relevant rule in an operative regional plan.
19. If this consent is not exercised before 3 July 2061, then it shall lapse in accordance with section 125 of the Resource Management Act 1991.

Advice Note: A 35-year duration was sought by Meridian as part of the Fast-track process. 'Exercised' is defined as implementing any requirements to operate this consent and undertaking the activity as described in these conditions and/or application documents.

DATE OF GRANT: 3 July 2026 (per FTAA-2510-1120)

CRC262541 – Section 15 Consent to discharge contaminants to land or water

Works Area – For CRC262541



CRC262542 Section 15 Consent to Discharge Contaminants to Air

SCOPE

Note: This consent authorises the discharge of contaminants to air associated with the Lake Pūkaki Dam Resilience Works and the following activities:

- a. Constructing access tracks and ramps.
- b. Transporting rock from the existing stockpile sites to the temporary construction stockpile areas.
- c. Constructing work benches.
- d. Constructing toe along the Dam.
- e. Rock placement on the Dam.
- f. Rock placement on abutments.
- g. Establishment of temporary buildings within or adjacent to the main carpark and adjacent to the left abutment.
- h. Decommission of all temporary work sites.
- i. Maintenance/management of temporary stockpiles within the construction area.

GENERAL CONDITIONS

1. All discharges to air authorised by this consent shall be located at Lake Pūkaki within the area identified as 'works area' on Plan CRC262541 attached to this consent at or about map reference NZTM 1371515E, 5103020N.
2. No discharge to air authorised by this consent shall cause objectionable or offensive effects, including dust deposits and/or discharges of particulate matter beyond the boundary of the application site defined by Condition 1.
3. The Site Manager, or another nominated person, must be available at all times during rock armouring activities to respond to dust emissions complaints and issues. The contact details shall be displayed on signage at the entrance to the main carpark (being the carpark that services the public toilets, visitor centre and salmon shop at NZTM 1371515E, 5103020N).
4. The consent holder must notify Te Rūnanga o Ngāi Tahu (nohoanga@ngaitahu.iwi.nz), Land Information New Zealand, and Canterbury Regional Council (Attention: Manager Compliance) at least ten working days before the start of any activities authorised by this consent.

The notification shall include:

- a. The proposed start and end dates of the period of work;
 - b. The proposed start and end time of activity on each day during the period of works;
 - c. Where the consent is to be exercised by a person other than the consent holder, the name, address and contact telephone number of the persons exercising the consent; and
 - d. Whether the consent holder is considering closing the campsite and campervan parking area as a result of dust generation arising from the exercise of this consent. (Note: Any decision to close the campsite shall be undertaken in consultation with Te Rūnanga o Ngāi Tahu Nohoanga Team and LINZ).
5. Where works have been discontinued for more than eight consecutive days the Canterbury Regional Council (Attention: Compliance Manager), Te Rūnanga o Ngāi

CRC262542 Section 15 Consent to Discharge Contaminants to Air

Tahu (nohoanga@ngaitahu.iwi.nz), and Land Information New Zealand, shall be re-notified at least five working days prior to the recommencement of works.

DUST MANAGEMENT PLAN

6. The consent holder must produce and comply with a Dust Management Plan ('DMP') at all times.
7. The purpose of the DMP is to provide a framework for managing dust emissions from the activities authorised under this consent to minimise any effects of dust discharges on the surrounding environment. The DMP shall:
 - a. Be prepared in accordance with Schedule 2 of the Canterbury Air Regional Plan;
 - b. Be retained on site at all times;
 - c. Be provided to all persons operating or carrying out the activities authorised by this consent;
 - d. Be prepared by a suitably qualified experienced practitioner in air quality; and
 - e. Include details on how the conditions of this consent will be complied with.

The DMP shall be in accordance with the Dust Management Plan (DRAFT), prepared by GHD Limited, dated 19 May 2026, Version 6, and include:

- a. A description of the site location and the receiving environment;
- b. A system for training employees and contractors to make them aware of the requirements relating to dust mitigation and the conditions of this resource consent;
- c. Identifying staff responsibilities for implementing and reviewing the Dust Management Procedures;
- d. A description of all on-site activities authorised by this consent and dust sources on site;
- e. A description of the weather conditions that trigger the requirement for dust suppression activities;
- f. Details of location(s) of and appropriate installation of an onsite weather station;
- g. The methods to be used for controlling dust at each source during on-site activities including speed restrictions for internal access roads, and additional procedures for handling high risk dust-generating materials;
- h. A description of the methods for the use and source of water for dust suppression on all exposed areas on dry and/or windy days, including how and when water will be applied to maintain damp surfaces;
- i. The frequency and triggers of when water will be used to maintain damp surfaces and when these measures are to commence on dry and/or windy days;
- j. A description of the contingency measures to be used on-site, including sensitive receptor triggers to initiate PM₁₀ monitoring;
- k. Procedures, processes and methods for managing dust when staff are not on site;
- l. Procedures to be undertaken to ensure dust is managed during times when works may be delayed for an extended period of time and upon completion of works; and

CRC262542 Section 15 Consent to Discharge Contaminants to Air

- m. A requirement to visually monitor State Highway 8 road conditions during all works periods and undertake road sweeping if there is excessive deposition on the road surface.

Advice Note: *When water is required for dust suppression, water will be brought to site in water trucks. This will be the responsibility of the contractor. Other consents held by Meridian Energy Ltd do not provide for this use.*

- 8. Before first exercise of this consent, the consent holder must provide a copy of their proposed DMP to Canterbury Regional Council (Attention: Manager Compliance) for confirmation that it complies with the conditions of this consent (the 'Approved DMP'). If no response from Canterbury Regional Council is provided within 20 working days of submitting the plan for certification the consent holder shall proceed as if the plan has been approved.
- 9. The Approved DMP may be amended by the consent holder provided such amendments are consistent with the objective of minimising any effects of dust discharges on the surrounding environment. Any amended DMP shall be submitted to Canterbury Regional Council Attention: Manager Compliance) for certification that it complies with the conditions of this consent.
- 10. An updated DMP must be prepared in accordance with the requirements of Condition 7 at least once every five years from the date the Approved DMP is certified. The updated plan must include consideration of any changes to the sensitivity of the receiving environment, including sensitive receptor locations, and improvements in dust mitigation and monitoring methods. The updated DMP shall be submitted to Canterbury Regional Council (Attention: Manager Compliance) for certification that it complies with the conditions of this consent.
- 11. The consent holder may implement any amended or updated DMP after 20 working days of it being submitted for certification if Canterbury Regional council has not notified the consent holder of its decision. If Canterbury Regional Council notifies the consent holder that the amended DMP does not comply with the conditions of this consent the consent holder shall immediately (within 5 working days) revert to implementing the Approved DMP.

DUST MITIGATION

- 12. The consent holder shall ensure a water cart is held on site for the duration of each works period, with sufficient availability of water to meet dust suppressant requirements in the Approved DMP.
- 13. The consent holder must utilise all reasonably practicable measures to minimise the discharge of dust from rock armouring activities on-site:
 - a. On dry days when dust suppression activities are triggered by the Dust Management Plan; and
 - b. When there is any visible emission of dust from the site.
- 14. The consent holder shall install an on-site weather station during any periods of construction work to monitor wind and rain conditions. The weather station shall:
 - a. Be located on or immediately adjacent to the site in accordance with AS/NZS 3580:14-2014 (Methods for sampling and analysis of ambient air – Part 14 Meteorological monitoring for ambient air quality monitoring applications). If the monitoring station cannot be located in accordance with AS/NZS 580:14-

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2014 an alternative location shall be agreed in writing with the Canterbury Regional Council;

- b. Maintain a date and time stamped electronic record of meteorological monitoring results, recorded as rolling 10-minute averages, which are up-dated every one-minute in real-time;
- c. Send an alarm to the Site Manager (for example via mobile phone) if the wind speed trigger level identified in the Approved DMP is reached or exceeded. The Site Manager must then undertake additional mitigation as deemed necessary;
- d. Be maintained and calibrated in accordance with the manufacturer's specifications; and
- e. All meteorological monitoring data shall be made available to the Canterbury Regional Council on request.

COMPLAINTS

15. A record of all complaints relating to dust discharged to air from the site and associated activities must be maintained and shall include:
 - a. The location where the dust was detected by the complainant;
 - b. The date and time when the dust was detected;
 - c. A description of the wind speed and wind direction when the dust was detected by the complainant;
 - d. The most likely cause of the dust detected; and
 - e. Any corrective actions undertaken by the consent holder to avoid, remedy, or mitigate the effects of the dust detected by the complainant.
16. The record of any complaints and any responses or investigative actions taken as a result shall be provided to the Canterbury Regional Council (Attention: Compliance Manager) on request.

ANNUAL REPORT

17. The consent holder shall prepare an annual monitoring report for the period of 1 July to 30 June to the CRC (Attention: Compliance Manager), by 30 September each year that the consent is exercised (i.e. if there have been no rock armouring activities over the 12-month period no report is required).
18. The annual monitoring report shall include but not be limited to:
 - a. A record of any periods when construction work was undertaken, including the dates and duration of the work.
 - b. The complaints record required in accordance with Condition 14.

ADMINISTRATION

19. The Canterbury Regional Council may, once per year, on any of the last five working days of May or November, serve notice of its intention to review the conditions of this consent for the purposes of:
 - a. Dealing with an adverse effect on the environment occurring as a result of the exercise of this resource consent; or

SUPERSEDED



Dust Management Plan (DRAFT)

Lake Pūkaki Dam Resilience Works

Meridian Energy Limited

19 May, 2026



The Power of Commitment

SUPERSEDED

Project name		Meridian - WPS Pūkaki FTC					
Document title		Dust Management Plan (DRAFT) Lake Pūkaki Dam Resilience Works					
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S4	04	R Wilson/P Stacey	N Eldred		N Eldred		13/4/26
S4	05	P Stacey	N Eldred		N Eldred		13/5/26
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SUPERSEDED

1. Introduction

Meridian Energy Limited (Meridian) will create dust emissions as part of construction works at Lake Pūkaki. GHD was commissioned by Meridian to create a Draft Dust Management Plan (Management Plan) to support site construction works and minimise impacts to the surrounding environment. This plan was developed in accordance with the Good Practice Guide for Assessing and Managing Dust (MFE, 2016), which outlines management options for dust emitting sites.

This document is a preliminary Dust Management Plan. Prior to construction commencing, a final version of this Management Plan will be developed with input from the selected Construction Contractor (Contractor) and submitted to Environment Canterbury for certification. As outlined in Section 1.3 and 7, the Management Plan will be subject to continuous improvement and updates as the project progresses. Management options include prevention, mitigation and rectification measures, all of which may become necessary during the construction of the Project. The management plan outlines strategies to minimise dust impacts at sensitive receptors, resulting from construction processes and activities.

1.1 Purpose of this plan

The purpose of this Management Plan is to:

- Comply with the *Good Practice Guide for Assessing and Managing Dust*, the *Canterbury Regional Air Plan*, and other relevant regulatory requirements.
- Provide a description of the regulatory requirements relevant to dust and air quality that must be met in the course of undertaking construction works at the Project site.
- Identify the most likely sources of dust emissions that will be encountered during the construction works.
- Provide employees and contractors with clear descriptions of their responsibilities in relation to dust management during the construction works.
- Provide a description of the measures to be implemented by Meridian (and their contractors) to manage and mitigate dust impacts associated with operations.
- Provide a process for responding to feedback and complaints from affected sensitive receptors.

1.2 Assumptions

This Management Plan is subject to the following assumptions:

- Based on the proposed works, planned activities include stockpiling, creation of temporary access tracks and material handling and hauling. Planned construction activities for the rip-rap works are described in GHD 2025B.
- Other construction activities, such as bulk earthworks, drilling, or excavation (other than dam materials) are not proposed to occur and are not considered in this Management Plan. Should these activities be required, a revision to this plan will be required.
- No baseline monitoring has been undertaken at this site to support this plan.
- An air quality assessment report, including dispersion modelling, has been considered in the development of this plan (GHD 2025A).
- This plan is to be read in conjunction with the GHD 2025A report and addresses the construction site, emissions sources, and proposed activities only.
- There may be dust impacts arising from construction activities that are not addressed in the GHD 2025A Report. Should additional activities occur, a revision to this Management Plan will be required.
- Compliance with relevant legislation and guidelines.

In addition to relevant legislation and guidelines, Meridian is required to comply with consent conditions when undertaking construction activities at the project site. Draft consent conditions for the project have been developed and include several conditions related to dust management. Once issued, the final consent conditions should be appended to this Management Plan as important information for the selected Contractor.

The criteria presented in Table 1.1 are those presented in New Zealand's *Ambient Air Quality Guidelines* (2002), which provide details about the requirements for this Management Plan. The ambient criteria are applied everywhere in the open air, including residences, businesses, and parks.

Table 1.1 *Ambient air quality guidelines for particulate matter*

Pollutant	Concentration limit (µg/m ³)	Averaging period	Comment
PM ₁₀	50	24 hours	Allowance of one exceedance per year
	20	Annual	-
PM _{2.5}	25	24 hours	-
	10	Annual	-

The Ministry for Environment's *Good Practice Guide for Assessing and Managing Dust* has a 'trigger level' for managing Total Suspended Particulates (TSP) and PM₁₀. These are values that can be used when there is an active monitor that provides feedback to an activity. Exceedance of these values, shown in Table 1.2 means there is a likelihood of exceeding the ambient air quality guidelines, if mitigations are not implemented. Thus, trigger levels may be considered a 'warning' that permits active operations to be modified before exceedances occur.

Table 1.2 *Amenity air quality Trigger Levels for particulate matter in a high sensitivity environment*

Pollutant	Averaging time	Trigger concentration (µg/m ³)
PM ₁₀	1 hour	150
TSP	5-minute	250
	1 hour	200
	24 hours	60

1.3 Revisions and updates

This Management Plan is a working document that requires regular review and updating to ensure ongoing stability and effectiveness for environmental management of the construction process.

The Management Plan shall be reviewed and updated regularly:

- To remain consistent with relevant regulations and guidelines.
- Should improvements to the management measures be required.
- To take advantage of new technologies, innovations, and methodologies that are superior to the management measures presented in the current version of the management plan.
- After changes are made with regards to construction processes that may affect management measures in the current version of the Management Plan.
- If there are repeated non-conformances against dust objectives and targets.
- In the event of repeated complaints (more than once for the same aspect).

Changes made to the Management Plan, as well as the reasons for the changes made, will be documented as part of the review process. Copies of the original Management Plan, as well as all future versions, shall be retained by Meridian and made available upon request. The most recent version will be implemented. A version control log is included in Section 9.

1.4 Responsibilities

The Meridian appointed Contractor for the rock protection works at Lake Pūkaki is responsible for ensuring the completeness and effective implementation of the Management Plan. To accomplish this, the contractor's employees will be trained in this plan and their responsibilities designated. Responsibilities will include the deployment, maintenance, monitoring and inspection of equipment and the performance of effective actions to control and minimise dust emissions.

The Site Manager is responsible for:

- Maintaining this plan.
- Providing training to staff.
- Providing guidance on dust control measures.
- Ensuring inspections are being undertaken.
- Ensuring that proper records are maintained.

SUPERSEDED

2. Site description

2.1 Location

Lake Pūkaki is located in the South Island of New Zealand and makes up part of the Mackenzie Basin. It is located approximately 200 km west-southwest of Christchurch, in the middle of New Zealand's South Island and almost directly south of Aoraki (Mount Cook).

Lake Pūkaki is approximately 30 km long (north to south) and 5 km wide (east to west).. The lake sits at the southern end of the Tasman River delta, which is comprised primarily of glacial till and sediments. The lake comprises a surface area of approximately 172 km² based on an average lake level of 528 m RL.

The Pūkaki High Dam is located at the southern end of the lake. The nominal flow direction in the lake is from north to south, with water discharging from the lake via Gate 18 (into the Pūkaki canal) or Gate 19 into the Pūkaki Riverbed.

The project site will generally encompass the key areas shown on Figure 1, 2 and 3. These are:

- The Northern and Southern stockpiles shown on Figure 1 and the associated haul roads providing access to SH8.
- The left abutment work area shown on Figure 2
- The right abutment and dam face work area shown on Figure 3.
- The sections of SH8 that provide connections between the above work sites.

Note in addition to SH8, the project site is also crossed by the Alps to Ocean/Te Araroa trail (A2O/TA). Figure 1 shows the current location of the A2O/TA trail. Sections will likely require relocation during construction to manage the safety of the trail users. GHD 2025B discusses the possible relocation requirements – these requirements will be confirmed with the A2O/TA trail managers as part of the construction planning process.



Figure 1 Site Layout



Figure 2 Eastern Construction Site



Figure 3 Western Construction Site

2.2 Background

Lake Pūkaki is a modified natural lake and is managed as part of the Waitaki Power Scheme. It is New Zealand's largest hydro storage lake and provides an average of 1,767 GWh of stored water in normal operating conditions, with an additional 546 GWh available during a national hydro shortage.

Meridian is currently authorised to dam the Pūkaki River to control and operate Lake Pūkaki between the levels of 518 m RL (normal consented minimum lake level) and 532.5 m RL (maximum consented storage level). The proposed construction works are associated with Meridians Fast Track Approvals Act application to access the 546 GWh of contingent storage held below 518 m RL.

SUPERSEDED

3. Programme of works

3.1 Proposed construction activities

When the lake levels are low, Meridian is proposing to extend rip-rap armouring to reduce the risk of erosion on the dam face and other critical infrastructure. Rip-rap currently exists along the dam upstream face; however the rock armouring is inadequate to protect the dam and associated infrastructure if water levels were drawn below 518 m RL. Further details on the required works are provided in GHD 2025B.

3.2 Programme

The rip-rap placement programme is scheduled to be completed over a period of approximately 18 weeks. This will likely occur in short phases over a period of several years, as lake levels allow.

The construction methodology is based on the following programme:

- Construction activities may be short in duration (a few weeks) and occur over multiple stages.
- It may take multiple years to complete all the required works.
- Access is expected to be more frequent at higher lake levels within the 518 m to 513 m range, rather than at the lower end.
- The assumed approach is for rip-rap placement in a multi-stage process with rip-rap being placed when lake levels allow.
- Forecasting lake levels within a period of a few weeks is generally achievable based on predicted generation flows from the lake, predicted inflows, and predicted rainfall events in a 1-to-2-week window.
- Based on this data, guidance can be provided to a contractor as to when lake levels are likely to reach required levels for construction to commence and how long they are likely to stay low in the short to medium term.
- Given the time required to mobilise and demobilise from the site, contractor guidance indicates that the minimum duration for any construction stage is 3 weeks.
- Inflow events, whether predicted or not, can result in a relatively rapid rise in lake level. Historical data indicates that the lake can rise up to 1 m in one day and 3 m in one week. Therefore, the construction sequence must include contingency plans for rapid site demobilisation, ensuring the site is left in a safe and environmentally appropriate condition prior to water inundating the works area.
- Historical data indicates that low lake levels at Lake Pūkaki most frequently occur during mid to late winter and early spring.
- Construction activities will be restricted to the following schedule:
 - Daily: 6:00 a.m. to 7:30 p.m.
 - No work during the following periods:
 - Good Friday to Easter Monday (inclusive)
 - 24, 25 and 26 December (inclusive) and 31 December to 1 January (inclusive)
 - New Zealand Public Holidays

3.3 Dust emission sources

Potential dust sources are grouped into the following:

- Material handling of rip-rap (storage, loadings onto trucks, unloading and placement). Note rip-rap materials that have been stored on site for several years and are not likely to be overly “dusty” due to exposure to rainfall and the generally very coarse nature of the materials.

- Haulage along identified, unpaved haul roads.
- Creation of temporary haul roads on the abutments and upstream dam face to facilitate rip-rap works (see Figures 2 and 3 for approximate locations).
- Temporary stockpiling of excavated materials to allow access and rip-rap placement on the dam face.

SUPERSEDED

4. Surrounding environment

4.1 Sensitive receptors

A detailed list of identified potentially sensitive receptors around the whole lake is provided in GHD (2025A). A consolidated list of lake environs receptors is also provided in GHD (2025A).

The sensitive receptors closest to the dam earthworks sites (and potentially most affected by proposed construction activities) are identified as the following and shown on Figure 4:

- A residence is located about 760 m from the Left abutment work site (**R22**).
- A publicly accessible parking area, observation and photo point immediately adjacent to the Left abutment site (**R24**). This is a place where people will transit through – the toilets and parking area are approximately 100m from the left abutment construction site.
- A business (Mt Cook Alpine Salmon Shop) is immediately adjacent to the right abutment construction site, but it is to be closed for the duration of any works and is therefore not required to be assessed (**R26**).
- The Pines freedom camping area is located about 300 m from the northeast corner of the Left abutment construction site (**R67**). This site is potentially the most exposed to a change in air quality associated with the proposed works
- A Nohoanga site near the Pines freedom camping area (generally in the vicinity of **R68**).
- The A2O/TA trail that crosses the site area. It is noted that the most likely time for works to occur (late winter/early spring), is the trails low to shoulder season when the number of users is expected to be significantly below the summer peaks.
- State Highway 8.

When finalising this Management Plan the Contractor will clearly identify the site boundaries with respect to monitoring of visible dust leaving the site and potentially impacting sensitive receptors. For the avoidance of doubt both SH8 and the A2O/TA Trail will be considered as being outside the site boundary.

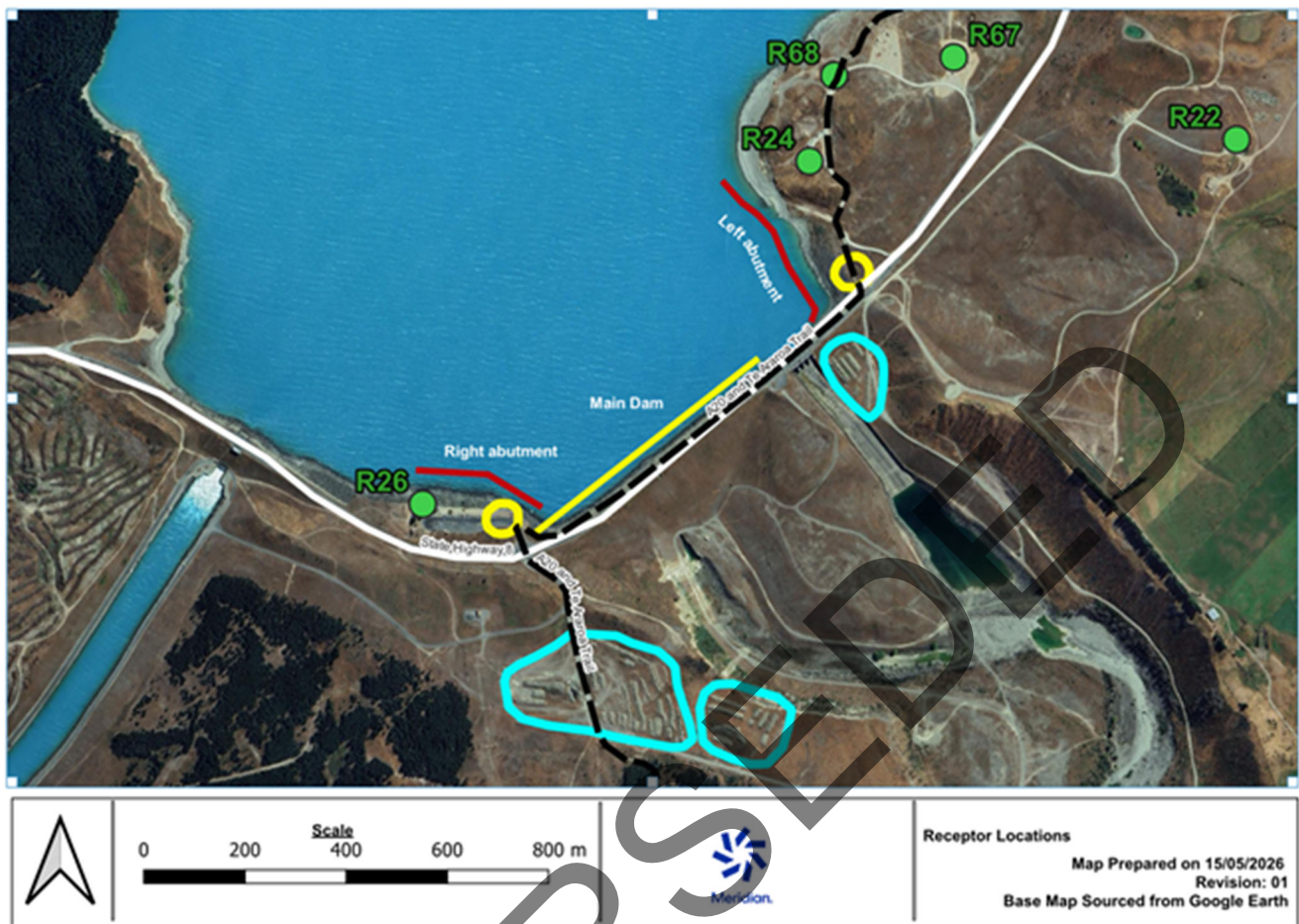


Figure 4 Sensitive Receptor Locations

5. Meteorology

Given that wind can generate and transport dust, it is important that site staff understand the local wind patterns experienced at the Project site, particularly in relation to the identified sensitive receptors surrounding the earthwork areas.

A weather station will be installed on-site to assist with the management of potential dust events and to provide real time meteorological information to support operational decision making. Weather conditions, including wind speed and wind direction, should be reviewed at the beginning of each workday and monitored throughout active construction periods to identify periods of elevated dust risk. Particular attention should be given to dry and windy conditions, where there is increased potential for dust generation and transport toward sensitive receptors.

Understanding prevailing wind conditions in relation to active work areas allows site staff to proactively identify higher risk activities and implement additional mitigation measures where required. For example, during periods of strong winds blowing toward the Pines camping area, A2O/TATrail, observation areas, or SH8, additional watering, pre-wetting of exposed surfaces, reduced working areas, or temporary suspension of particularly dust generating activities may be required to minimise off site dust effects.

The weather station data and site observations should also be used to support routine visual dust inspections, complaint investigations, and decisions regarding when additional mitigation or operational restrictions are necessary.

Based on the data from the Lake Pūkaki weather station, presented in Figure 5, the prevailing winds are predominantly from the west to northwest sector, with the highest frequency of winds occurring from the west-northwest. The data also indicates that the winds with the greatest potential to generate and transport dust are generally associated with the northwest to northeast sectors, as these directions are more frequently associated with higher wind speeds.

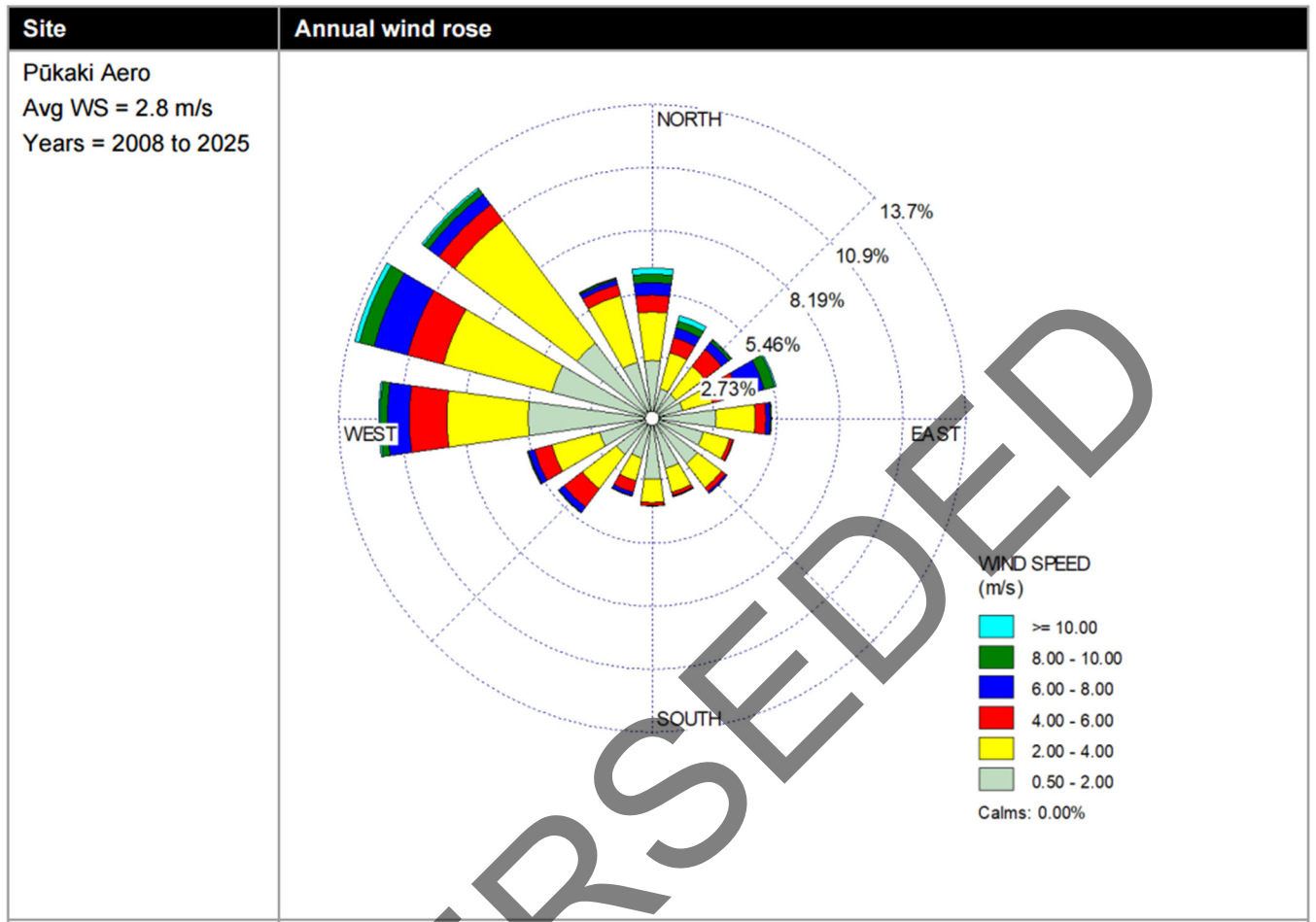


Figure 5: Wind Rose from the Lake Pūkaki Weather Station

6. Dust management

The main features of the dust management strategy are based on prevention, mitigation, and rectification. The mitigation and rectification measures will be implemented as required and their exact details will be determined on a case-by-case basis depending upon the situation and the technical solutions available at the time. The proposed management strategies are described in the following sections.

6.1 Mitigation measures

The following prevention measures should be taken at the Project site:

6.1.1 General site management and training

- Prepare dust management education material for inclusion in site inductions, training, and daily toolbox meetings. The education material must include identification of A2O/TA trail users and SH8 as potential dust receptors.
- Prepare and undertake a regular audit to ensure compliance with consent conditions (at least once during any construction event or monthly for longer construction events). Audit records should be stored in the Site Office.
- Plan construction activities to keep exposed areas to a minimum and, where possible, avoid scheduling major emissions-generating activities to occur at the same time.
- All plant and equipment should be fitted with the appropriate emissions controls and maintained according to the manufacturer's specifications.
- Bins, rubbish, and storage areas will be monitored during regular audits and emptied at regular intervals.

6.1.2 Weather monitoring and operational management

- Undertake daily reviews of forecast wind speed and wind direction prior to commencing works to identify periods of elevated dust risk.
- Increase watering frequency during dry and windy conditions.
- Restrict particularly dust generating activities during periods of strong winds where effective dust mitigation cannot be achieved.
- Where practicable, avoid leaving disturbed areas exposed ahead of forecast high wind events.
- Undertake routine visual dust inspections throughout the day during active earthworks, particularly during dry or windy conditions.
- If dust is observed crossing the site boundary or travelling towards receptors, the activity generating the dust will be modified, temporarily suspended, or additional mitigation measures implemented until dust emissions are effectively controlled.

6.1.3 Water suppression and exposed surface management

- Pre-wet exposed work areas prior to undertaking earthworks, excavation, or material handling activities during dry conditions.
- Minimise the size and duration of exposed surfaces and progressively stabilise disturbed areas as soon as practicable following completion of works.
- Retain as much vegetative screening between the Project site and the nearest sensitive receptors as possible, while acknowledging the extent of existing vegetation is very limited.

- Instigate progressive rehabilitation as soon as practicable to encourage the establishment of vegetation (where appropriate) as soon as possible after the completion of works.
- The Draft Erosion and Sediment Control Plan (ESCP - GHD 2026) for the Project requires the progressive re-grassing of any cleared stockpile areas and temporary tracks at the end of each work period and once all works are complete with the intent of minimising the duration that areas are left as bare ground, where practicable. This requirement will also assist with dust control.

6.1.4 Traffic management and track out controls

- Implement on-site traffic and operational controls to prevent unnecessary dust generation from vehicle movements, including:
 - Regular watering of access roads if rainfall is insufficient to suppress dust (see Section 6.1.6 below for suggested watering rates).
 - Trucks transporting material may need to be covered (depending on the nature of the materials and climatic conditions).
 - Ensure tailgates are firmly fixed.
 - Enforce speed limits. Speed limits in themselves are not a primary mitigation measure for dust but can assist in combination with the above measures to mitigate dust effects. A maximum speed limit of 30 km/h will be applied on haul roads (excludes SH8).
- Inspect haul roads, access points, and exposed surfaces daily for evidence of excessive dust generation or material tracking and implement corrective actions where required.
- Ensure water carts and road sweeping equipment remain operational and available onsite throughout active construction periods.
- The ESCP for the project (GHD 2026) includes requirements for regular (multiple times per day, as required) sweeping of the SH8 to remove any tracked material. This will include the requirement to initiate sweeping if visible dust is being generated from the SH8 associated with the site. The ESCP also includes the option to install stabilised site entrances/exits, shaker ramps and wheel washes if deemed necessary to control the tracking of materials onto the state highway.

6.1.5 Stockpile management

- Locate stockpiles, where practicable, away from receptors and minimise stockpile heights during dry and windy conditions.
- Consider covering loads in trucks, or spray loads as an alternative if transported materials warrant these measures.
- Consider installing wind breaks surrounding primary temporary stockpile locations. Given the often-extreme wind conditions experienced at the site, porous wind breaks should be considered in favour of solid wind breaks. Whilst this is a less effective mitigation measure, it will ensure that the wind break does not become a safety hazard under excessive load.

6.1.6 On-Site Weather Station

To assist in site management, the Contractor will install an on-site weather station during any periods of construction work to monitor wind and rain conditions. The data will be used to support decision making regarding dust mitigation activities and will provide a record of site conditions.

The weather station will:

- Measure wind speed as 1-minute scalar averages with maximum resolution of 0.1 metres per second (m/s), have an accuracy of at least within +/-0.2 m/s, and a stall speed no greater than 0.5 m/s.

- Measure wind direction as 1-minute vector averages with maximum resolution of 1.0 degree and accuracy of at least within +/- 1.0 degree, and a stall speed no greater than 0.5 m/s.
- Measure screened temperature with accuracy of +/- 0.5 degree.
- Measure relative humidity with an accuracy of +/- 1%.
- Measure rainfall with an accuracy of +/- 0.2mm.
- Be located on or immediately adjacent to the site in accordance with AS/NZS 3580:14-2014 (Methods for sampling and analysis of ambient air – Part 14 Meteorological monitoring for ambient air quality monitoring applications). If the monitoring station cannot be located in accordance with AS/NZS 3580:14-2014 an alternative location shall be agreed in writing with Environment Canterbury.
- Maintain a date and time stamped electronic record of meteorological monitoring results, recorded as rolling 10-minute averages, which are up-dated every one-minute in real-time.
- Send an alarm to the Site Manager (for example via mobile phone) if the wind speed trigger level of 7 m/s (10 minute scalar average) is reached or exceeded. Site Manager to then undertake additional mitigation as deemed necessary.
- Be maintained and calibrated in accordance with the manufacturer's specifications.
- All meteorological monitoring data shall be made available to the Environment Canterbury on request.

6.1.7 Water Requirements

The general guidance on water requirements is based on the MfE Good Practice Guide for Assessing and Managing Dust (November 2016).

A conservative estimate is that dust generating areas of track and other dust generating areas should be watered starting 12 hours after no rainfall (assuming sandy soils that dry quickly) at a rate of 1 Litre/m²/hour. However, if dust liftoff is observed from roads or stockpiles, water application rates should be applied at a rate of 2 Litre/m²/hour.

Sufficient water will be stored on site at all times along with a water cart to allow water application to commence when required.

6.2 Visible Dust Emissions

Site inspections of visible dust emissions will be carried out routinely throughout the day. Findings and mitigation actions are to be recorded in the daily inspection form (Refer to Appendix A.1).

Inspections ensure control measures are effective, while also assisting in the analysis of dust events for managing and responding to complaints. The specific procedures are outlined below:

- Staff on-site will routinely watch for dust plumes.
- If a visible dust plume moves beyond the Site boundary, the following must be recorded:
 - The dust emissions source;
 - The level/extent of the visible dust emissions beyond the Site boundary;
 - The person in charge of the investigation and response;
 - Description of the dust emissions; and
 - The possible source of the incident, preventative, and corrective actions taken.
- The dust mitigation measures set out in Section 6.1 always apply. If the level of visible dust drifts beyond the Site boundary, the Site Manager must be notified and take further action. When notified, the Site Manager will investigate and take necessary steps to ensure dust levels do not impact off-site locations. These actions are

to be recorded in the daily inspection form (see Appendix A.1).

6.2.1 Contingency Measures

In addition to the operational preventive measures outlined above, the Contractor will consider the following contingency measures to further prevent exposure to dust emissions:

Weather forecast

- Assess upcoming weather conditions for the day and plan site activities accordingly. Pay particular attention to periods of forecast or observed high winds.
- If meteorological conditions deteriorate consider:
 - Modifying or ceasing activities that generate dust which have a direct impact at nearby sensitive receptors, or
 - Adding additional mitigation measures at source to control adverse dust conditions.
- This may include:
 - Ceasing dust generating construction activities within 200 m of a sensitive receptor location when wind speed reaches or exceeds 7 m/s (10 minute scalar average) and activities would be upwind of the sensitive receptor (10 minute average wind direction).

Restricting public access

- Consider closure of the public toilets/visitor area (R24 on Figure 4) immediately adjacent to the construction area.
- Consider closure of The Pines campsite (R67 on Figure 4) to the north of the left abutment construction area when construction works are being undertaken and conditions are adverse – while noting the site is located over 300m from the Left Abutment is unlikely to be impacted by dust generation from construction activities.

Air quality monitoring

Air quality monitoring can be undertaken at any time at the discretion of the Contractor and Meridian but is required to be implemented during any construction event if visible dust is observed leaving the Site boundary and impacting sensitive receptors.

If required, air quality monitoring will be undertaken at locations that can be used to best assess potential offsite dust emissions. Likely locations are southeast of the primary stockpile site to enable the effect of the frequent northwest winds to be assessed, and/or near the visiting area (R24) or campsite (R67) adjacent to the left abutment.

Should air quality monitoring be implemented at the site, a Trigger Action Response Plan (TARP) will need to be developed for use in conjunction with this Management Plan. This will include agreed trigger PM₁₀ concentrations and agreed responses.

6.3 Rectification measures

The following rectification measures are to be taken at the Project site:

- Record environmental complaints and maintain regular reviews and reporting of performance. Complaints made during an initial block of works will inform preventative measures to be undertaken during subsequent construction works (see Appendix A.3 for Draft Complaints Report form).
- Consider increasing water sprays as needed (see section 6.1) and/or cover temporary stockpiles when not in use.
- Develop alternative methods to reduce dust generation.

6.4 Corrective actions

Corrective actions are to be undertaken to a level proportional to the severity of complaint. Upon receipt of a valid complaint, the following tasks will be undertaken:

- Conduct a detailed review of all on-site activities undertaken at the time when the complaint was received.
- Identify key on-site activities contributing to off-site impacts. This will be achieved by:
 - Undertaking a visual inspection of construction processes and activities to ascertain the source of dust emissions relevant to the complaint.
 - Assessing weather data during the time period for which the complaint was made.
- Upon identification and attribution of the likely activities/sources responsible for the complaint, revised operations or additional mitigation measures will be trialled to improve (reduce) emissions from the source.
- If the trial proves effective at managing the source, a revision to the standard operating procedures will be documented and implemented across site. If the trial did not prove effective, alternative mitigation options may be trialled until an effective solution is found.
- Once investigations are complete, a response will be provided to the complainant setting out the findings and conclusions (see Appendix A.4 - template to be added by Contractor once appointed).

6.5 Site Management After Hours

- A site contact will be available at all times, including outside normal working hours, to respond to any complaints or incidents. Signage will be provided on the site boundary with this information.
 - The site will be left in a condition that minimises the potential for dust generation at the end of each work period, including stabilisation of exposed surfaces where practicable.
 - Dust-prone areas, such as access roads and disturbed surfaces, will be appropriately treated prior to leaving site (e.g. watering or compaction where required).

6.6 Site Closure

As discussed in Section 3, the works are likely to be undertaken over several discrete periods of activity. Several months or years may elapse between periods of construction. Therefore, the site must be left in a condition that minimises the potential for dust generation to the extent practicable at the end of each construction event. As outlined in GHD 2025A, this will include:

- Removal of temporary stockpiles and haul roads on the dam face and abutments and restoration (likely with rip-rap that has been temporarily removed). Some sections of temporary haul road may be left in place but they must be left in a non-dust generating condition.
- Any areas of the rock storage sites which will no longer be required for storage will be restored to a vegetated condition similar to the surrounding site.
- Any other potential sources of significant dust generation will be remediated, as required.

Once all the works are complete, a similar approach to completion of the works will be adopted. Note that the rock storage sites will continue to be required beyond this project. Rock is stored at the site for a variety of purposes in addition to this project.

6.7 Training

All personnel should receive induction training prior to entering site. Training should include:

- Location of sensitive receptors.
- Implementation of the dust mitigation measures outlined above.
- Roles and responsibilities regarding dust mitigation and management.
- Incident response, management and reporting procedures.
- Environmentally safe work methods relating to dust.

Supervisors and workforce representatives that are nominated to undertake monitoring and inspections will be trained specifically for this task. Mitigation measures outlined above will be consistently covered in toolbox talks to serve as a reminder to the workforce.

Other specific topics covered by the toolbox talks will be planning and preparation for high wind or regional dust events. Lessons learned during the construction and operation of the site and updates to this Management Plan will be communicated to the workforce in toolbox talks.

A log of site staff training is to be maintained (see Appendix A.2 -form to be added by Contractor once appointed).

6.8 Consideration of cultural impacts

It is recognised that temporary restriction of access to areas around the lake could have cultural impacts – particular for the Nohoanga site identified on Figure 4. Therefore, any discussions and decisions should be made with consultation between all potentially affected parties.

6.9 Communications strategy

Meridian are to develop and implement a communications strategy that includes stakeholder engagement procedures. The communications strategy should include, but not be limited to:

- Procedures for issuing works notification to nearby residents and property owners to inform them of Project staging and operational activities.
- Communication avenues for members of the public to ask questions and lodge complaints regarding the operations of the site.

Notification regarding specific construction activities should be provided to adjacent residents and property owners likely to be affected by dust emissions from works. Such notification should be provided prior to the activity commencing (typically one week notice) and should provide the following details:

- the reason for the activity;
- types of equipment required;
- the expected commencement of the activity;
- activity hours of operation;
- the likely duration and impact of operation at the site and any requirement for subsequent additional works; and
- contact details for further information and complaints.

Schedule follow-ups and check-ins with adjacent residents and property owners regarding dust impacts, where reasonable and practicable.

7. Continuous improvement

This Dust Management Plan is a site-specific document that identifies fugitive sources of dust emissions from the Site and the Best Management Practices for controlling these sources. This plan will be reviewed and updated on an annual basis, or more frequently as required to reflect changing Site conditions. It will build on current and known practices with a commitment to continuous improvement.

SUPERSEDED

8. References

GHD 2025A - Lake Pūkaki Hydro Storage and Dam Resilience Works – Air Quality Assessment – Rip-Rap Placement. Prepared for Meridian Energy by GHD 5 Nov 2025

GHD 2025B – Lake Pūkaki Hydro Storage and Dam Resilience Works - Pūkaki Dam Rip-Rap Design and Construction Methodology. Prepared for Meridian Energy by GHD 26 Oct 2025.

GHD 2026(April 2026 – Ver04) - Lake Pūkaki Hydro Storage and Dam Resilience Works – DRAFT Erosion and Sediment Control Plan. Prepared for Meridian Energy by GHD 26 Oct 2025.

SUPERSEDED

9. Version control

Table 9.1 Document Version Control

Version	Date	Description of Changes
1.0	5/11/2025	DRAFT
2.0	23/01/2026	DRAFT – added draft forms
3.0	26/02/26	DRAFT – updated text
4.0	13/04/26	Description of the “Site” added Construction of temporary haul roads included as an activity Trigger levels defined for dust monitoring Wind speed and direction trigger levels included for sensitive receptors After hours and site closure activities included Water requirements included Requirement for a weather station
5.0	13/05/26	Included reference to road sweeping Confirmation that water will be stored on site Inclusion of a speed limit Updated list of sensitive receptors to include A2O/TA Trail, SH8 and Nohoanga Included plan showing A2O/TA route (Figure 1 and 4) Re-arrangement of mitigation measures discussion and addition of more detail
6.0	19/05/26	Included Figure 4 and updated associated text. Further edited text to align with Expert Conferencing Joint Witness Statement – Dust Management for Rock Armouring Works (14 May 2026).

Appendices

SUPERSSEDED

Appendix A.1

Daily Inspection/Maintenance Report

Daily Inspection Record / Maintenance Report



Lake Pukaki Hydro Storage and Dam Resilience Works

Day

Construction works underway:

Date

Time

Inspector name

Monitoring Location / Work Zone

Wind Direction

Wind Speed

Rain forecast / Actual rain for the day (mm)

Dust Monitoring
(e.g. visual, air sampling pumps,
OPC / CPC)

Dust Rating 1-5
(1=Ok, 5= no visibility)

Dust Source

Dust management and mitigation
controls implemented

Stockpile(s) condition
(e.g. dust generation)

Noise reading (dBA)

Road inspection
(material tracking)

Complaints received
(if yes add details)

Environmental Management Plan and Erosion and Sediment Control Plan Observations

General Site Observations

Appendix A.2

Site Training Log

SUPERSEDED

**Intentionally left blank – to be added by
Contractor in Final Version**

SUPERSEDED

Appendix A.3

Dust Complaint Report

Dust Complaint Report



Lake Pukaki Hydro Storage and Dam Resilience Works

Date:

Time:

Complainant Details

Name:

Contact:

Receiver Details

Name:

Contact:

Complaint Details

Investigation and Assessment

Physical Location of the Complaint:

Or indicate below

Wind Direction at the Time:

Or indicate below



Wind Speed at the Time:

Most Likely Cause of Dust:

Corrective Action:

Closeout Detail:

Appendix A.4

Complaint Response Letter

**Intentionally left blank – to be added by
Contractor in Final Version**

SUPERSEDED



CRC262543 Section 13 Consent to disturb and to deposit material on the bed of Lake Pūkaki

SCOPE

Note: This land use consent only authorises works associated with the Lake Pūkaki Dam Resilience Works project that occur outside of the Lake Pūkaki dam face itself. This consent does not authorise the discharge of contaminants to land or water associated with these activities. These discharges are authorised by air discharge consent CRC262541.

GENERAL CONDITIONS

1. The activities authorised by this consent shall be associated with the rock armouring of Lake Pūkaki Dam and limited to:
 - a. The excavation and disturbance of the bed of Lake Pūkaki.
 - b. The deposition of aggregate and rock armouring in, on or under the bed of Lake Pūkaki.
 - c. Establishing and decommissioning haul roads to work areas.
2. The works carried out in accordance with Condition 1 shall be located at Lake Pūkaki within the area identified as 'works area' on Plan CRC262541 attached, which forms part of this consent.
3. The works shall be undertaken in general accordance with the 'Design Plans for CRC262543' attached, which form part of this consent.

PRIOR TO WORKS COMMENCING

4. Before starting work the consent holder shall provide a copy of this consent to staff and contractors undertaking the activities authorised by this consent and explain to them how to comply with the conditions.
5. The consent holder shall ensure that:
 - a. The Canterbury Regional Council, Attention: Compliance Manager, Te Rūnanga o Ngāi Tahu (nohoanga@ngaitahu.iwi.nz) and Land Information New Zealand, are notified at least ten working days prior to the commencement of works; and
 - b. Where works have been discontinued for more than eight consecutive days, the Canterbury Regional Council Attention: Compliance Manager, Te Rūnanga o Ngāi Tahu (nohoanga@ngaitahu.iwi.nz) and Land Information New Zealand, shall be re-notified at least five working days prior to the recommencement of works.

Notification shall include:

- i. The proposed start date of the period of work;
- ii. The proposed start and end time of works on each day during the period of works; and
- iii. Where the consent is to be exercised by a person other than the consent holder, the name, address and contact telephone number of the persons exercising the consent.

Advice note: Notification to CRC may be via emailing ecinfo@ecan.govt.nz

6. The consent holder shall ensure all works are carried out in accordance with Lake Pūkaki Reservoir Hydro Storage and Dam Resilience Works (DRAFT) Erosion and

CRC262543 Section 13 Consent to disturb and to deposit material on the bed of Lake Pūkaki

Sediment Control Plan, Rev 04, dated 15 April 2026, attached to and forming a part of this consent (the 'Approved ESCP').

Advice note: The Canterbury Regional Council Erosion & Sediment Control Toolbox for Canterbury can be found at <http://escscanterbury.co.nz/>

7. The Approved ESCP may be amended at any time. Any amendments shall be:
 - a. For the purpose of improving the efficacy of the erosion and sediment control measures and hazardous substance management, and shall not result in reduced discharge quality;
 - b. Consistent with the conditions of this resource consent; and
 - c. Submitted in writing to the Canterbury Regional Council, Attention: Compliance Manager for confirmation that it complies with the conditions of this consent prior to any amendment being implemented.
8. The consent holder may implement any amended ESCP after 20 working days of it being submitted for certification if Canterbury Regional Council has not notified the consent holder of its decision. If Canterbury Regional Council notify the consent holder that the amended ESCP does not comply with the conditions of this consent the consent holder shall immediately (within 5 working days) revert to implementing the Approved ESCP.
9. All practicable measures shall be undertaken during works to minimise:
 - a. Erosion of the bed and banks of Lake Pūkaki; and
 - b. The discharge of sediment to Lake Pūkaki as a result of the works; and
10. In the event of any erosion occurring to the bed or banks of Lake Pūkaki as a result of the works, the consent holder shall be responsible for rectifying the situation.
11. Works shall:
 - a. Only occur between 0600 hrs and 1930 hrs; and
 - b. Not occur on:
 - i. Good Friday to Easter Monday (inclusive);
 - ii. 24, 25, 26 and 31 December and 1 January; or
 - iii. New Zealand Public Holidays observed in the Mackenzie District.

DURING WORKS

12. In the event of any disturbance of Kōiwi Tangata (human bones) or Taonga (treasured artefacts), the consent holder shall immediately:
 - a. Advise the Canterbury Regional Council of the disturbance,
 - b. Advise the Upoko of Te Rūnanga o Arowhenua or their representative, and the New Zealand Historic Places Trust, of the disturbance; and
 - c. Cease earthmoving operations / works in the affected area until an area has been marked off around the site, and Kaumatua and archaeologists have given the approval for the activity to commence.
- Note:** This condition is in addition to any agreements that are in place between the consent holder and the Rūnanga Upoko or the New Zealand Historic Places Trust.
13. All practicable measures shall be undertaken to prevent oil and fuel leaks from vehicles and machinery including but not limited to:
 - a. There shall be no storage of fuel or refuelling of vehicles and machinery within 20 metres of flowing water or water bodies.

CRC262543 Section 13 Consent to disturb and to deposit material on the bed of Lake Pūkaki

- b. Fuel shall be stored securely or removed from the site overnight.
 - c. The pump shall be attended at all times during refuelling.
 - d. Drip trays shall be used at all times during refuelling.
 - e. A spill response kit shall be kept on site at all times.
14. To prevent the spread of pest species, including but not limited to didymo, the consent holder shall ensure that activities authorised by this consent are undertaken in accordance with Biosecurity New Zealand's hygiene procedures and that machinery shall be free from plants and plant species before use in water.

TRAFFIC MANAGEMENT

15. Prior to the movement of rock material to the site by heavy construction vehicles, the applicant shall implement temporary traffic management on State Highway 8 via an authorised Traffic Management Plan for the duration of rip-rap works.
16. If authorised by the New Zealand Transport Agency, the consent holder shall undertake a pre and post construction condition survey of the State Highway 8 pavement, kerbs and channels for the sections of State Highway 8 utilised by heavy construction vehicles associated with the rip-rap works to identify existing pavement condition and damage. A pre and post construction survey shall be undertaken for each phase of construction. Any pavement damage caused by the rip-rap construction traffic shall be repaired within 1 month of the completion of construction to match or exceed the standard of the existing pavement. The limits of the survey are 30 m in either direction from the section of utilised highway.

Advice note: Before the installation of any temporary traffic management or prior to any physical work on the state highway you are legally required to apply to the New Zealand Transport Agency for a Corridor Access Request (CAR) and for that request to be approved. Please submit your CAR to www.submitica.com a minimum of fourteen working days prior to the commencement of any works on the state highway; longer is advised for complex works.

ADMINISTRATION

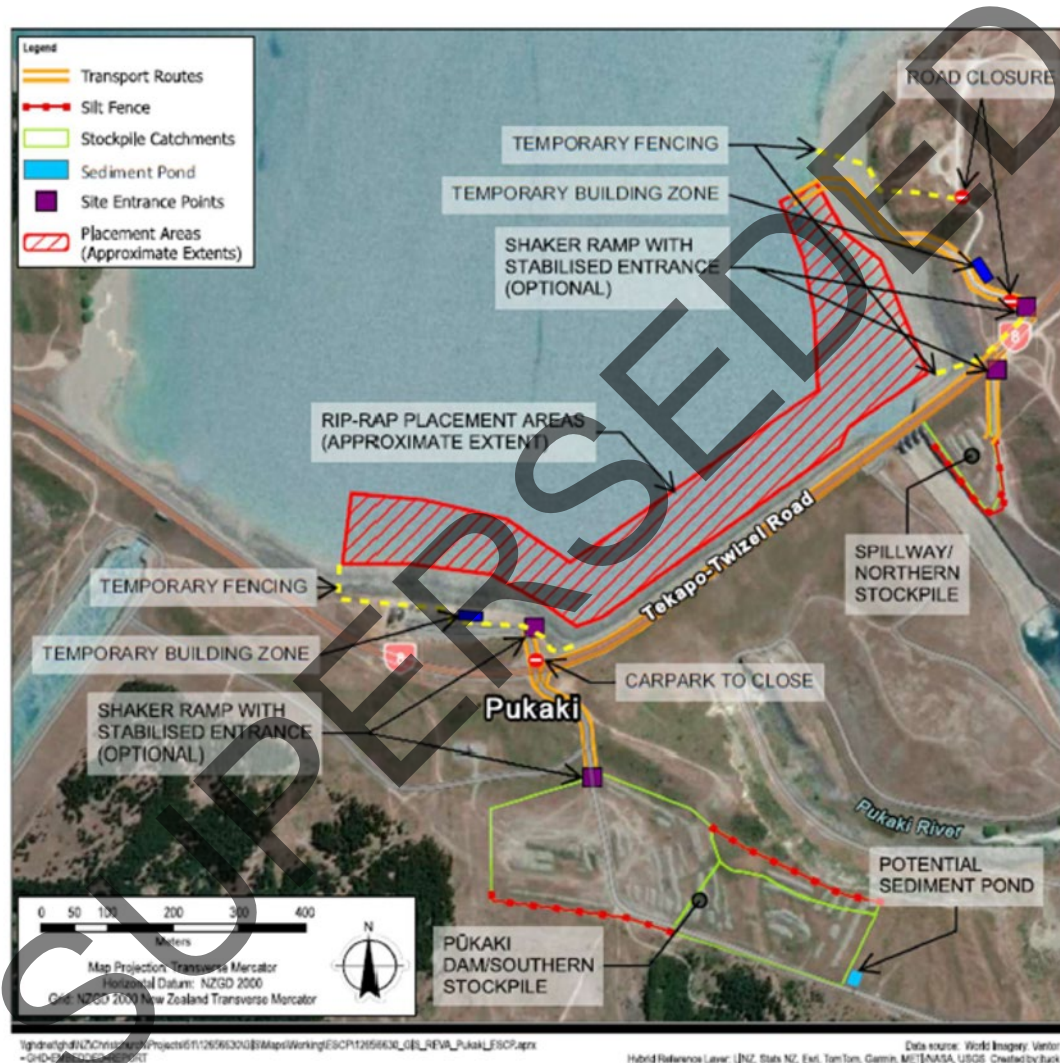
17. The Canterbury Regional Council may, once per year, on any of the last five working days of May or November, serve notice of its intention to review the conditions of this consent for the purposes of:
- a. Dealing with an adverse effect on the environment occurring as a result of the exercise of this resource consent; or
 - b. Requiring best practicable options to be adopted by the consent holder to remove or reduce any adverse effect on the environment as a result of the exercise of this resource consent; or
 - c. Requiring the consent holder to carry out monitoring and reporting instead of, or in addition to, that required by the resource consent; or
 - d. Requiring the consent holder to comply with a relevant rule in an operative regional plan.
18. If this consent is not exercised before 3 July 2061, then it shall lapse in accordance with section 125 of the Resource Management Act 1991.

CRC262543 Section 13 Consent to disturb and to deposit material on the bed of Lake Pūkaki

Advice Note: A 35-year duration was sought by Meridian as part of the Fast-track process. 'Exercised' is defined as implementing any requirements to operate this consent and undertaking the activity as described in these conditions and/or application documents.

DATE OF GRANT: 3 July 2026 (per FTAA-2510-1120)

Works Area – For CRC262541



CRC262543 Section 13 Consent to disturb and to deposit material on the bed of Lake Pūkaki



**CRC262543 Section 13 Consent to disturb and to deposit material
on the bed of Lake Pūkaki**

Approved Erosion & Sediment Control Plan

SUPERSEDED



Lake Pūkaki Reservoir Hydro Storage and Dam Resilience Works

DRAFT Erosion and Sediment Control Plan

Meridian Energy Limited

15 April 2026

→ **The Power of Commitment**



		Meridian - WPS Pukaki FTC					
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SUPERSEDED

1. Introduction

Meridian Energy Limited (Meridian) have engaged GHD Limited (GHD), to assist with obtaining consents to authorise the operation of Lake Pūkaki below the current normal minimum level of 518.0 m above mean sea level (m RL), for a three-year period, and for civil works at Pūkaki Dam to improve the structures resilience to wave action during lower lake operational levels.

Meridian Energy Limited (Meridian) has engaged GHD to develop a draft Erosion and Sediment Control Plan (ESCP) for the proposed Pūkaki Dam rip-rap upgrade works located at the southern end of Lake Pūkaki approximately 7.5 km North of Twizel. This plan also includes proposed dust control measures.

1.1 Project Background

1.1.1 Waitaki Power Scheme

The Waitaki Power Scheme (WPS) is a nationally and regionally significant component of New Zealand's electricity supply infrastructure. It is New Zealand's largest and most flexible hydroelectricity power scheme and therefore has a critical role to play in the electricity system and economy. It consists of eight power stations (two owned by Genesis Energy and six owned by Meridian Energy), commissioned between 1935 and 1985, together having an installed capacity of 1,761 MW, being ~32% of New Zealand's installed hydro capacity.

Lake Pūkaki is a modified natural lake and is managed as part of the WPS. It is New Zealand's largest hydro storage lake and provides an average of 1,767 GWh of stored water in normal operating conditions, with an additional 545 GWh available during a national electricity shortage.

Meridian is currently authorised to dam the Pūkaki River to control and operate Lake Pūkaki between the levels of 518.0 m RL (normal consented minimum lake level) and 532.5 m RL (maximum consented storage level).

1.1.2 Previous Plan Changes - Waitaki Catchment Allocation Regional Plan (WAP)

The WAP is a sub-regional plan and provides objectives, policies and rules for the use and development of water resources within the Waitaki Catchment. Prior to 2012, it was a prohibited activity in the WAP for Meridian to draw the lake level below 518.0 m RL.

1.1.2.1 Plan Change 1 (PC1)

In 2012, Meridian initiated Plan Change 1 (PC 1) to the WAP which sought to introduce a new minimum lake level for Lake Pūkaki during circumstances when the System Operator (SO) had commenced an Official Conservation Campaign (OCC) in regard to electricity supply. PC1 allowed additional water from Lake Pūkaki to be used for generating electricity as a permitted activity when an OCC is declared by the SO.

When assessing the potential operation of Lake Pūkaki below 518.0 m for PC1, the duration of an entire event (time below 518.0 m RL) was considered likely to be between 4-7 months (this includes the time spent operating below 518.0 m RL while the OCC was in place, as well as the time required to restore the lake level to above 518.0 m RL once an electricity supply emergency ended). Supporting technical effects assessments were submitted as part of this plan change process. It was ultimately concluded that allowing access for electricity generation purposes to water stored between 513.0 and 518.0 m RL, as a permitted activity once an OCC had been declared, was appropriate and promoted the sustainable management purpose of the RMA. PC1 was adopted by Environment Canterbury on 27 September 2012.

1.1.2.2 Plan Change 3 (PC3)

PC3 included a new rule regarding the use of Lake Pūkaki between 518.0 m RL and 515.0 m RL. In addition to the PC1 Permitted Activity rule, at times of a Security of Supply Alert (SSA) initiated by the SO, the lake may be

operated between the alert minimum control level of 515.0 m RL and 518.0 m RL. The rule is not a permitted activity and to implement this, Meridian applied for and was a granted resource consent in 2018 (CRC185833). This consent expired on 30 April 2025 but has been granted a section 124 continuance while the new replacement consent (CRC240441) is being processed.

1.1.3 Meridan's Application

Meridian is seeking approvals under the Fast Track Approvals Act (FTAA) to enable access to water stored in Lake Pūkaki below 518.0 m RL, without the currently applicable security of supply triggers, thereby enabling the better planning and utilisation of the available stored generating capacity. Further information on the background to the proposal and the benefits of allowing access to additional water is provided in the Substantive Application¹ document that supports the FTAA application.

Meridian is proposing to access the additional storage for a time-bound period of three years, until the end of 2028. For the purpose of this report 'Eased Access', refers to the ability to use water from Lake Pūkaki between 513.0 m RL and 518.0 m RL without a SSA or OCC being initiated by the SO. The ability to access stored water below 518.0 m RL will be incorporated into Meridian's electricity generation models and water stored in Lake Pūkaki (both above and below 518.0 m RL) will continue to be managed to supply the market. The three-year period is to allow for additional generation capacity that is currently being built, to come online. For further clarification, the existing lake operation framework and proposed activity is detailed below in Table 1.

Existing Framework	Proposed Activity
Operation of Lake above 518.0 m RL (CRC905321.7).	Operation of Lake above 518.0 m RL (CRC905321.7). UNCHANGED.
Operation of Lake between 518.0 m RL and 515.0 m RL as a discretionary activity at times of a Security of Supply Alert initiated by the System Operator (CRC185833).	Operation of Lake between 518.0 m RL and 513.0m RL for a period of 3 years <u>without</u> a Security of Supply Alert or Official Conservation Campaign being initiated by the System Operator.
Operation of Lake between 518.0 m RL and 513.0 m RL as permitted activity during an Official Conservation Campaign initiated by the System Operator (Permitted Activity).	

Table 1 Proposed Activity – Eased Access

In addition to the temporary ability to lower the lake level, Meridian seeks consent for the installation of rip-rap on the face of the Pūkaki dam and its left and right abutments to provide protection from wave erosion, when operating the lake below 518.0 m RL. Rip-rap will be placed to a maximum depth of 510.5 m RL, with earthworks/site preparation activities extending to a maximum depth of 509.6 m RL. Rock armouring will take a total of 12-18 weeks to complete but is expected to be done over multiple stages over several years and works may be required to be completed beyond 2028.

Meridian has stockpiled rock for this purpose on its land adjacent to the Pūkaki dam since 2014, but the rock armouring has not been undertaken due to the existing supply triggers never being initiated by the SO, with the result that the lake level has not been low enough over that period to allow the works to be completed.

¹ FOOTNOTE OF SA HERE

1.2 Purpose of this ESCP

This ESCP has been developed to support the FTAA application for the excavation and placing of the rock armouring above and below the water line of Lake Pūkaki and the stormwater runoff diversions and discharges related to the proposed construction and operation activities at the site.

The plan is developed in general accordance with the Environment Canterbury erosion & sediment control toolbox for soil disturbing activities. It outlines measures to minimise sediment discharges to water from site during and following construction.

This ESCP is draft and has been developed to support the rip-rap design and construction methodology set out in Lake Pūkaki Dam Resilience Works Report GHD 2025A. The ESCP has been prepared by a suitably qualified GHD professional (see Section 1.3) and reviewed by Rooney Earthmoving Ltd – a construction company that has undertaken similar work to the rip-rap upgrade activities required for this project. Prior to the commencement of earthworks, the ESCP will be finalised to align with the final design of the works, planned construction methodology, and any resource consent conditions, and provided to Environment Canterbury.

1.3 Report Author and Contributions

The qualifications and experience of the report authors are set out in Appendix A. The author confirms that they have read the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note (2023) and agree to comply with it. In that regard the lead author confirms that this ESCP is written within their expertise, except where stated that the author is relying on the assessment of another person. The author confirms that they have not omitted to consider material facts known to them that might alter or detract from the opinions expressed.

1.4 Limitations

This report has been prepared by GHD Limited on the instructions of Meridian Energy, in accordance with the agreed scope of work. It is intended to support Meridian's application under the Fast-track Approvals Act 2024 and may be relied upon by the Expert Panel and relevant administering agencies for the purposes of assessing the application.

While GHD Limited has exercised due care in preparing this report, it does not accept liability for any use of the report beyond its intended purpose. Where information has been supplied by the Client or obtained from external sources, it has been assumed to be accurate unless otherwise stated.

2. Basis of Plan

2.1 Legislation, Guidelines and Standards

This ESCP is prepared with consideration given to Erosion & Sediment Control Toolbox for Canterbury

2.2 Resource Consent Conditions and other Site Specific Rules

To be populated prior to finalising-likely include as Appendix.

2.3 Assumptions

As discussed in Section 1.2, this ESCP is expected to be adopted for the construction work. Prior to the commencement of earthworks, the ESCP will be finalised to align with the final design of the works, planned construction methodology, and any resource consent conditions, and provided to Environment Canterbury.

This ESCP has been prepared using the following assumptions:

- No significant amounts of groundwater will be encountered during excavation work.
- No specific measures have been adopted in respect of potential contaminated land. A Preliminary Site Investigation (PSI) has been completed for the site (see Appendix B) and has not identified any issues of concern for the proposed construction site. In the unlikely event that contamination is encountered an Unexpected Discovery Protocol has been included in this ESCP (Section 8).

3. Site Description

3.1 Site description

The site covers the Lake Pūkaki Main Dam area as shown in Figure 1, including:

- The upstream face of the Main Dam,
- The left and right abutments, and
- Existing rip-rap stockpiles east of the spillway and south of the Main Dam.

The surrounding hydrologic features of the site are:

- Lake Pūkaki (works will occur within the lake margin), and
- Pūkaki River which runs from Lake Pūkaki south approximately 100 m from the stored rock armouring area. In normal conditions, this river does not have any flow due to the Pūkaki Dam and diversion of all flows through the Pūkaki Canal. However, the river does flow periodically through the Pūkaki Dam spillway/Gate 19 and any sediment discharged to the riverbed will eventually be picked up by the river when flow occurs.
- The Pūkaki Canal which is located to the west of the Main Dam. Water discharges intermittently from the lake to the canal via the Gate 18 structure.

3.2 Existing Site.

The existing features on the sites include:

Main Dam and Abutments

- Constructed dam faces with placed rip-rap material over bedding and low permeability materials,
- Exposed rock and gravels and placed rip-rap material on the abutment faces,

Stockpile areas

- Exposed rip-rap stockpiles
- Gravel access road,
- Naturally established grass and some bushes with substantial exposed areas due to ongoing vehicle tracking.



Figure 1 Locations of rock armouring stockpiles, abutments and high dam.

3.3 Receiving Environment

The proposed site works are described in GHD 2025A. The report includes a description of the proposed methodology for placement of additional rip-rap. The methodology has been used in the development of this ESCP.

From an erosion and sediment control perspective, the receiving environment includes:

- Lake Pūkaki via runoff from abutments and Main Dam faces, and sediment generated while working below the waterline within the lake margin,
- The Pūkaki Canal via sediment plumes generated within the lake, and
- The Pūkaki Riverbed via overland flow from the two rip-rap stockpile areas. This riverbed has some residual pools, however, is typically dry outside time of high-level lake overflow or intentional release. However, any sediment discharged to the riverbed will eventually be entrained by the flow when releases occur.

Construction activities in and around Lake Pūkaki pose potential risks to both the lake and the Pūkaki River. The works will be carried out near and below the lake's waterline, while the rock armouring stockpile area drains directly toward the Pūkaki River. If runoff from either the stockpile area or contracting works carries elevated levels of sediment or construction-related contaminants, it may adversely affect water quality. Additionally, in-lake operations are expected to disturb sediment associated with the constructed dam and abutment rip-rap armouring as well as any sediment that has accumulated along the dam margin, further contributing sediment accumulation in Lake Pūkaki.

The ESCP purpose is to mitigate effects on the receiving environment to the extent practicable by collection and detention of runoff from the site.

It is noted that the environment at the site is generally beneficial with respect to potential generation of sediment due to:

- Low rainfall climate
- Typically, free draining gravel dominated substrate.

4. Construction and Programme of Works

4.1 Project Schedule

These works are proposed to occur during periods when the lake level is at a sufficiently low level to access the works area. Once a defined start date for the works is determined, the site will be established as the lake level lowers towards 518.0 m RL. As the lake levels are influenced by weather, energy demand and operational controls, an exact construction period cannot be determined, however, based on modelling (Meridian 2025), it is expected to generally occur within the months of August to November, however when lake levels are suitable for construction outside this period, the works may be progressed. When suitable lake level conditions are met, the works will be undertaken. The proposed construction methodology, as described in GHD 2025A, involves placing rip-rap in two sequential tranches, defined by elevation ranges:

- **Main Dam: Tranche 1:** Rip-rap Placement from 517.3 m RL to 514.5 m RL.
- **Abutments: Tranche 1:** Rip-rap Placement from 517 m RL to 513.0 m RL. Note: GHD 2025A includes as-built drawings for the right abutment that indicate existing rip-rap may extend down to 512.5 m RL. However, past dive surveys have only confirmed that rip-rap extends to at least 517.0 m RL. The presence or absence of rip-rap below this level will be confirmed by further diver surveys. For this ESCP and GHD 2025A it has been assumed that rip-rap will need to be placed below 517.0 m RL for both abutments.
- **Main Dam: Tranche 2:** Rip-rap Placement from 514.5 m RL to 510.5 m RL.
- **Abutments: Tranche 2:** Rip-rap Placement from 513.0 m RL to 510.5 m RL.

The trigger levels for commencing works are based on an excavator being able to work in up to 600 mm water depth while sitting on the 517.3 m RL bench. This allows for working within the lake when water levels are at or below 517.9 m RL.

Rip-rap placement for Tranche 2 will only commence once Tranche 1 is fully completed. For each tranche, work will occur concurrently across all three work zones (Main Dam and left and right abutments).

These works will include:

- Site establishment, fencing, offices and equipment to site
- Establish erosion and sediment control measures
- Constructing access tracks and ramps.
- Transporting rock armour from the current location to a designated stockpile area.
- Constructing work benches.
- Constructing toe/key along the Dam.
- Rock placement on the Dam and abutments.
- Temporary building.
- Decommission of site.

If the rip-rap placement programme is completed in a single stage, the estimated duration is approximately 12 to 18 weeks. However, it is unlikely that the lake level will be maintained below 518.0 m RL for an extended period allowing all works to be completed in a single continuous effort. Construction is likely to be undertaken in shorter periods over multiple years.

Construction activities will be restricted to the following schedule:

- Daily: 6:00 a.m to 7:30 p.m.
- No work during the following periods:
 - Good Friday to Easter Monday (inclusive)
 - 24, 25, 26 and 31 December and 1 January
 - New Zealand Public Holidays

4.2 Earthworks Volumes and Areas

Rock material has been previously stockpiled with approximately 23,000 tonnes of rock available at the two stockpile sites identified in Figure 1. This is sufficient to complete the proposed works across all three work zones down to 514.0 m RL. An additional 50,000 tonnes of rock will be required to support lake operation to 513.0 m RL, which includes rip-rap placement to 510.5 m RL, plus rip-rap bedding (as required).

In addition, there will be re-handled Zone 6 and Zone 10 materials at the dam and abutments.

The total area of the construction works including rehandled and existing stockpile areas, access tracks and rock placement areas is approximately 15 ha.

4.3 Construction Staging and Methodologies

A staging summary is provided in Table 2 and this should be read in conjunction with Section 9 GHD (2025A).

Table 2 Sequence Plan, Summary from GHD 2025

Tranche	Location	Tasks
1	Main Dam (see Figure 2 and Figure 6)	- Establish Excavator - Construct High Dam access track to 517.3 m RL Bench - Construct Right Abutment access track to 517.3 m RL - Strip and stockpile Zone 10 material (as per Section 5.6) with 45 tonne excavator. - Establish a key toe at 514.5 m RL - Rip-rap placement will proceed in 40 m wide sections at a rate of approximately 1 section per week. –
1	Left and right abutments (see Figure 3 and Figure 7)	45t Excavator strip existing rip-rap to form 517.3 m RL bench and reuse material to extend bench with 45 tonne excavator. - Form groynes at 15 m intervals perpendicular to abutment face. - Place imported material on bench for running coarse. - Excavate 513.0 m RL toe key. - Place rip-rap material from toe key up the abutment, deconstructing groynes as work progresses. –
2	Main Dam (see Figure 4 and Figure 8)	- Extend access ramp to 512.4 m RL and create a 7.3 m wide bench. - Excavate zone 6 material for reuse. - Excavate zone 8 material for off-site disposal. - Place 0.9 m of rip-rap bedding on bench for form bench at 513.3 m RL. - Excavate toe key to 509.6 m RL. - Place rip-rap from toe key (510.5 m RL) to 514.5 m RL with excavator. –
2	Left and right abutments (see Figure 5 and Figure 9)	- Establish new construction bench at 513.4 mRL using 45 tonne or similar excavator. - Form groynes at 15 m intervals perpendicular to abutment face. - Place imported material on bench for running coarse. - Place 1.5 m rip-rap from 510.5 mRL, moving upslope and deconstructing groynes as works progresses. –

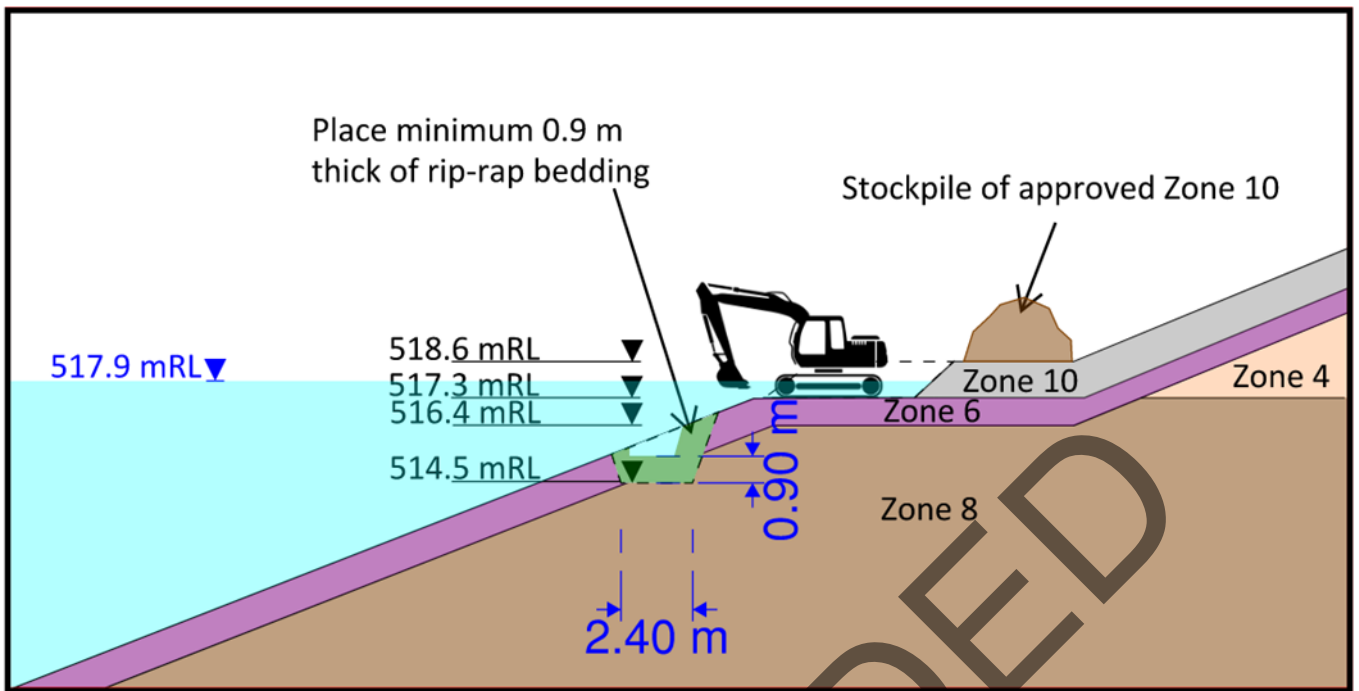


Figure 2 Schematic sketch – Tranche 1 – Main Dam – construction of key toe at 514.5 m RL and installation of rip-rap bedding

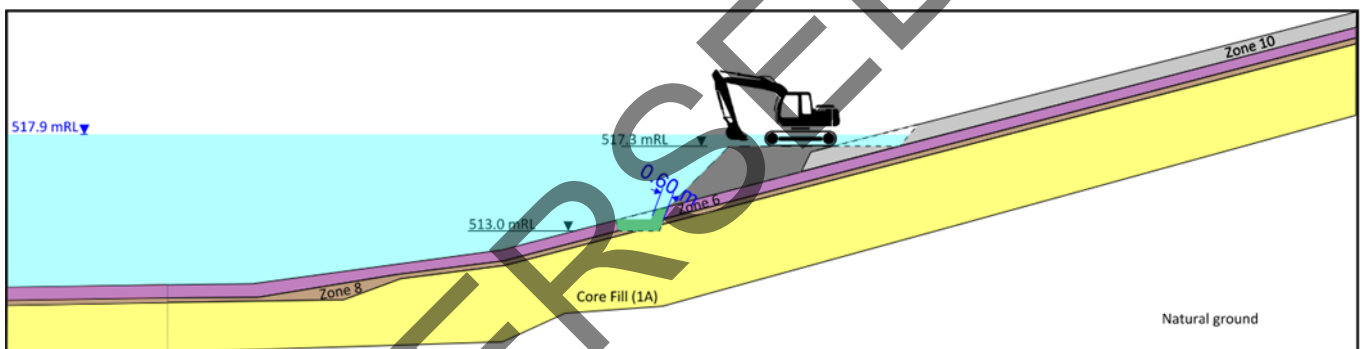


Figure 3 Schematic sketch – Tranche 1 – abutments - construction of key toe at 513.0 m RL and installation of rip-rap bedding

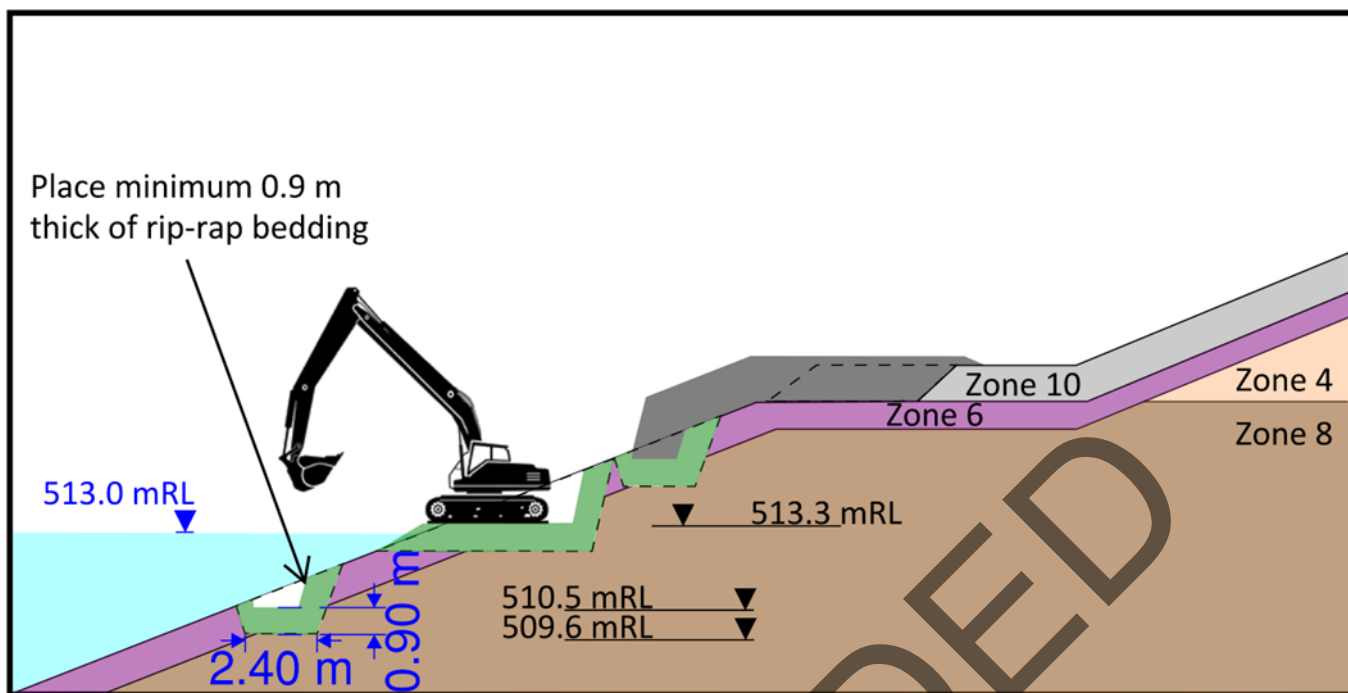


Figure 4 Schematic sketch – Tranche 2 – Main Dam – construction of key toe and installation of rip-rap bedding

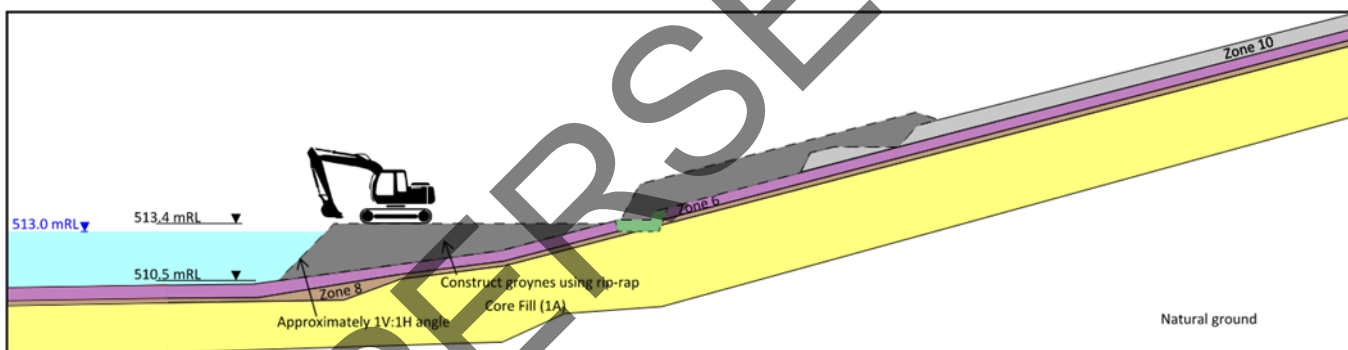


Figure 5 Schematic sketch – Tranche 2 – abutments – construction of groynes

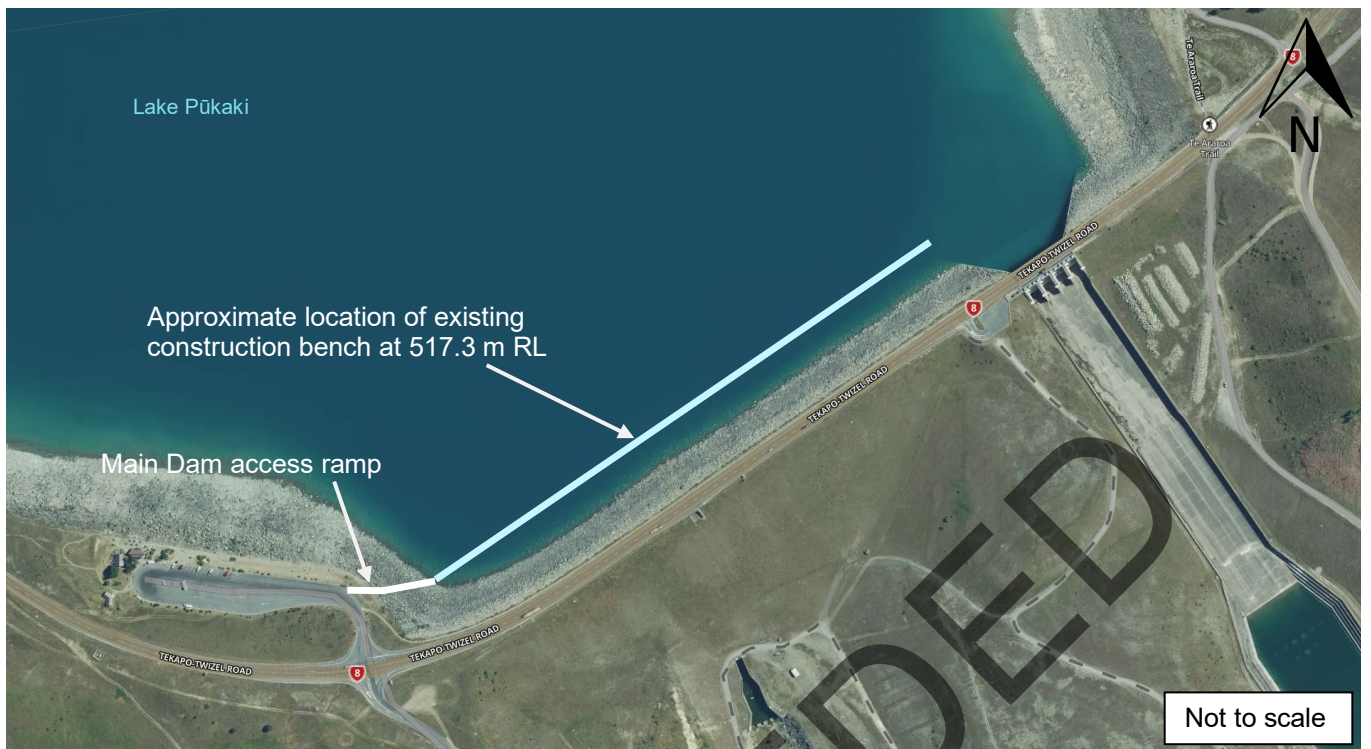


Figure 6 Site plan (Main Dam) – Tranche 1 - indicative 517.3 m RL construction bench

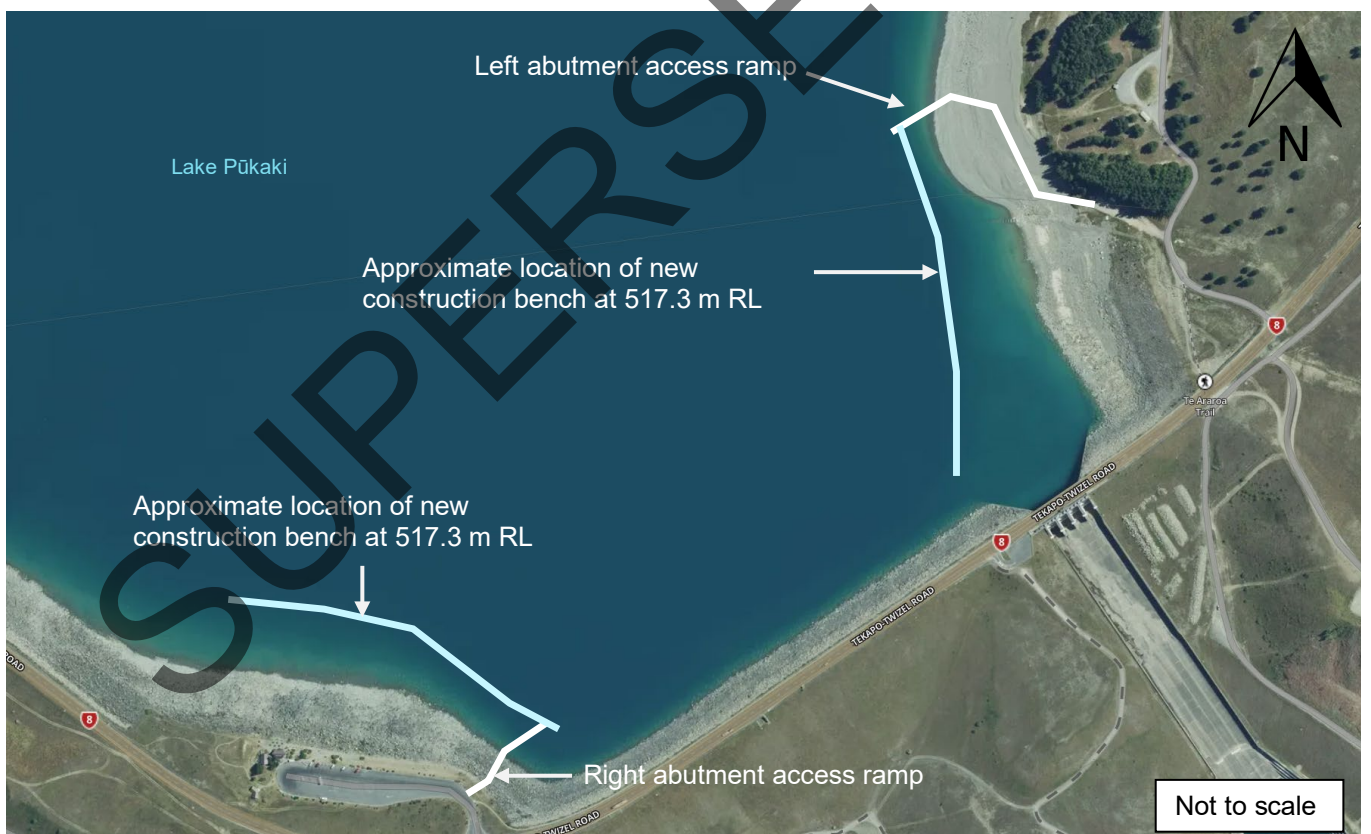


Figure 7 Site plan (abutments) – Tranche 1 - and indicative 517.3 m RL construction bench

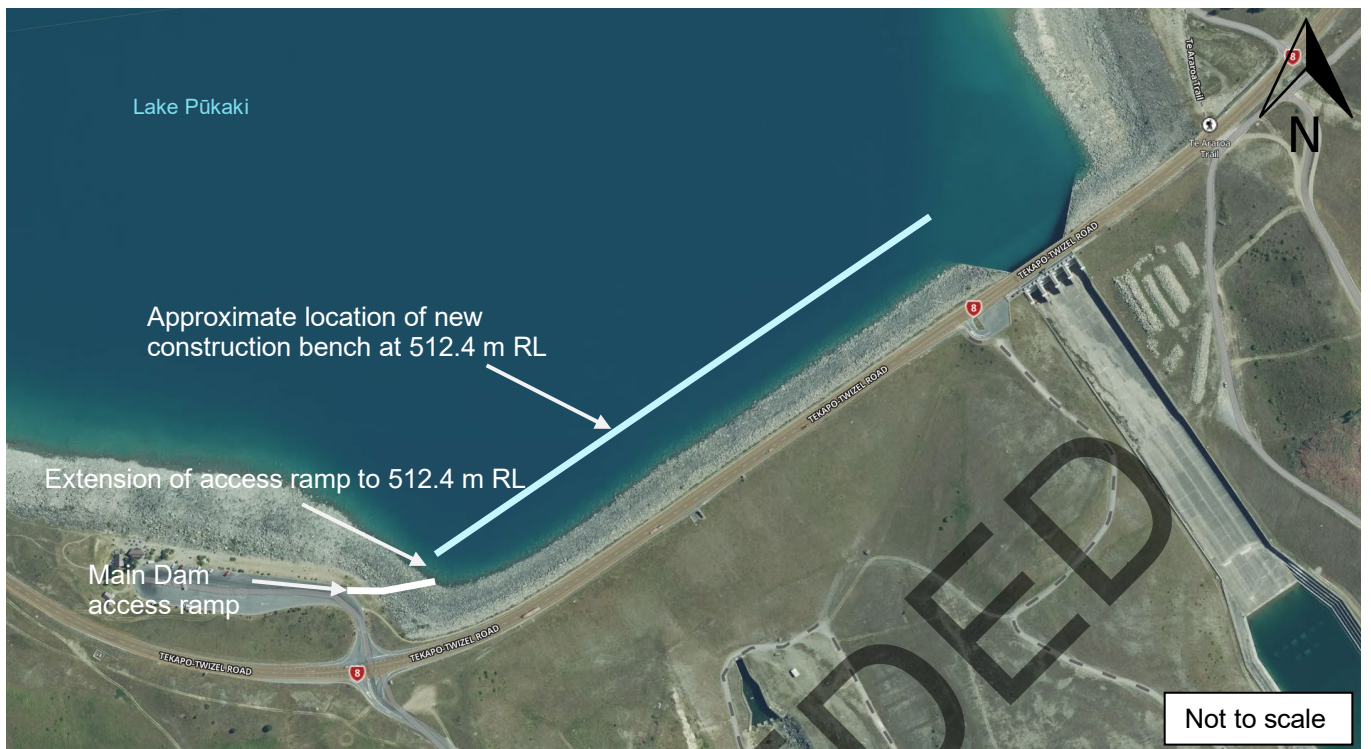


Figure 8 Site plan (Main Dam) – Tranche 2 - indicative 512.4 m RL construction bench

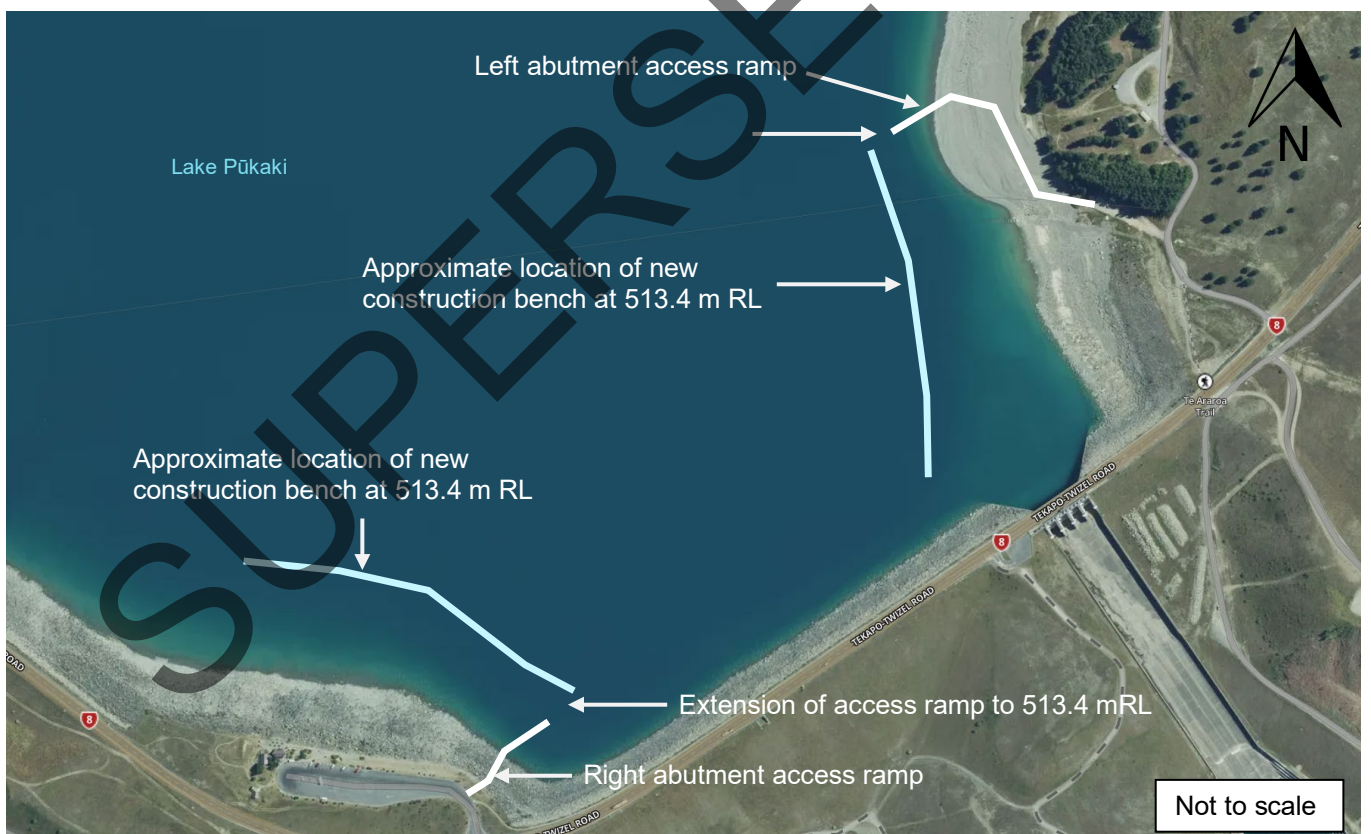


Figure 9 Site plan (abutments) – Tranche 2 - indicative 513.4 m RL construction bench

4.4 Key Equipment

A summary list of the likely large plant to be used on site is provided in Table 3 (GHD, 2025A). This does not include the site offices, traffic management units and small plant including excavators, water trucks, sweeps, etc.

Table 3 Key equipment

Resource	Count	Tasks
20t Excavator	2	Sorting and loading rock from stockpile area
45t Excavator	1	Enabling and construction work on High Dam and Right Abutment
Mercedes AXOR Heavy Duty Road Trucks	3	Carting gravels and Rock to/from High Dam and Right Abutment
AXOR 45t Excavator	1	Enabling and construction work on Left Abutment
AXOR Heavy Duty Road Trucks	3	Carting gravels and Rock to/from Left Abutment

4.5 Reinstatement

Reinstatement of the works sites will include the following activities:

End of each work period

- Removal of any temporary stockpiles created during works and replacement of stockpile rock material from commercial quarries, as required.
- Re-grassing of any rip-rap stockpile areas to match surrounding existing land. This is to be progressively undertaken as works progresses and bare ground areas exposed to minimise the duration that areas are left as bare ground.
- Temporary protection of created access ramps with zone 10 materials (rip-rap) out of the construction season to minimise erosion.

Once All Works Complete

- Removal of access ramps and permanent reinstatement with zone 10 materials (rip-rap).
- Complete re-grassing of stockpile areas and associated tracks
- Removal and reinstatement of all ESC features including silt fences and silt ponds once re-grassing has been completed.

Note stockpiles may be retained beyond the end of the works associated with this project to provide a source of material for other ongoing maintenance projects associated with the wider Lake Pūkaki engineering structures.

5. Proposed Erosion and Sediment Controls

The proposed erosion and sediment control measures are outlined on the site plan in Figure 10. These features are discussed in detail below.

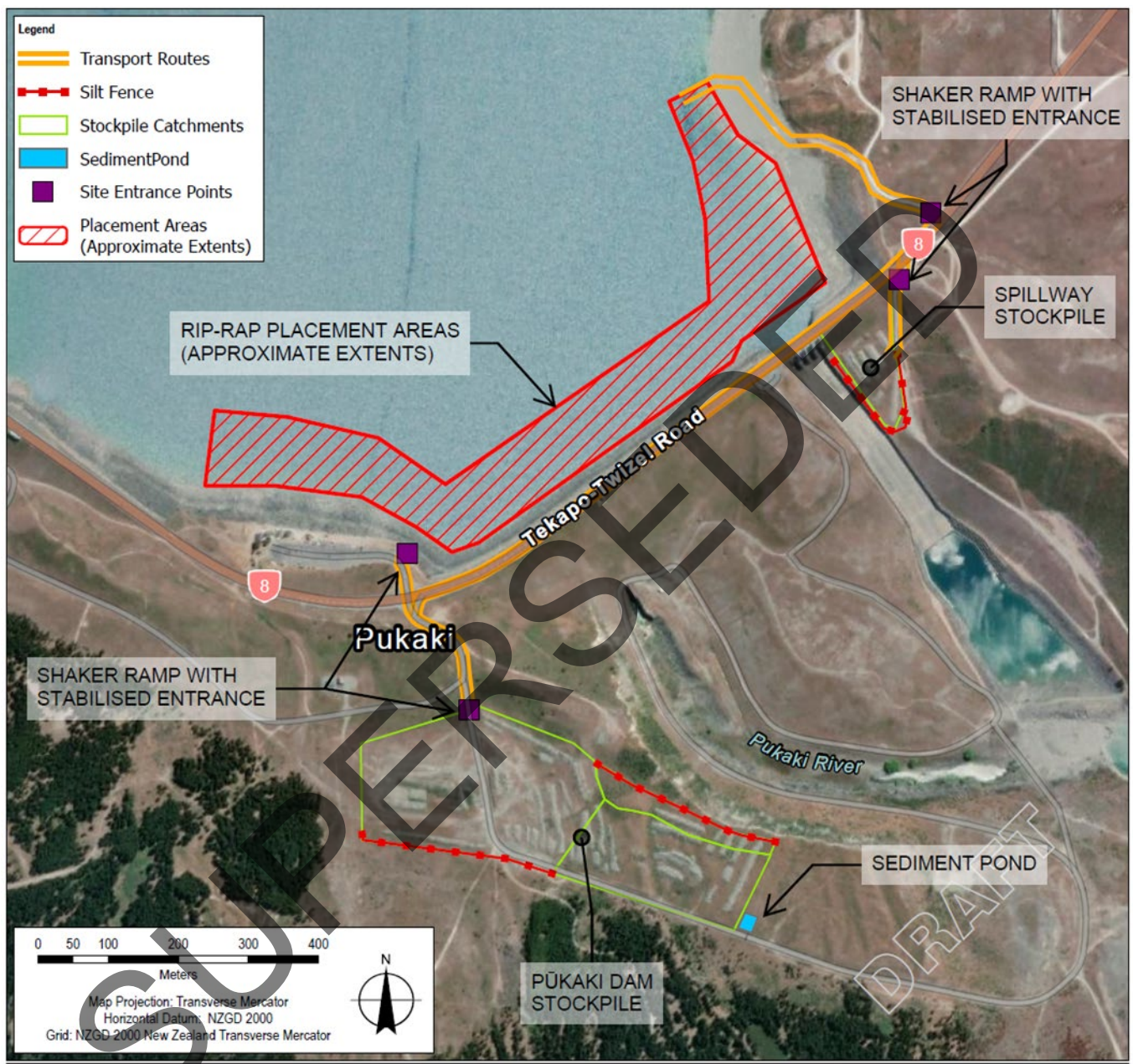


Figure 10 Erosion and sediment control layout plan

5.1 Key sediment discharge minimisation principles

Construction timing is an important sediment discharge control for this project and the first focus for minimising disturbance from the works.

- Where possible, all works will be completed with excavators located in dry conditions and above lake water levels. Nonetheless, works will require excavator to be removing and replacing rock from below water level.
- However, given the duration required for construction and modelled lake levels, it is unlikely that there will be sufficient time to undertake all the works with lake levels below 517.3 m RL (i.e. the level of the existing construction bench) and almost certainly not for Tranche 2 works. To provide as much opportunity as

possible to complete works, it is expected that the excavator will need to sit within water for at least part of the works (to a depth of 0.6 m). Hence works will be scheduled to occur where lake levels are below 517.9 mRL and control measures for this activity is outlined in Section 5.5. The levels for commencing works are based on an excavator being able to work within 600 mm water depth while sitting on the 517.3 mRL bench for Tranche 1 and 513.4m RL for Tranche 2.

The following key principles are applied in this ESCP and are to be implemented during construction:

- Wherever possible, works will be kept to the minimum required to meet the needs of the project while also minimising soil disturbance and reducing reinstatement requirements.
- Construction works under the water line of Lake Pūkaki will be kept to a minimum.
- Where runoff flows from the rock stockpiles in sheet flows off the site, silt fences or shallow cut off drain will be used to minimise sediment runoff. Additionally, long overland flow paths with vegetation cover will offer fine sediment capture before reaching waterways. As noted in Section 3, significant runoff is only likely to occur during significant or very significant rain events.
- For areas of concentrated runoff, a sediment retention pond or soakaway pit will be constructed to treat runoff prior to discharge.
- If required, wheel wash stations and/or shaker ramps will be implemented for trucks leaving site. However, the ground conditions at the site are generally either established gravel tracks or gravel substrate and excessive mud generation is not expected.
- Regular (multiple times a day, as required) sweeping of the State Highway to remove any tracked material.
- Use of sediment curtains within Lake Pūkaki to reduce sediment migration from the works area.

5.2 Specific Control Measures for the Rock Armouring Stockpile Areas

Spillway Stockpile (see Figure 10)

The total area of the spillway stock approximately 0.8 ha. The stockpile is located downstream of the dam and is underlain by natural ground. This area has partial grass cover around the rip-rap stockpiles. The options for control of runoff are:

- Install silt fences along all down slope aspects of the site as shown in Figure 10 or shallow cut off drains at the same location,
- Install silt fences or cut off drains below removed stockpiles to further breakup the catchment into areas not greater than 0.3 ha,
- Reinstatement of the surfaces immediately after stockpiles have been completely removed – complete in stages as areas become available between periods of construction.

Pūkaki Dam Stockpile (see Figure 13)

The rock armouring stockpile area has been split into three catchment areas which drain in different directions. All sediment control measures will be constructed in accordance with **Environment Canterbury's Erosion and Sediment Control Toolbox**. The control measures for each catchment are shown in Figure 13 and are outlined as follows.

Catchment 1 drains to the south in sheet flow. The runoff from this catchment travels for approximately 1.5 km through vegetation prior to discharging to the Pūkaki River. This long flow path will allow finer sediment captured in addition to any interception measures described below.

Two options will be considered for control of runoff and sediment:

Option 1 - A Super Silt fence along the southern catchment boundary will be constructed to keep sediment in the rock armouring stockpile area. The catchment boundary has a less than 10% grade and is 280 m long therefore the spacing of returns should be 60 m. A schematic of the super silt fence is shown in Figure 11. However, ground conditions may make construction of the fence problematic with the presence of stones and boulders making the driving of stakes difficult.

Option 2 – Given the typically low rainfall conditions in the area and free draining nature of the ground a shallow cut off drain along the alignment of the silt fence shown on Figure 13 may be sufficient to intercept runoff and associated silt.

Catchment 2 drains Northeast towards the Pūkaki River. This catchment is a smaller area, and the runoff is sheet flow. As with Catchment 1, a Super Silt fence or shallow cut off drain along the northeast boundary of the catchment will provide sufficient capture of sediment. The boundary to the catchment is 280 m long and sits at the top of a steep slope. The super silt fence or drain will be located at the top of the bank where the slope is less than 10%.

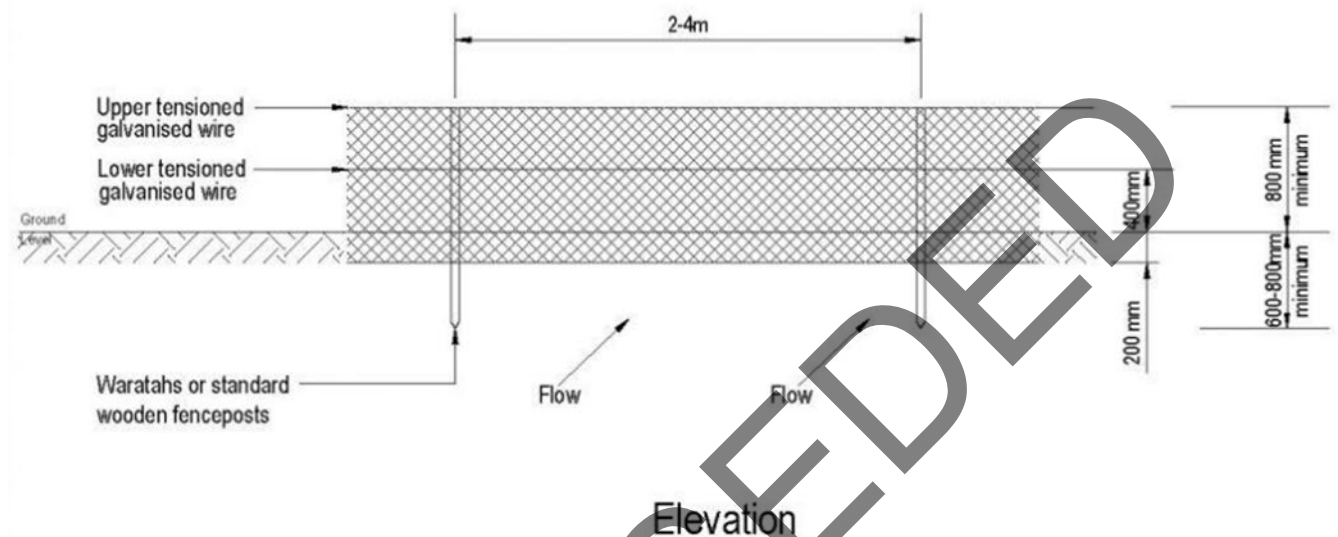


Figure 11 Elevation view for a super silt fence provided by the ECAN Erosion and Sediment Control Toolbox

Catchment 3 drains to the South into a roadside channel. This channelised flow then flows to the Pūkaki River. At this stage of ESCP development it has been conservatively assumed that flow will be intercepted and sent to a sediment retention pond (SRP – see Figure 12) sized to store 3% of the catchment area at 900 m³. Runoff will then be discharge through a culvert beneath the access road to stabilised ground. The discharge will flow over vegetated land from the Southern side of the access road for 1.5 km prior to meeting the Pūkaki River. During final development of the ESCP it may be deemed acceptable to utilise a soakage pit given the relatively free draining nature of the underlying ground.

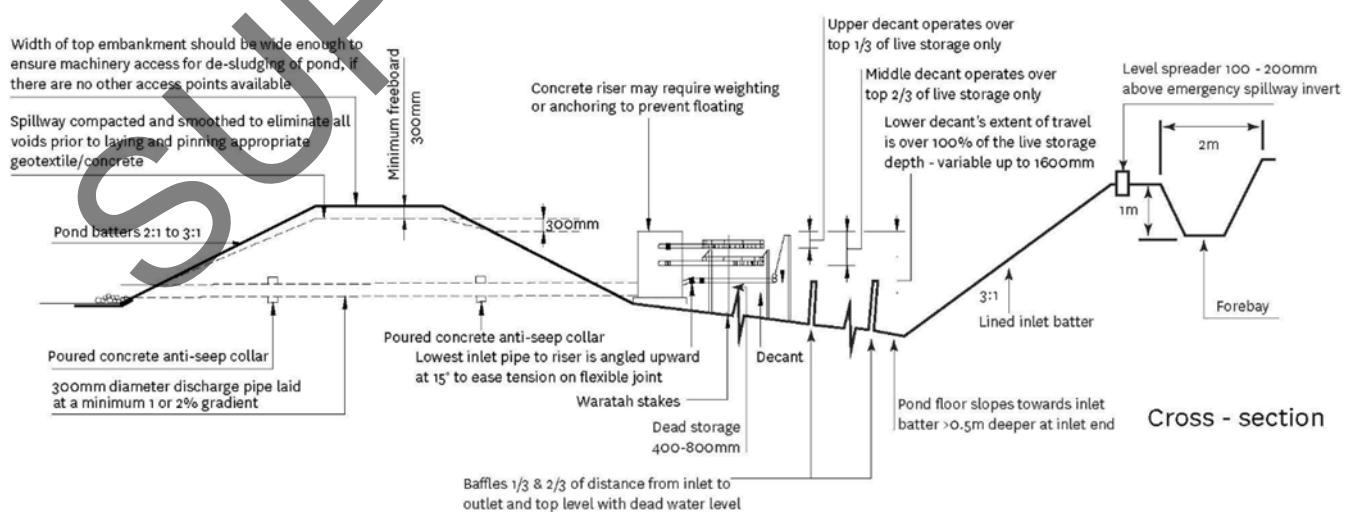


Figure 12 Cross-section of an SRP needed for a 3-5 Ha catchment provided by the ECAN Erosion and Sediment Control Toolbox

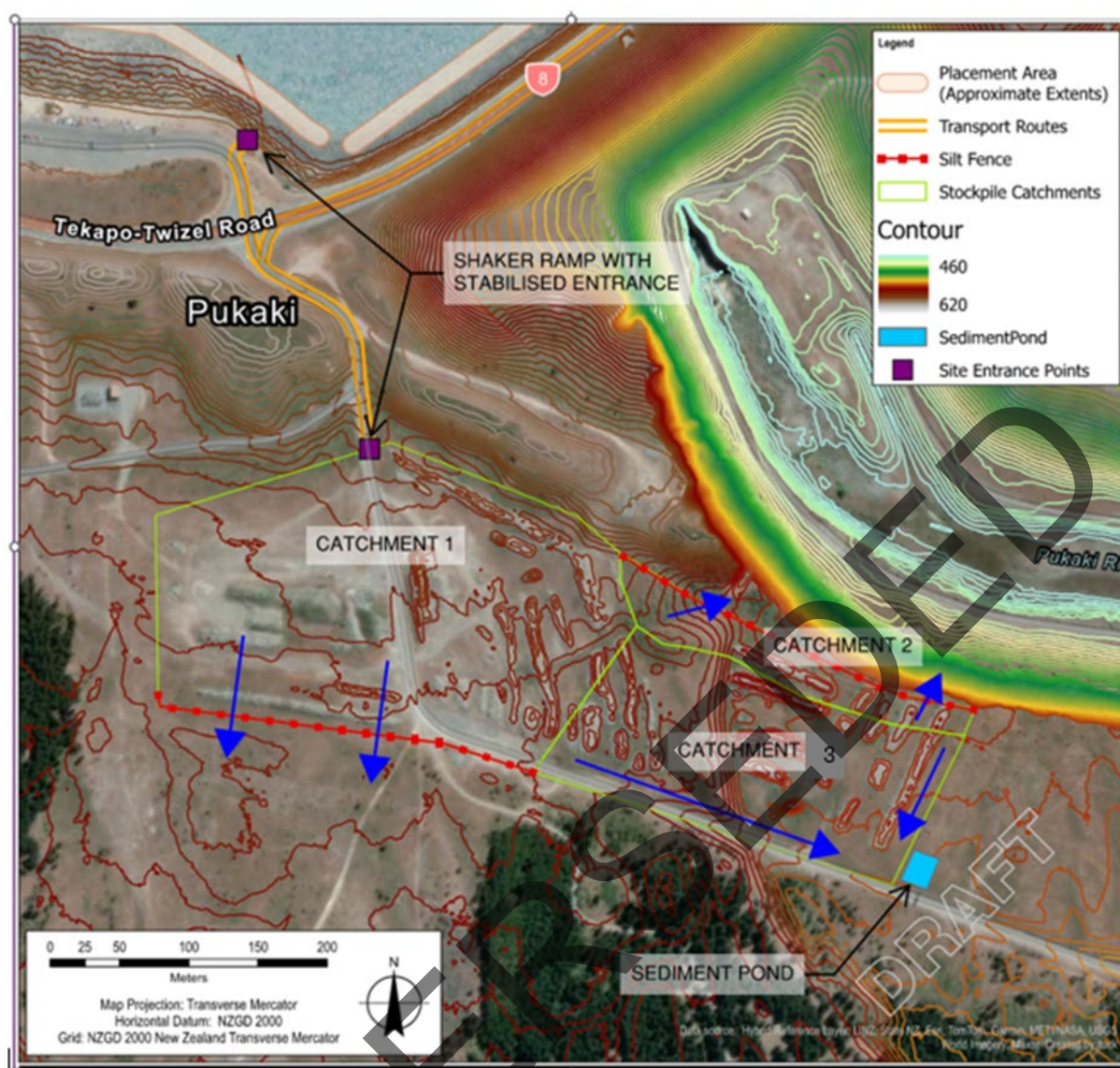


Figure 13 Pūkaki Dam stockpile area catchment and sediment and erosion control measures.

Table 4 Catchment areas

Catchment	Area (Ha)
1	5.93
2	0.77
3	3.02

Note that the extent of catchments has been determined from Lidar information and site truthing, especially in relation to deviations along the access tracks may be required. This likely results in a larger catchment area reporting to the proposed sediment pond.

5.3 ESC measures for works near Lake Pūkaki

It is expected that the wave height in the works area will increase the size of sediment plumes. The maximum wave height from GHD (2025B) is shown in Figure 14. In events where the wave height is significant sediment is expected to be stirred up regardless of site works in the area. The works will consist of excavating and placing rock armouring above and below the water line of Lake Pūkaki. Mitigation of works below the water level are discussed in Section 5.5. For works above the water level, but near the lake in areas that will eventually be inundated as the lake rises, the following approach will be adopted.

Rock armouring and associated bedding material is generally large rock and expected to have low fines content. However, it is expected that the rock armouring and excavation works along the shoreline will result in sediment that can either be washed into the lake during a rain event or mobilised once the lake level rises and inundates the work area.

To minimise the amount of sediment within the work area, a washdown station for trucks entering the work zone may be required, depending on actual conditions at the site. However, as noted earlier in this report, under most conditions excessive fines generation and tracking is not expected. Additional in-lake contingency mitigation measures are discussed in Section 5.7.

Nonetheless, as the lake rises following periods of work being carried out, it is expected that there will be temporarily elevated TSS along the lake edge as recently placed and disturbed materials are inundated. This is considered to be largely unavoidable. The extent, size and duration of sediment plume will be largely dependent on the prevailing wave heights as the lake level rises. The maximum wave height from GHD (2025B) is shown in Figure 14. Calmer conditions are likely to result in a smaller plume but for a longer period. Intermediate wave conditions will generate a larger plume, but it may disperse more rapidly. Very large waves are expected to result in sediment disturbance in general around the lake regardless of site works in the area. Management of sediment within the lake during construction is discussed in Section 5.5.

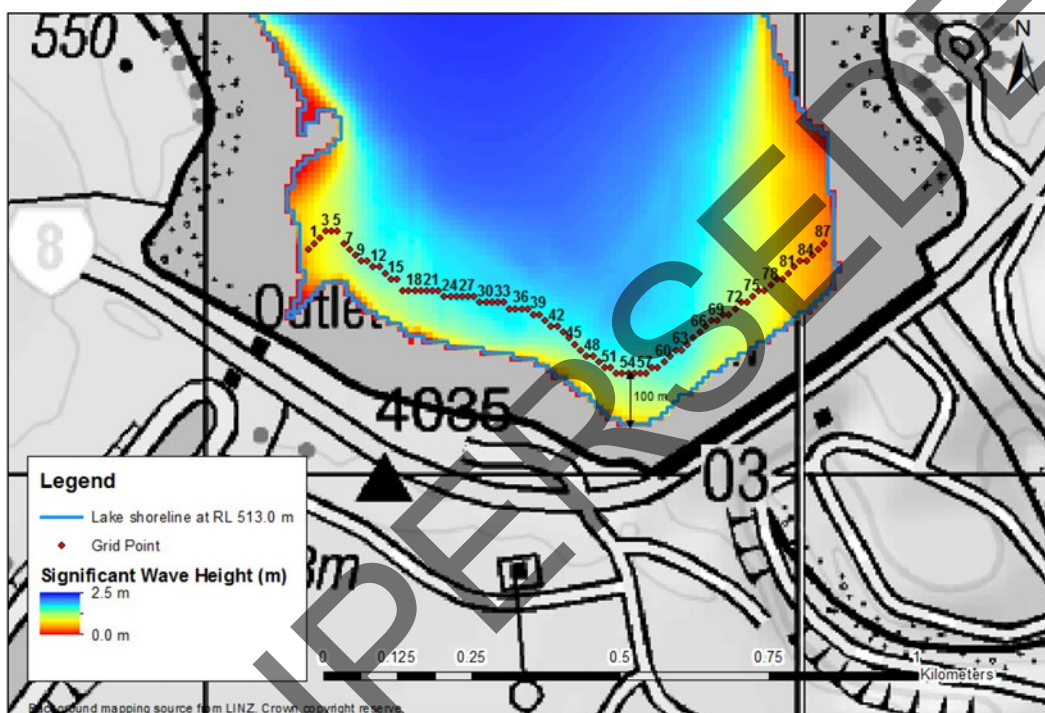


Figure 14 Wave height at the works area of Lake Pūkaki

5.4 Transport

To transport the rock armouring to the work area, trucks must carry the rock along the routes shown in Figure 10 and Figure 13. The publicly accessed/used State Highway and Lake need to be protected from sediment, dirt and rock discharge during transport. Therefore, several sediment control measures are available to manage State Highway crossing, if required. These control measures are shown in Figure 15 and Figure 16 and, if required, are to be constructed in accordance with **Environment Canterbury's Erosion and Sediment Control Toolbox**. Further details for the control measures are detailed as follows:

An area of stabilised aggregate at the entrances will help to minimise sediment built up at the site entry points and tracking of material onto the highway. They are to be a minimum of 4 m wide and 10 m long. Figure 15 shows a schematic of the stabilised entranceway provided by ECAN. However, the existing entrance ways are currently generally underlain by gravel and will be inspected prior to construction commencing and further stabilisation placed as required to both the lake front and the lay down area to meet the intent of the ECAN entranceway stabilisation.

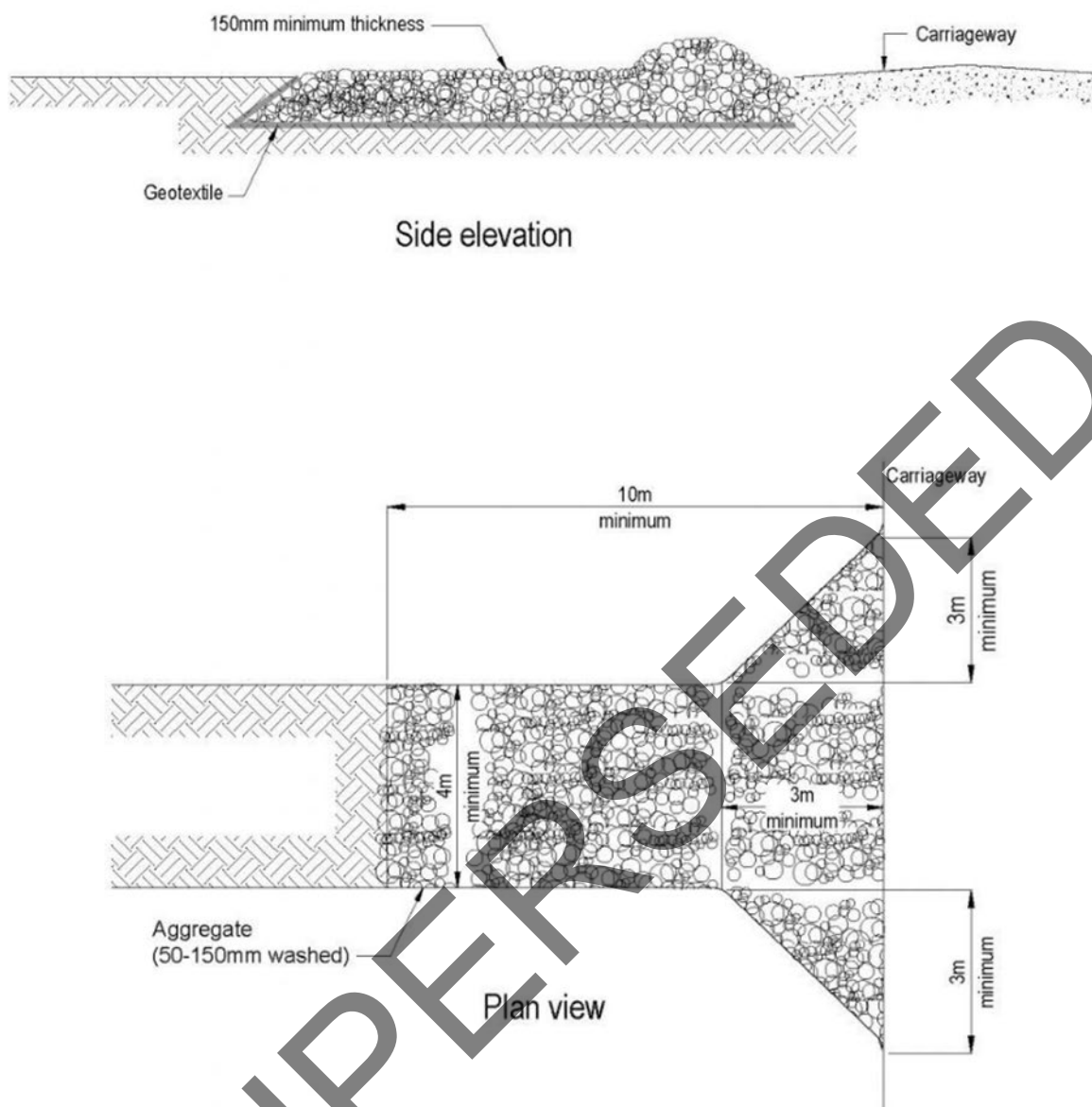


Figure 15 Stabilised entranceways schematic from ECAN's Erosion and Sediment Control Toolbox

As discussed in Section 5.1, in the event ground and weather conditions result in unacceptable tracking of material from the site options for further mitigation include shaker ramps and wheel washes in addition to the stabilised entrance ways.

The shaker ramps are designed so that they are at least 5 m in length. See example below in Figure 16.



Figure 16 Example of shaker ramp provided by ECAN in the Erosion and Sediment Control Toolbox.

A provisional wheel wash down station is to be located on site. If used, the water supply for this is to be provided by a water cart on site.

As discussed in Section 5.1, regardless of the measures in place it is expected that there will still be a noticeable amount of material deposited on/along the state highway. To manage this and the risk and nuisance factor to the public regular (multiple times per day) sweeping of the road is to be undertaken. This may need to extend beyond the immediate site where material is being sourced off-site.

5.5 Working within Water

Working within water is unavoidable for this project. Therefore, controls need to be in place to minimise environmental effects from the proposed works.

- Works within water will be minimised, this will be done by constructing working platforms where practical to do so and implementing long reach excavator equipment.
- A single entry and exit point will be used to minimise the area of disturbance.
- All vehicles entering water will be thoroughly cleaned (washdown station) and checked for fuel and oil leaks prior to entry.
- Additional contingency measures are discussed in Section 5.7.

5.6 Temporary Stockpiling

It is anticipated that through construction, temporary stockpiling of excavated/removed materials will be required within the work area along the margins of the lake water line. To minimise the potential sediment discharge from these stockpiles, the following measures will be implemented:

- Where practicable, stockpiles will be placed away from the water line and at an elevation such that they will not be influenced by wave runup that may feasibly occur during the projected duration of the temporary stockpile, with allowance for water level raising during high rainfall events.
- Any stockpiles within the lake margin that may be left in place from one season, will be placed above the highest lake operating level and more that 20 m from the high waterline. They will be stabilised as necessary to protect against dust generation and/or sediment discharge. They will also include toe bunding to capture any sediment running off the stockpiles.

5.7 Sediment Curtains

In general, sediment curtains are to be installed where work is expected to generate sediment within the lake. In some circumstances, sediment generation may be considered unlikely and ongoing turbidity monitoring will be undertaken, as outlined in Section 6. In the event this identifies undesirable water quality conditions extending from the immediate area of works sediment curtains will be installed.

Curtains (e.g. Figure 17) are placed around work areas to contain sediment and are moved as necessary as construction progresses. A 20 m buffer zone will be allowed between the curtain and the area of work. The curtains are to extend $>2/3^{\text{rds}}$ of the water depth.

The silt curtain should form a perimeter around the whole worksite, unless it is demonstrated that longshore currents towards the lake outlet are sufficient to negate the need for curtains 'upstream' of the worksite.

It is possible that high wind and wave events could either:

- Damage the installed curtain; or
- Require the temporary removal of the curtain.

Under these circumstances, the curtain will be replaced as soon as practicable. It is expected that under high wave conditions, near shore turbidity will be naturally elevated and increased mixing of waters from the worksite will temporarily reduce the benefits from the curtain

Sediment curtains will be removed at the end of each phase of construction.



Figure 17 Example of floating sediment curtain (<https://cirtexcivil.co.nz/products/silt-control/envirosieve-turbidity-curtain/>)

6. Inspection and Monitoring

Daily monitoring of turbidity and suspended solids is required starting one month before construction begins. These tests should be conducted at the canal intake and the overflow spillway. Establishing baseline data at these locations will ensure a clear understanding of existing lake conditions, providing a reliable reference point for comparison during construction activities.

During the construction phase, visual monitoring of discharge water quality is to be undertaken at 3-hour intervals while the site is active, and ponds are discharging. This monitoring shall be by visual water sample comparison with prepared reference samples to confirm adequacy of treatment. The monitoring shall also visually inspect for any hydrocarbons within drains, ponds and discharges.

During the laying of rock armouring in and around Lake Pūkaki, visual monitoring of water quality is to be undertaken at 3-hour intervals while the site is active. This monitoring shall be done by visual water sample comparison with prepared reference samples to confirm the level of care taken in construction is sufficient. The locations of these sample shall be on both sides of the canal intake. The western side of the canal intake should not have any sediment disturbance so would be an ideal reference sample to compare with areas surrounding the construction works. While it is expected that under most circumstances silt curtains will be deployed prior to construction commencing, the methodology detailed above and in Sections 6.1 and 6.2 will be utilised where silt curtains have not been deemed necessary, but works are occurring near the lake, and a risk remains of discharge/disturbance to the lake.

Inspections of installed ESC features for the rock armouring area are to be undertaken daily, and maintenance carried out immediately where required.

Table 5 *Monitoring and inspection schedule*

Item	ESC Feature	Monitoring Schedule	Responsible Person	Notes
1	Clarity sampling	2× daily	Site Foreman / Environmental Manager	Sampled as per Section 6.1
2	Silt fences	Daily, increased frequency during storm events	Site Foreman	Fence layout to be approved by SQEP
3	Shaker ramps and stabilised entrances	Daily	Site Foreman	
4	Highway and public access roads	2 hourly	STMS / all site staff using the route	All staff using the route to lookout for material or any rocks/stones left on roadways.
5	Sediment Pond	2 hourly during rain; daily otherwise	Site Foreman	Siting and construction of pond to be approved by SQEP.
6	Sediment Curtains (if installed)	2 hourly during work hours	Site Foreman / Environmental Manager	Installation extents to be approved by SQEP

6.1 Visual Clarity Monitoring

Monitoring and recording of visual clarity and fine suspended sediment (via clarity tube) is to be undertaken at:

- a. A control point - at a position on the lake shore determined by a SQEP to be uninfluenced by works. This is expected to be either, near the lake outlet on the opposite bank from the area of works or >200 m away from the worksite in a direction away from the outlet, such that the induced longshore current from lake discharges prevents the sample area being affected by works.
- b. A monitoring point - 50 m from the works site centre of the digger working in water, and
- c. A monitoring point - 50 m from the works site perpendicular to the shoreline.

Samples to be taken approximately 4 and 8 hours after commencing works each day and not immediately following a period of no in lake works (i.e. lunch break).

6.2 Trigger Criteria

The following trigger values will be applied for deploying silt curtains and would be based on (1) or (2) being exceeded on two consecutive working days unless there is clear evidence that the increased measurements result from factors other than the rip-rap placement works being undertaken. The trigger levels related to the monitoring regime in Section 6.1 are:

1. If there is a 20% reduction in clarity between a control point (a) and monitoring points (b or c), or
2. Where a visual plume is exceeding 50 m from the edge of the work site and TSS increases by more than 50 g/m³ between a control point (a) and monitoring points (b or c).

Where monitoring following deployment of a curtain shows the trigger values to be exceeded for two further consecutive working days:

1. Council is to be notified and supplied monitoring forms and revised mitigation measure proposal, and
2. A SQEP is to be engaged to determine a best practical option for TSS and clarity improvements related to these works.

7. Contaminant indicators and protocols

7.1 HAIL Study

A Hazardous Activities and Industries List (HAIL) assessment has been completed for the site and is included in Appendix B. The HAIL assessment concluded that while several HAIL activities were identified present within the wider area only one of these, an Underground Storage Tank (UST) has been identified as a potential risk of being a source of soil contamination at the site.

However, due to the nature of the potential contamination and the distance to the proposed works area, it is considered unlikely that contamination in soils is present at the site resulting from potential discharges from the UST which is likely located adjacent to the lookout carpark.

7.2 Unexpected Discovery Protocol for Contaminated Materials

While the HAIL assessment concluded that site contamination is unlikely, the following protocols should be followed at the site during construction works.

Contaminant indicators in soil may include:

- Cement pipe, sheet, pipe or board materials (may contain asbestos)
- Auditory assessed contamination (flowing or dripping liquid and liquid of gas leaks)
- Visually assessed contamination (buried refuse, metal objects, building material, soil or water staining/bleaching or discolouration)
- Olfactory assessed contamination (odorous materials or groundwater)

If any such indicator or other suspicious material is observed during earthworks, the following steps shall be taken:

- Advise site management and cease works immediately in the vicinity of the issue and/or isolate the area until a definitive decision is made regarding the hazard posed
- If confirmation of contamination is needed, the contractor shall engage, or instruct engagement, of a contaminated lands Suitably Qualified and Experienced Practitioner (SQEP). The SQEP can provide options for next steps including soil reuse and/or disposal

For interim management of the unexpected discovery, the following steps shall be undertaken:

- Where possible, contamination should remain in the ground or removed from the ground and securely isolated until a suitable course of action has been decided
- In the event that any soil contamination found has been excavated into trucks or stockpiles, or contaminated groundwater has been stored in a settlement tank, the contamination shall be contained to control migration or leachate formation

If any contaminated soil is discovered during the works and requires off-Site disposal, soil should be tested before any material is sent off-Site and the appropriate landfills should be consulted.

In addition to all of the above, the contractor will maintain a register of any contaminated material discovered, including location, type, quantity and any associated disposal records. The information will be provided to the SQEP writing the soil validation report.

8. Emergency Procedures

All staff need to know in advance the emergency procedures that will be implemented for any accident, including spills and accidental untreated sediment discharge reaching surface water.

Appointed Contractor to complete Emergency Procedures in accordance with their Standard Operating Procedures and Site-Specific Risk Assessment.

9. Heavy Rainfall Response and Contingency

Weather forecasts are to be monitored through the construction period to identify where periods of increased rainfall might exceed the design capacity of the installed ESC features. Where this will potentially occur, site activities will focus on reducing exposed surfaces, contouring areas of earthworks to direct flow towards the sediment ponds and reduce areas of flow concentration where practicable.

10. Plan Revisions

This ESCP is to be confirmed prior to commencing physical works. As the project progresses it is likely the ESCP will require further refinement and adjustment. Any material changes to the ESCP are to be submitted to ECan for certification.

11. Responsibilities

The responsible parties for each of the control and monitoring measures is displayed in Table 6.

Table 6 Responsible parties for control measures

Control measure	Responsible party
Sampling of water quality	Contractor
Sampling result decision making	Appointed SQEP
Visual sediment plume result decision making	Appointed SQEP
State Highway debris removal	Contractor
Maintenance and inspection of ESC features	Contractor

12. Version control

Table 7.1 Document Version Control

Version	Date	Description of Changes
1.0	30/10/25	DRAFT
2.0	9/03/26	DRAFT – updated text
3.0	16/3/26	DRAFT – updated silt curtain text and triggers
4.0	15/04/26	DRAFT – removed Dust Management Plan – see separate document

SUPERSEDED

13. References

GHD 2025A. Lake Pūkaki Reservoir Hydro Storage and Dam Resilience Works – Pukaki Dam Rip-Rap Design and Construction Methodology 2025.

GHD 2025B. . Lake Pūkaki Reservoir Hydro Storage and Dam Resilience Works – Lake Processes and Geomorphology 2025.

Environment Canterbury 2020. Erosion & Sediment Control Toolbox

Meridian 2025 – Modelling Memo

SUPERSEDED

Appendix A

CV

SUPERSEDED



Jeff Tuck

Senior Water Engineer



Location

Christchurch

Experience

10 years

Qualifications/accreditations

- Master of Engineering, 2016
- Bachelor of Engineering (Hons), 2010

Key technical skills

- Construction management
- Transient modelling and design
- Water infrastructure design
- 1D and 2D hydraulic modelling of surface water and urban networks
- Water balance and mass load modelling with probabilistic assessment

Memberships

- Engineering New Zealand
- Water New Zealand

Relevant experience summary

Jeff's experience encompasses construction management, water balance modelling, risk mitigation, environmental assessment, and a focus on design of effective hydraulic infrastructure. Having undertaken design, construction monitoring and quality assurance, Jeff brings a practical aspect to his work which enables him to consider constructability when providing inputs to design projects.

Jeff's attributes include being able to think critically, analyse complex situations, and apply innovative techniques. His knowledge includes fluid mechanics, system hydraulics, hydraulic modelling and the software used to do this.

Experience demonstrating capability in construction monitoring and design

Construction Monitoring Experience

North New Brighton WW Renewals

Role: Contracts Engineer, PM
Client: Christchurch City Council
Location: Christchurch
Date(s): 2020-2022 (PC issued August 2021)

Jeff is the Contracts Engineer and GHD Project Manager for the North New Brighton WW renewals Contract which involves renewal of 2,200 m of wastewater mains and corresponding lateral connections. This role includes managing the contract and applying quality management procedures in line with the CCC construction standard specification.

Fendalton and Riccarton WW Renewals

Role: Contracts Engineer, PM
Client: Christchurch City Council
Location: Christchurch
Date(s): 2020-2024

Jeff is the Contracts Engineer and GHD Project Manager for the Fendalton and Riccarton WW renewals Contract which involves renewal of 3,000 m of wastewater mains and corresponding lateral connections. This role includes managing the contract and applying quality management procedures in line with the CCC construction standard specification.

Woolston WW Renewals

Role: GHD Project Manager
Client: Christchurch City Council
Location: Christchurch
Date(s): 2021-2023

Jeff is the GHD Project Manager for the Woolston WW renewals Contract. His role is to provide guidance and assistance to the Contracts Team on the project based on past CCC contract experience and undertake internal project management tasks.

Te Mato Vai Stage 1 and 2

Role: Engineers Representative Assistant

Client: Cook Islands Government (MFEM)

Location: Cook Islands - Rorotonga

Date(s): 2019-2021

The Te mato Vai Stage 2 project included the construction of ten water treatment plants, water intakes, storage tanks and trunk mains to supply treated water to the communities of Rarotonga. The Stage 1 project included renewals of 15 km of water mains. Jeff was an Engineer Representative Assistant and carried out construction supervision across these two projects for periods of 2019 and 2020. The role covered supervision of all aspects of the construction project on behalf of the Cook Islands Government. Further to the supervision role, re-design work was regularly carried out in response to encountered unexpected conditions.

Te Mato Vai - Road Panel | Cook Islands | 2020

Role: Engineers Representative

Client: Cook Islands Government (MFEM)

Location: Cook Islands - Rorotonga

Date(s): 2020-2021

Jeff undertook the Engineers Representative role for the Te Mato Vai Road Panel contract. This contract is setup to maintain access and provide ancillary contract works to support the Te Mato Vai Stage 2 construction works. The role includes maintaining contractual communications with the three construction companies represented on the panel and completing MSQA requirements.

Project Management Unit (PMU) | Cook Islands | 2019

Role: Design Engineer

Client: Cook Islands Government (MFEM)

Location: Cook Islands - Rorotonga

Date(s): 2020-2021

The PMU contract was setup by the Cook Islands Government with involvement by MFAT to manage the Te Mato Vai and Mei Te Vai Ki Te Vai projects. These projects focus on replacement of Rarotonga's water supply infrastructure and development of wastewater infrastructure.

Jeff's involvement included design and tendering of ancillary contracts such as minor pump stations, pipeline renewals and household metering installation contracts. The project also involved a significant community consultation component.

Hydraulic and surge modelling

Western Corridor Wastewater Servicing

Role: Hydraulic Modeller

Client: Tauranga City Council

Location: Tauranga

Date(s): 2020

As well as demonstrating his technical abilities in surge modelling and analysis, this work has also built Jeff's knowledge of the Western Corridor network.

Jeff carried out hydraulic and surge modelling on the proposed design to support design decisions and verify system capacity. The analysis included long term fatigue assessment to inform system optimisation through the design phase.

The project involves construction of a new wastewater pump station and rising main to support future development. Three phases of construction are proposed to align with staged development, where the final solution includes 6,000 m of twin DN500 PE pipelines.

Various surge analysis projects

Role: Hydraulic Modeller

Client: Various

Location: Auckland, Tauranga & Christchurch

Date(s): 2017 – on-going

The relevance of these projects is in the surge modelling and surge mitigating design works Jeff undertakes. This is similar to the work he is expected to perform on the TCC renewals programme and demonstrates his knowledge of the effects of surge on pipeline condition and ability to contribute to predictions that may affect current pipe condition and future longevity.

Among other collaborative projects and reviews, Jeff carried out surge analysis modelling for:

- Halswell wastewater rising main
- Prebbleton pump station and rising main surge analysis and capacity assessment
- Snell Algies outfall pipeline
- Castor Bay Road pump station and wastewater rising main
- Almna Road pump station and wastewater rising main
- Hingaia pump station and wastewater rising main
- Hibiscus coast distribution trunk main and water supply distribution

On these Jeff was also called upon to:

- Assess pipeline class for surge requirements
- Determine air valve placements
- Size surge protection vessels
- Undertake fatigue analysis

Christchurch Citywide Flood Model

Role: Hydraulic Modeller & Data Analyst
Client: Christchurch City Council
Location: Christchurch
Date(s): 2017 – 2019

This work highlights Jeff's ability to tackle the challenges of large and complex modelling projects.

The complexity and scale of the CFM project required Jeff to develop a range of tools using ARC-GIS, Python, Excel and Visual basic software to enable efficient model building, quality assurance and data processing.

The Citywide flood model uses DHI MIKE Flood software to create three-way coupled model with a flexible mesh of the Christchurch stormwater catchments.

Pukerimu Intake Assessment

Role: Hydraulic Modeller
Client: Waipa District Council
Location: Waikato River
Date(s): 2018 – 2019

This work demonstrates that Jeff has an understanding of the natural environment effects on design and potential impacts of infrastructure on the environment.

Using HEC-RAS 2D river modelling software Jeff assessed the low flow river levels within the Waikato River near the Pukerimu raw water intake. He used this information to determine the risk profile for the intake, which is applied in prioritising upgrades and design levels. The study further assessed the impact of the intake on river flow and levels to demonstrate acceptable environmental impacts

Wakamoekau Community Water Storage Scheme Feasibility Study

Role: Transmission & hydraulic roughness assessor
Client: Wairarapa Water Ltd.
Location: Wairarapa
Date(s): 2020

This study demonstrates Jeff's research capabilities, applying an understanding beyond 'design code' principles to generate robust models and enable fit for purpose infrastructure designs.

Jeff carried out a literature review and optimisation process to determine nominal pipeline roughness allowances to apply for efficient and accurate network modelling.

The study is part of a wider design project to irrigate of 8,000 ha of land through 150 km of pressure pipelines.

Waimea Additional Irrigation Assessment

Role: Hydraulic Modeller
Client: Waimea Irrigators Ltd.
Location: Waimea, Tasman District
Date(s): 2017

To support development of the irrigation scheme Jeff helped to develop concept designs of three irrigation networks. This included modelling each network within a hydraulic design optimisation process.

He also developed construction cost estimates for the proposed systems.

Water Intake Design

Role: Hydraulic Modeller and Designer
Client: Watercare Services Ltd.
Location: Tuakau, Waikato River
Date(s): 2017-2020

Watercare is looking to upgrade a water intake and treatment plant at Tuakau to supply 300,000 m³/d to the network and the project is in the consenting phase of works. Jeff's involvement includes producing concept designs for the screened raw water intake and pumpstation. The intake is designed to meet regulatory requirements for fish screening while accounting for river hydraulic conditions to maintain reliable supply.

In brief...

Jeff also dedicates time to providing industry based tutor time to the final year capstone project at UoC.

- **University of Canterbury, ENCI/ENNR413 Capstone Project** – Providing industry based tutoring, including lectures, tutorials and project design assistance in the final year capstone projects undertaken as part of the Civil and Natural Resource Engineering Degrees.

Career history

2017 – present	GHD, Water Engineer
2011 – 2016	Canterbury University, Postgraduate Studies, Research Assistant, Lecturer, Tutor
2009 – 2011	Opus, Intern Water Engineer
2008 – 2009	Opus, Laboratory Technician

Modelling & design software used

– ArcGIS	– Hytran
– Bentley WaterCAD/Hammer	– WANDA
– Goldsim	– Mike by DHI (Mike Flood, Mike 11, Mike 21)
– HEC-RAS	– AutoCAD

Appendix B

HAIL Report

SUPERSEDED

Memorandum

Internal use only

26 August 2024

To	Amy Callaghan		
Copy to	Stephen Douglass		
From	Wendy Whitley	Tel	03 363 0802
Subject	Lake Pukaki HAIL areas	Project no.	12647815

1. Introduction

Meridian Energy propose to undertake some erosion protection measures along the southern shoreline of Lake Pukaki (the 'site'). The indicative works boundary is shown on Figure 1 below.

The site is located within a property area that has been identified on Environment Canterbury's (ECan) Listed Land Use Register (LLUR) as having three HAIL² activities occurring on it. The presence of potentially contaminated land will impact on the consenting requirements for discharges for the proposed works.

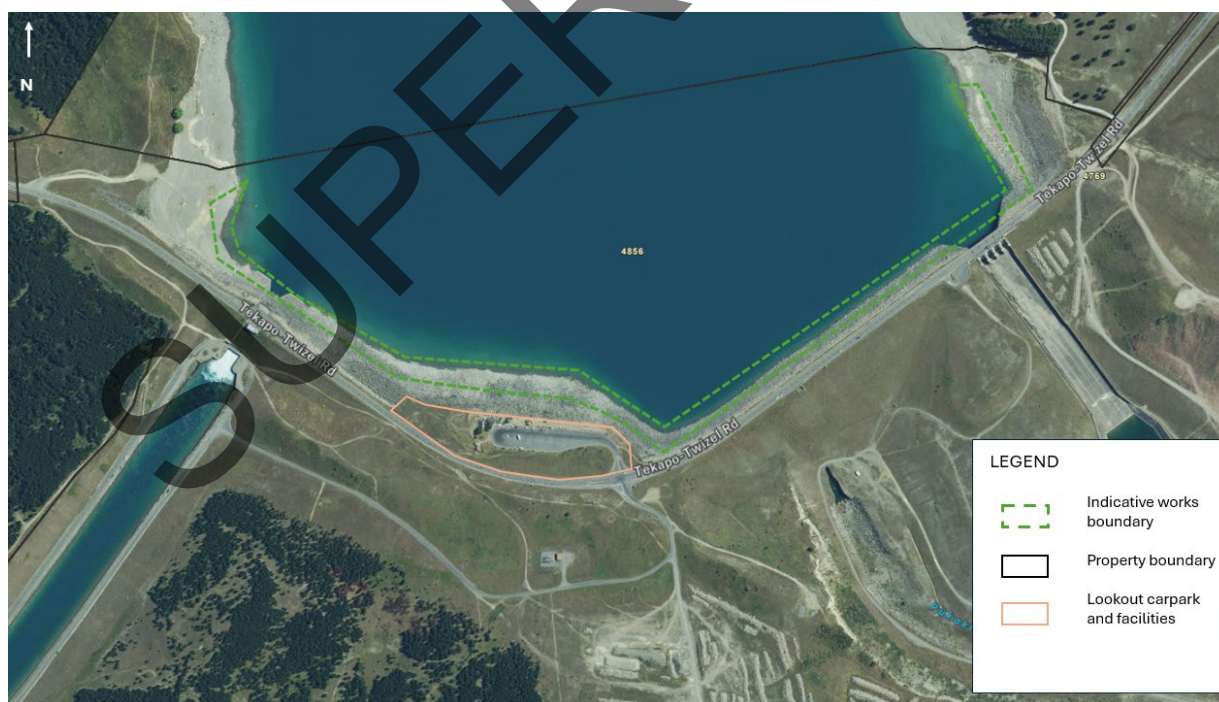


Figure 1: Site location (image source: Environment Canterbury GIS)

¹ Draft construction methodology provided by Meridian Energy, 7 August 2024

² Hazardous Activities and Industries List, October 2011, Ministry for the Environment

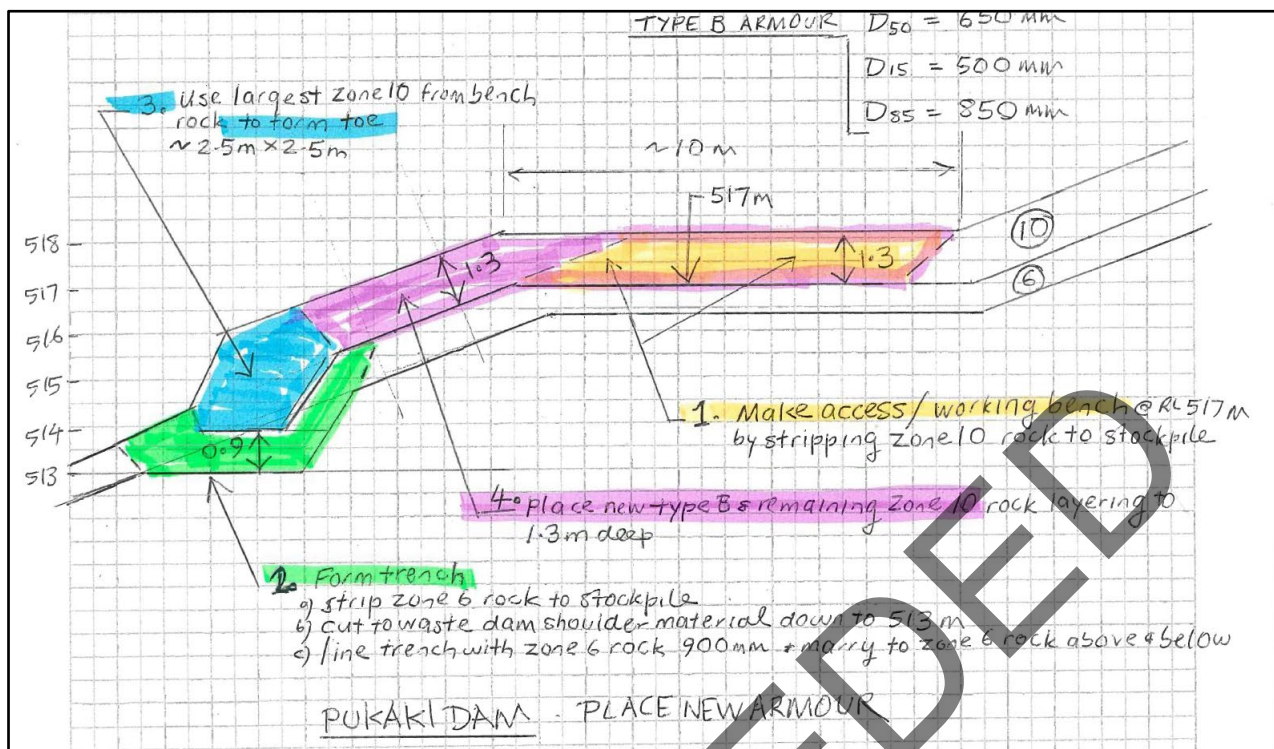


Figure 2: Draft proposed excavations and benching for placing new armour

1.1 Scope and objectives

This memo provides a high-level assessment of whether a HAIL activity is occurring or has occurred at the site and determine if there is a risk of soil contamination impacting the proposed project works, and includes:

- Review of the following information:
 - Environmental setting details including geology and groundwater from publicly available resources;
 - LLUR statement for the Property;
 - Publicly available historical aerial photographs on the ECan online GIS portal; and
 - Client provided information.
- Preparation of a preliminary Conceptual Site Model to understand the potential risks for contamination.

2. Site setting

2.1.1 Site description

The site is located in the northern portion of Lot 1 DP 368484 (the Property) and is located on the Tekapo-Twizel Road, Twizel, on the southern banks of Lake Pukaki.

Adjacent to the lake are the engineering infrastructure associated with the hydro dam and control of lake levels, and the Lake Pukaki lookout carpark with small commercial facilities and public toilets. This lookout area is a popular tourist attraction with hundreds of people visiting every day.

2.1.2 Environmental setting

The geology of the area is described as *generally unweathered bouldery till; mixtures of gravel / sand / silt / clay; in well-defined valley moraines and engineered fill associated with hydro-electric canals and dams; alluvial gold dredge tailings* by GNS³.

Details for two test pits which were excavated adjacent to the lookout carpark were found on the New Zealand Geotechnical Database (NZGD). Relevant details from these testpits include:

- The soils encountered comprised a silty topsoil underlain by a fine sand with gravels and silt increasing with depth down to 1.7 m and 2 m depth.
- Groundwater was not encountered in the test pits.
- It appears the investigations were undertaken to support changes for the discharge from the public toilets. Based on the test pit logs and accompanying location plan reviewed from NZGD, there is a former dispersal bund adjacent to the carpark area and the current dispersal field is located approximately 250 m to the south of the car park (shown on Figure 3).

Based on ECan's online GIS, piezometric contours indicate that groundwater flows towards the lake and canal (north and north east). A nearby monitoring well (H38/0005) (shown on Figure 3) was installed in 1998 and the initial water level was recorded to be approximately 13.45 m below ground level (noting that ground levels and water levels are likely to vary significantly due to the engineered nature of the area).

3. Information review

3.1 LLUR

The LLUR statement for the site is attached to this memo as Attachment 1. The identified HAIL areas are shown on Figure 3 and an overview of these HAIL activities is provided in Table 1 overleaf.



Figure 3: HAIL areas (image source: Environment Canterbury GIS)

³ [Geology 2.0.0 \(gns.cri.nz\)](http://geology2.0.0.gns.cri.nz/)

Table 1: HAIL activities overview

LLUR ID	HAIL activity	Comments
1540	HAIL activity A17 – storage tanks or drums for fuels, chemicals or liquid waste	It is stated on the LLUR report that a 2,000 L diesel underground storage tank (UST) is present within the outlined HAIL area. The HAIL area outlined on the LLUR statement is large and extends into the lake and the exact location of the UST is not provided. However, it is likely that the UST is located close to the lookout carpark adjacent to the commercial premises. The HAIL area is categorised as 'not investigated' on the LLUR.
367217	HAIL activity B4 – power stations, substations or switch yards	This HAIL area is located approximately 90 m to the south of the site and comprises an electrical transformer contained within a concrete bund (visible from Google Street View). It is unclear from the historical aerial photos whether this structure was always bunded. It is unlikely that contaminants, if present, from this source would migrate in surface / near surface soils as far as the site.
367219	HAIL activity B4 – power stations, substations or switch yards	This HAIL area is located approximately 200 m to the south of the site and comprises a small electricity substation. It is unlikely that contaminants, if present, from this source would migrate in surface / near surface soils as far as the site.

3.2 Historical aerial photographs

Historical aerial photographs available on ECan's online GIS for the area were reviewed. A summary of the historical aerial photographs is provided in Table 2 below and the images are attached to this memo in Attachment 2.

Table 2: Historical aerial photographs

Year	Description
1960-1964	Lake Pukaki and a dam has been constructed, however the shoreline, discharge to the river, road layout and engineering infrastructure varies significantly to the current layout. Worker's huts and structures are present approximately 120 m from the lake edge. These are located within the current lake boundary.
1965-1969	There are no significant changes along the lake edge. There are an increasing number of worker's huts further to the south.
1980-1984	The shoreline, surrounding waterways and canal, road layout and engineering infrastructure are as the current layout. The lookout carpark is present, with no adjacent structures.
2004-2010	Notable changes are visible for the structures adjacent to the lookout carpark only.

3.3 Client provided information

Information regarding the UST was requested from Meridian Energy, however they do not have records for the UST at the site. It is considered most likely that the UST is associated with the facilities at the lookout carpark.

Meridian Energy did note that a 22,000 L septic tank is located adjacent to the carpark, and two additional tanks are currently proposed.

4. Identified HAIL activities

HAIL activities within 200 m of the site are shown on Figure 3 and include:

- HAIL activity A17: Storage tanks for fuel, chemicals or liquid waste
 - The location of the fuel UST is not confirmed, however is assumed to be adjacent to the lookout carpark not within the proposed works area.
- HAIL activity B4: Power stations, substations or switchyards
 - Due to the distance from the site of these structures and that bunding is present around the transformer, it is unlikely these activities would result in shallow soil contamination at the site and therefore are discounted as a potential risk for the proposed works.
- HAIL activity G5: Waste disposal to land (excluding where biosolids have been used as soil conditioners)
 - The septic tank dispersal areas could potentially fall under this HAIL activity. The key contaminants of concern include biological hazards, which normally degrade rapidly over a short period of time, and heavy metals, that will likely have limited leachability in this environment. Due to the distance to the proposed works area of the currently in-use dispersal field and the former dispersal mound not being in-use, there is likely limited risk of soil contamination in the proposed works area from these sources.

5. Preliminary Conceptual Site Model

A preliminary conceptual site model (CSM) for the site has been developed to assess the likelihood of a complete linkage between a contaminant source(s) and potential receptors via a given pathway. This is presented in Table 3.

While several HAIL activities have been identified present within the wider Property within which the site is located, only one of these, the UST – HAIL activity A17, has been identified as a potential risk of being a source of contamination at the site.

It is considered unlikely that the UST would have been installed within the site area and is likely located adjacent to the lookout carpark / commercial premises. The potential for soil contamination to be present at the site would require migration, via soil and groundwater, of contaminants from the UST following a leak in the tank or fuel lines. There is no indication that a leak has occurred from this UST.

However, contamination, resulting from a leak, from a source such as a UST would be limited in extent both vertically and horizontally. Should this have occurred, then this activity would fall under HAIL Activity H - *Any land that has been subject to the migration of hazardous substances from adjacent land in sufficient quantity that it could be a risk to human health or the environment.*

Table 3: Preliminary conceptual site model of potential contamination at the proposed works area

Source	Pathway	Receptor	Potential linkages
UST containing fuel (Hydrocarbons, potentially lead)	Vertical migration of contaminants through soil to groundwater, and Horizontal migration of contaminants through soil.	Shallow soil (should leak have occurred in fuel lines) Groundwater Lake Pukaki Human health (site workers)	Incomplete Surface soils only are proposed to be disturbed for access tracks, and unlikely to intersect potentially contaminated groundwater or soils.

6. Summary

While several HAIL activities have been identified present within the wider Property within which the site is located, only one of these, the UST – HAIL activity A17, has been identified as a potential risk of being a source of soil contamination at the site.

However, due to the nature of contaminants and the distance to the proposed works area, it is considered unlikely that contamination in soils is present at the site resulting from potential discharges from the UST which is likely located adjacent to the lookout carpark.

Regards



Wendy Whitley
Senior Environmental Scientist

Cecilia Gately
Technical Director

Limitations

This memorandum has been prepared by GHD for Meridian Energy. It is not prepared as, and is not represented to be, a deliverable suitable for reliance by any person for any purpose. It is not intended for circulation or incorporation into other documents. The matters discussed in this memorandum are limited to those specifically detailed in the memorandum and are subject to any limitations or assumptions specially set out.

This HAIL assessment has been based on the review of limited information and is not considered to be a Preliminary Site Investigation in accordance with Ministry for the Environment (2021) Contaminated Land Management Guidelines No. 1 – Reporting on contaminated sites in New Zealand.

GHD has prepared this memorandum on the basis of information provided by the Client and others who provided information to GHD (which may also include Government authorities), which GHD has not independently verified or checked for the purpose of this memorandum. GHD does not accept liability in connection with such unverified information, including errors and omissions in the memorandum which were caused by errors or omissions in that information.

Attachments

SUPERSEDED

Attachment 1

ECan Listed Land Use Register Report

Dear Sir/Madam

Thank you for submitting your property enquiry from our Listed Land Use Register (LLUR). The LLUR holds information about sites that have been used or are currently used for activities which have the potential to cause contamination.

The LLUR statement shows the land parcel(s) you enquired about and provides information regarding any potential LLUR sites within a specified radius.

Please note that if a property is not currently registered on the LLUR, it does not mean that an activity with the potential to cause contamination has never occurred, or is not currently occurring there. The LLUR database is not complete, and new sites are regularly being added as we receive information and conduct our own investigations into current and historic land uses.

The LLUR only contains information held by Environment Canterbury in relation to contaminated or potentially contaminated land; additional relevant information may be held in other files (for example consent and enforcement files).

Please contact Environment Canterbury if you wish to discuss the contents of this property statement.

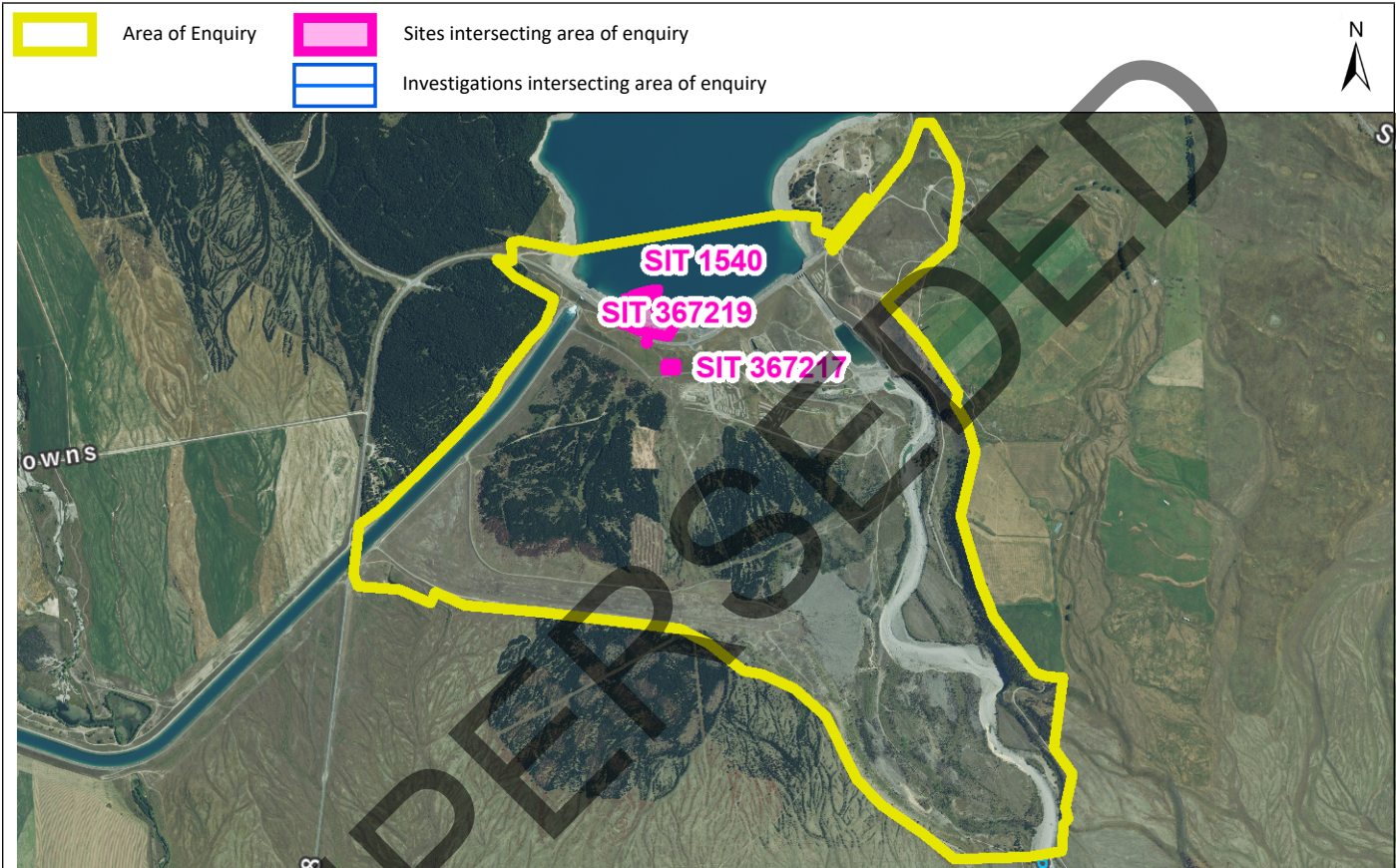
Yours sincerely

Contaminated Sites Team

Property Statement from the Listed Land Use Register

Visit ecan.govt.nz/HAIL for more information or
contact Customer Services at ecan.govt.nz/contact/ and quote ENQ386857

Date generated: 08 August 2024
Land parcels: Lot 2 DP 368484
Lot 1 DP 368484



The information presented in this map is specific to the property you have selected. Information on nearby properties may not be shown on this map, even if the property is visible.

Sites at a glance

 Sites within enquiry area

Site number	Name	Location	HAIL activity(s)	Category
1540	Pukaki Canal Inlet	Glen Lyon Road, Lake Pukaki	A17 - Storage tanks or drums for fuel, chemicals or liquid waste;	Not Investigated
367217	Power station		B4 - Power stations, substations or switchyards;	Verified HAIL
367219	Substation infrastructure		B4 - Power stations, substations or switchyards;	Verified HAIL

More detail about the sites

Site 1540: Pukaki Canal Inlet (Intersects enquiry area.)

Category: Not Investigated
Definition: Verified HAIL has not been investigated.

Location: Glen Lyon Road, Lake Pukaki
Legal description(s): Lot 1 DP 368484

HAIL activity(s):	Period from	Period to	HAIL activity
	?	Current	Storage tanks or drums for fuel, chemicals or liquid waste

Notes:

20 May 1999 1993: One 2000 L underground storage tank (UST), 3(c) product.



Investigations:

There are no investigations associated with this site.

Site 367217: Power station (Intersects enquiry area.)

Category: Verified HAIL
Definition: The land-use / HAIL history has been confirmed.

Location:
Legal description(s): Lot 1 DP 368484

HAIL activity(s):	Period from	Period to	HAIL activity
		Present	Power stations, substations or switchyards.

Notes:



Investigations:

There are no investigations associated with this site.

Site 367219: Substation infrastructure (Intersects enquiry area.)

Category: Verified HAIL
Definition: The land-use / HAIL history has been confirmed.

Location:
Legal description(s): Lot 1 DP 368484

HAIL activity(s):	Period from	Period to	HAIL activity
		Present	Power stations, substations or switchyards.

Notes:



Investigations:

There are no investigations associated with this site.

Disclaimer

The enclosed information is derived from Environment Canterbury's Listed Land Use Register and is made available to you under the Local Government Official Information and Meetings Act 1987.

The information contained in this report reflects the current records held by Environment Canterbury regarding the activities undertaken on the site, its possible contamination and based on that information, the categorisation of the site. Environment Canterbury has not verified the accuracy or completeness of this information. It is released only as a copy of Environment Canterbury's records and is not intended to provide a full, complete or totally accurate assessment of the site. It is provided on the basis that Environment Canterbury makes no warranty or representation regarding the reliability, accuracy or completeness of the information provided or the level of contamination (if any) at the relevant site or that the site is suitable or otherwise for any particular purpose. Environment Canterbury accepts no responsibility for any loss, cost, damage or expense any person may incur as a result of the use, reference to or reliance on the information contained in this report.

Any person receiving and using this information is bound by the provisions of the Privacy Act 1993.

SUPERSEDED

Listed Land Use Register

What you need to know

What is the Listed Land Use Register (LLUR)?

The LLUR is a database that Environment Canterbury uses to manage information about land that is, or has been, associated with the use, storage or disposal of hazardous substances.

Why do we need the LLUR?

Some activities and industries are hazardous and can potentially contaminate land or water. We need the LLUR to help us manage information about land which could pose a risk to your health and the environment because of its current or former land use.

Section 30 of the Resource Management Act (RMA, 1991) requires Environment Canterbury to investigate, identify and monitor contaminated land. To do this we follow national guidelines and use the LLUR to help us manage the information.

The information we collect also helps your local district or city council to fulfil its functions under the RMA. One of these is implementing the National Environmental Standard (NES) for Assessing and Managing Contaminants in Soil, which came into effect on 1 January 2012.

For information on the NES, contact your city or district council.

How does Environment Canterbury identify sites to be included on the LLUR?

We identify sites to be included on the LLUR based on a list of land uses produced by the Ministry for the Environment (MfE). This is called the Hazardous Activities and Industries List (HAIL)¹. The HAIL has 53 different activities, and includes land uses such as fuel storage sites, orchards, timber treatment yards, landfills, sheep dips and any other activities where hazardous substances could cause land and water contamination.

We have two main ways of identifying HAIL sites:

- We are actively identifying sites in each district using historic records and aerial photographs. This project started in 2008 and is ongoing.
- We also receive information from other sources, such as environmental site investigation reports submitted to us as a requirement of the Regional Plan, and in resource consent applications.

¹ The Hazardous Activities and Industries List (HAIL) can be downloaded from MfE's website www.mfe.govt.nz, keyword search HAIL

How does Environment Canterbury classify sites on the LLUR?

Where we have identified a HAIL land use, we review all the available information, which may include investigation reports if we have them. We then assign the site a category on the LLUR. The category is intended to best describe what we know about the land use and potential contamination at the site and is signed off by a senior staff member.

Please refer to the Site Categories and Definitions factsheet for further information.

What does Environment Canterbury do with the information on the LLUR?

The LLUR is available online at www.llur.ecan.govt.nz. We mainly receive enquiries from potential property buyers and environmental consultants or engineers working on sites. An inquirer would typically receive a summary of any information we hold, including the category assigned to the site and a list of any investigation reports.

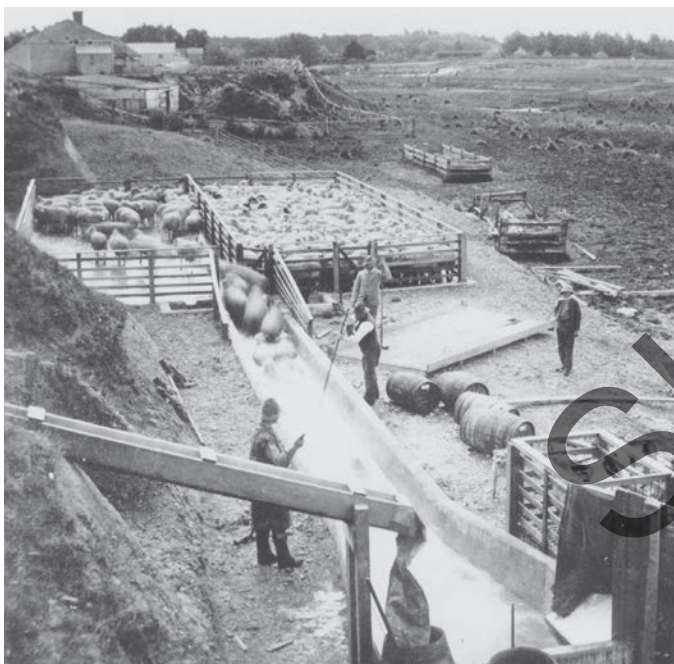
We may also use the information to prioritise sites for further investigation, remediation and management, to aid with planning, and to help assess resource consent applications. These are some of our other responsibilities under the RMA.

If you are conducting an environmental investigation or removing an underground storage tank at your property, you will need to comply with the rules in the Regional Plan and send us a copy of the report. This means we can keep our records accurate and up-to-date, and we can assign your property an appropriate category on the LLUR. To find out more, visit www.ecan.govt.nz/HAIL.



IMPORTANT!

The LLUR is an online database which we are continually updating. A property may not currently be registered on the LLUR, but this does not necessarily mean that it hasn't had a HAIL use in the past.



Sheep dipping (ABOVE) and gas works (TOP) are among the former land uses that have been identified as potentially hazardous. (Photo above by Wheeler & Son in 1987, courtesy of Canterbury Museum.)

My land is on the LLUR – what should I do now?

IMPORTANT! Just because your property has a land use that is deemed hazardous or is on the LLUR, it doesn't necessarily mean it's contaminated. The only way to know if land is contaminated is by carrying out a detailed site investigation, which involves collecting and testing soil samples.

You do not need to do anything if your land is on the LLUR and you have no plans to alter it in any way. It is important that you let a tenant or buyer know your land is on the Listed Land Use Register if you intend to rent or sell your property. If you are not sure what you need to tell the other party, you should seek legal advice.

You may choose to have your property further investigated for your own peace of mind, or because you want to do one of the activities covered by the National Environmental Standard for Assessing and Managing Contaminants in Soil. Your district or city council will provide further information.

If you wish to engage a suitably qualified experienced practitioner to undertake a detailed site investigation, there are criteria for choosing a practitioner on www.ecan.govt.nz/HAIL.



I think my site category is incorrect – how can I change it?

If you have an environmental investigation undertaken at your site, you must send us the report and we will review the LLUR category based on the information you provide. Similarly, if you have information that clearly shows your site has not been associated with HAIL activities (eg. a preliminary site investigation), or if other HAIL activities have occurred which we have not listed, we need to know about it so that our records are accurate.

If we have incorrectly identified that a HAIL activity has occurred at a site, it will be not be removed from the LLUR but categorised as Verified Non-HAIL. This helps us to ensure that the same site is not re-identified in the future.

Contact us

Property owners have the right to look at all the information Environment Canterbury holds about their properties.

It is free to check the information on the LLUR, online at www.llur.ecan.govt.nz.

If you don't have access to the internet, you can enquire about a specific site by phoning us on (03) 353 9007 or toll free on 0800 EC INFO (32 4636) during business hours.

Contact Environment Canterbury:

Email: ecinfo@ecan.govt.nz

Phone:

Calling from Christchurch: (03) 353 9007

Calling from any other area: 0800 EC INFO (32 4636)

Listed Land Use Register

Site categories and definitions

When Environment Canterbury identifies a Hazardous Activities and Industries List (HAIL) land use, we review the available information and assign the site a category on the Listed Land Use Register. The category is intended to best describe what we know about the land use.

If a site is categorised as **Unverified** it means it has been reported or identified as one that appears on the HAIL, but the land use has not been confirmed with the property owner.

If the land use has been confirmed but analytical information from the collection of samples is not available, and the presence or absence of contamination has therefore not been determined, the site is registered as:

Not investigated:

- A site whose past or present use has been reported and verified as one that appears on the HAIL.
- The site has not been investigated, which might typically include sampling and analysis of site soil, water and/or ambient air, and assessment of the associated analytical data.
- There is insufficient information to characterise any risks to human health or the environment from those activities undertaken on the site. Contamination may have occurred, but should not be assumed to have occurred.

If analytical information from the collection of samples is available, the site can be registered in one of six ways:

At or below background concentrations:

The site has been investigated or remediated. The investigation or post remediation validation results confirm there are no hazardous substances above local background concentrations other than those that occur naturally in the area. The investigation or validation sampling has been sufficiently detailed to characterise the site.

Below guideline values for:

The site has been investigated. Results show that there are hazardous substances present at the site but indicate that any adverse effects or risks to people and/or the environment are considered to be so low as to be acceptable. The site may have been remediated to reduce contamination to this level, and samples taken after remediation confirm this.

Managed for:

The site has been investigated. Results show that there are hazardous substances present at the site in concentrations that have the potential to cause adverse effects or risks to people and/or the environment. However, those risks are considered managed because:

- the nature of the use of the site prevents human and/or ecological exposure to the risks; and/or
- the land has been altered in some way and/or restrictions have been placed on the way it is used which prevent human and/or ecological exposure to the risks.

Partially investigated:

The site has been partially investigated. Results:

- demonstrate there are hazardous substances present at the site; however, there is insufficient information to quantify any adverse effects or risks to people or the environment; or
- do not adequately verify the presence or absence of contamination associated with all HAIL activities that are and/or have been undertaken on the site.

Significant adverse environmental effects:

The site has been investigated. Results show that sediment, groundwater or surface water contains hazardous substances that:

- have significant adverse effects on the environment; or
- are reasonably likely to have significant adverse effects on the environment.

Contaminated:

The site has been investigated. Results show that the land has a hazardous substance in or on it that:

- has significant adverse effects on human health and/or the environment; and/or
- is reasonably likely to have significant adverse effects on human health and/or the environment.

If a site has been included incorrectly on the Listed Land Use Register as having a HAIL, it will not be removed but will be registered as:

Verified non-HAIL:

Information shows that this site has never been associated with any of the specific activities or industries on the HAIL.

Please contact Environment Canterbury for further information:

(03) 353 9007 or toll free
on 0800 EC INFO (32 4636)
email ecinfo@ecan.govt.nz

Attachment 2

Historical aerial photographs

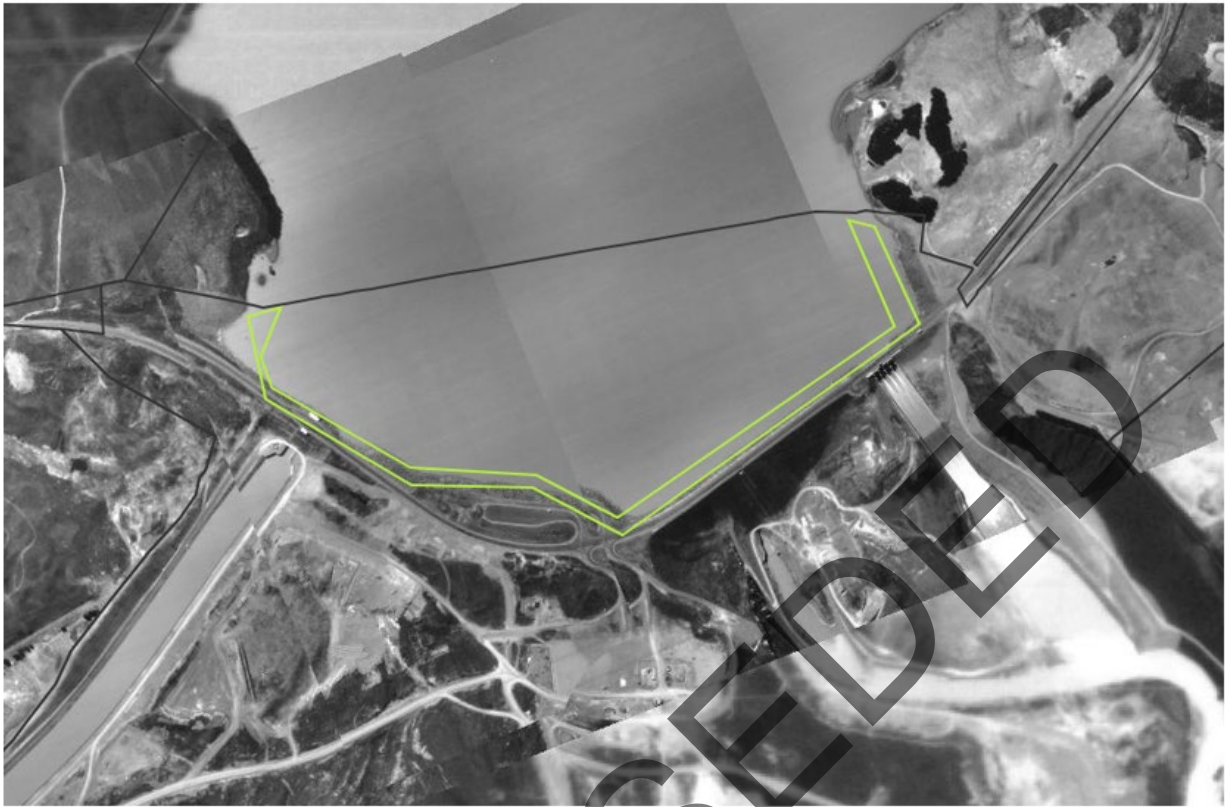
1960-1964, Source Environment Canterbury GIS



1965-1969, Source Environment Canterbury GIS



1980-1984, Source Environment Canterbury GIS



2004-2010, Source Environment Canterbury GIS





ghd.com

→ **The Power of Commitment**

APPENDIX A2: CONDITIONS OF WILDLIFE ACT AUTHORITY

SUPERSEDED

Wildlife Act Authority (FTAA-2510-1120)

Schedule 1A

Authorised Activity: For the purpose of the activity authorised in Fast-track Approval (FTAA-2510-1120) on the Land identified in Schedule 1B, the Capturing, Holding, Liberating, Incidentally Harming or Killing of the following lizard species:

1. McCann's skink (*Oligosoma maccanni*)
2. Southern grass skink (*Oligosoma chionochloescens*)
3. Southern Alps gecko (*Woodworthia "Southern Alps"*)
4. Mackenzie skink (*Oligosoma prasinum*)

Schedule 1B

The Land:

To catch alive, hold and incidentally kill at the following sites identified in the LMP at Appendix A, Figures 1, 2 and 4:

1. Dam armouring access tracks and material laydown: 44°11'24.7"S 170°08'31.6"E
2. South stockpile (6.3 ha): 44°11'37.0"S 170°08'39.4"E
3. North stockpile (0.8 ha): 44°11'16.7"S 170°09'02.4"E

To liberate:

1. At the relocation site identified in the LMP at Appendix A, Figure 6

Schedule 1C

Term: 35 years expiring on 3 July 2061

Schedule 1D

Authorised Personnel:

1. Graham Ussher

Schedule 1E

Authority Holder: Meridian Energy Limited

Schedule 1F

Authority Holder's address for notices:

Environment Team

Meridian Energy Limited

Level 2, 98 Customhouse Quay

Wellington 6011

Wildlife Act Authority (FTAA-2510-1120)

Schedule 1G

Director-General's address for notices and all other correspondence:

Permissions Team Level 4

73 Rostrevor Street

Hamilton 3204

Email: permissionshamilton@doc.govt.nz

Conditions

1. This Authority applies only to the lizard species specified in Schedule 1A.
2. If, in the course of any lizard survey or salvage activity, all reasonable effort has been made to meet all of the conditions expressed and implied in this Authority, and wildlife is killed by the Authority Holder, then that will be permitted under this Authority.
3. DOC Operations Manager(s) are to be contacted immediately for further advice if species of protected wildlife other than those listed in Schedule 1A, including other than lizards are located within the footprint of a planned activity. A separate application in relation to non-authorised species will be required.
4. This Authority gives the Authority Holder the right to hold absolutely protected wildlife in accordance with the terms and conditions of the Authorisation, but the wildlife remains the property of the Crown. This includes any dead wildlife, live wildlife, any parts thereof, any eggs or progeny of the wildlife, genetic material and any replicated genetic material.
5. Unless expressly authorised by the Director-General in writing, the Authority Holder must not donate, sell or otherwise transfer to any third party any wildlife, material, including any genetic material, or any material propagated or cloned from such material, collected under this Authority.

Note: *The exception to this is the collection of eDNA which will be sent to a third party for genetic analysis to assess species presence.*

6. The Authorised activities must be undertaken in accordance with the approved Lizard Management Plan for the project annexed to this Authority (*Lake Pūkaki Fast Track Consent Substantive Application – Lizard Management Plan, Version 3, April 2026: Tonkin and Taylor Limited*) (**LMP**).
7. Lizards must only be handled by Authorised Personnel listed in Schedule 1D or under the direct supervision of Authorised Personnel, unless otherwise agreed in writing by the Director-General of Conservation.
8. Capture and handling of lizards must involve only techniques that minimise the risk of infection or injury to the animal.

Wildlife Act Authority (FTAA-2510-1120)

9. The Authority Holder is only permitted to release wildlife that are listed in Schedule 1A using methods described in the LMP written for the particular lizard salvage operation.
10. Capture and handling methods shall follow those described in the Herpetofauna inventory and monitoring toolbox Herpetofauna: Modules for biodiversity inventory and monitoring
11. The Authority Holder must ensure all live capture traps are covered to protect lizards from exposure and minimise stress. Damp leaf litter or other material must be provided to reduce desiccation risk and the bottom of the pit-fall trap must be perforated to allow drainage of water. The Authority Holder must ensure that all live capture traps contain retreats to minimise risk of predation events within the trap.
12. If any mortality is detected, due consideration shall be made, and documented, that show measures have been taken to reduce mortality. Measures may include, but are not limited to, providing additional protection from weather, undertaking rodent suppression by trapping and/or poisoning at the site; not conducting live-trapping where mouse numbers have irrupted following grass seeding (where predation has been the cause of mortality); twice-daily trap checks, switching catching devices, or some combination of these measures.
13. The Authority Holder must ensure all live capture traps, (e.g. pitfall traps), are checked at least every 24 hours.
14. The Authority Holder must sterilise any instruments that come in contact with the lizards and/or are used to collect or measure lizards between each location. A separate holding bag must be used for each animal. All gear should be thoroughly cleaned and dried between sites.
15. The Authority Holder must ensure lizards are temporarily held individually in a suitable container (e.g. breathable cloth bag) and held out of direct sunlight to minimise the risk of overheating, stress and death.
16. If any lizards should die during the authorised activities of catch, transfer or liberate, the Authority Holder must:
 - a. inform the Director-General within 48 hours;
 - b. If requested by the Director-General, chill the body if it can be delivered within 72 hours, or freeze the body if delivery will take longer than 72 hours;
 - c. send the body to Massey University Wildlife Post-mortem Service for necropsy, along with details of the animal's history;
 - d. pay for any costs incurred in investigation of the death of any lizard, if required to do so by the Director-General; and
 - e. If required by the Director-General, cease the Authorised Activity for a period determined by the Grantor.

Wildlife Act Authority (FTAA-2510-1120)

17. If any lizards are found injured as part of the Authorised Activity, the Authority Holder shall seek advice from the Authority holder on management of the lizard(s).
18. The Authority Holder must not euthanise any wildlife unless:
 - a. The Authority Holder obtains authority from the Director-General; or
 - b. A veterinarian recommends euthanasia on animal welfare grounds; or
 - c. The Authority Holder euthanises the wildlife under direction from the Director-General.
19. The Authority Holder must provide an annual report or reports to the Director-General on any additional lizard surveys undertaken. These must be electronically forwarded to the Director-General at permissionshamilton@doc.govt.nz and the DOC Operations Manager for Twizel at twizel@doc.govt.nz citing the Project Name. These reports must be submitted by 30 June each year.
20. For all salvage operations a report on each salvage operation is to be submitted in writing to permissionshamilton@doc.govt.nz and to the DOC Operations Manager for Twizel at twizel@doc.govt.nz by 30 June each year for the life of this Authorisation, summarising outcomes in accordance with any specific Lizard Management Plan. Each report must include:
 - a. The project name number; and
 - b. the species and number of any animals collected and released;
 - c. the GPS location (or a detailed map) of the collection point(s) and release point(s);
 - d. results of all surveys, monitoring or research; and
 - e. description of how the Lizard Management Plan was implemented including any difficulties encountered with capture and handling, how release sites were assessed, post release monitoring and what contingency actions were required.
21. For all survey and salvage operations undertaken, completed Amphibian and Reptile Distribution System (ARDS) cards for all herpetofauna sightings and captures (Amphibian and Reptile Distribution Scheme: Herpetofauna data collection) must be sent to Herpetofauna, Department of Conservation, National Office, PO Box 10420 Wellington 6143 or herpetofauna@doc.govt.nz. For more information refer to: Species sightings and reptile species information.
22. All reports submitted under Conditions 20 and 21 above must contain any implications of the results for conservation management.
23. The Authority Holder acknowledges that the Director-General may provide copies of the reports referred-to in Conditions 20 and 21 above to tangata whenua and the general public if requested.
24. Didymo biosecurity - The Authority Holder must comply with the Ministry for Primary Industries' (MPI)'s "Check, Clean, Dry" cleaning methods to prevent the spread of

Wildlife Act Authority (FTAA-2510-1120)

didymo (*Didymosphenia geminata*) and other freshwater pests when moving between waterways. "Check, Clean, Dry" cleaning methods can be found at - <http://www.biosecurity.govt.nz/cleaning>.

COMPENSATION MANAGEMENT PLAN

25. Prior to works commencing a separate final Compensation Management Plan (**CMP**) (presently included as Appendix E in the LMP) shall be submitted to the Director-General at permissionshamilton@doc.govt.nz for certification. Prior to submitting the final CMP to the Director-General, the Authority Holder shall consult with the Director-General on the location of the proposed compensation area(s) and the wilding pine control method(s) to be implemented.

LIZARD FENCE

26. A Lizard exclusion fence must be installed to separate known Mackenzie skink habitat from the North stockpile to prevent Mackenzie skink from entering the North stockpile.
27. The fence must be constructed so that it extends a minimum of 500 mm above the ground level and be buried approximately 50-100 mm below ground level with a return or lip to prevent lizards burrowing under the fence. Stakes must be installed at approximately 2 m intervals to support the fence. A lizard proof gate may form part of the fence to allow access to the rock material.
28. The fence must be maintained until all rock material from the North stockpile has been utilised. Annual inspections are to be undertaken to ensure the fence continues to function as intended.
29. The fence must be designed and constructed in accordance with the specifications set out in the certified LMP and must incorporate polythene to deter skinks from climbing the fence.

ONGOING MANAGEMENT

30. On or prior to the 10th, 20th and 30th anniversaries of the approval of this Authority the Authority Holder must undertake a lizard survey across the stockpile, laydown and temporary building areas to review and quantify any change to the lizard population on site.
31. For any lizards are identified in the Northern stockpile an additional salvage operation shall be undertaken at that location in accordance with the LMP.
32. Following the completion of the above survey the LMP shall be reviewed and updated to include the results of the survey and any updated threat classifications. The updated Lizard Management Plan shall be submitted to the Director-General at permissionshamilton@doc.govt.nz citing the Authority Number FTAA-2510-1120 for confirmation that it meets the requirements of this Authority.

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VARIATIONS

33. The Authority Holder may apply to the Director General for variations to this Authority in accordance with clause (7)(2) of Schedule 7 of the Fast-Track Approvals Act 2024.

REVOCATION

34. The Director-General may revoke this Authority in whole or in part at any time (pursuant to clause 7(4) of Schedule 7 of the Fast-track Approvals Act 2024 if:

- a. The Authority Holder breaches any of the conditions of this Authority.
- b. In the Director-General's opinion, the exercise of this Authority has caused or is likely to cause any unforeseen adverse effects on lizards.

If the Director-General intends to revoke this Authority in whole or in part, the Director-General must give the Authority Holder such prior notice as is reasonable and necessary in the circumstances.

COSTS

35. The Authority Holder must pay the standard Department of Conservation charge-out rates for any staff time and mileage required to monitor compliance with this Authority and to investigate any alleged breaches of the terms and conditions of it.

LIABILITIES

36. The Authority Holder agrees to exercise the Authority at its own risk and releases to the full extent permitted by law, the Director-General and Director-General's employees and agents from all claims and demands of any kind and from all liability which may arise in respect of any accident, damage or injury occurring to any person or property arising from the Authority Holder's exercise of this Authority.

COMPLIANCE WITH LEGISLATION AND DIRECTOR GENERAL'S NOTICES AND DIRECTIONS

37. The Authority Holder must comply with all statutes, bylaws, and regulations, and all notices, directions, and requisitions of the Director-General and any competent authority relating to the exercise of the Authority.

EMPLOYEES, CONTRACTORS, OR AGENTS

38. The Authority Holder is responsible for the acts and omissions of its employees, contractors, and agents. The Authority Holder is liable under the Authority for any breach of its terms by employees, contractors, or agents, as if the breach were committed by the Authority Holder. Where obligations bind more than one person, those obligations bind those persons jointly and separately.

Wildlife Act Authority (FTAA-2510-1120)

Lizard Management Plan

SUPERSEDED



Lake Pūkaki Fast Track Consent Substantive Application

Lizard Management Plan

Prepared for

GHD Limited

Prepared by

Tonkin & Taylor Ltd

Date

April 2026

Job Number

1097626 v3

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September 2025	0.1	Draft for RMA Ecology review
October 2025	0.2	Draft for Environment Canterbury Review
October 2025	0.3	Draft for DOC review
November 2025	1.0	Final for submission
November 2025	1.1	Update following lizard surveys. Compensation Management Plan added. Draft for review by RMA Ecology.
December	1.2	Updated following RMA Ecology review. Draft for review by GHD and Meridian.
December	2	Final for submission
April	3	Updated following Section 53B response from DOC

Distribution:

GHD Limited

1 copy

Tonkin & Taylor Ltd (FILE)

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1 Introduction

Meridian Energy Limited (Meridian) hold consents to operate the Waitaki Power Scheme (WPS) for hydroelectric power generation. Lake Pūkaki is part of the WPS and is in the Mackenzie Basin of the South Island of New Zealand.

Meridian is seeking approval under the Fast Track Approvals Act (FTAA) to temporarily enable access to water stored in Lake Pūkaki below 518 m RL, without the currently applicable security of supply triggers. In addition, Meridian is seeking consent to undertake associated dam armouring works at the dam face of Lake Pūkaki during periods of lower water level, when the works zone can be accessed. The consenting period sought for the dam armouring works is 35 years.

Ecological assessments of the Project site have been undertaken to inform the FTAA application (T+T 2025). Native lizards have been identified as present in the project area as determined through targeted lizard surveys.

All native lizards are protected under the Wildlife Act (1953). This Lizard Management Plan (LMP) has been prepared for the Wildlife Approval Application to accompany the FTAA Substantive Application. Schedule 7 of the FTAA includes a list of information required for wildlife approval. Section 1.6 outlines the information requirements set out in Clause 2(1) of Schedule 7 and the relevant section of the LMP where the information requirement is addressed.

This work has been undertaken in accordance with Variation 01 (VO1) dated 27 June 2025¹ to the original contract (Letter of Engagement (LOE) dated 19 December 2024).²

1.1 Purpose and scope

This LMP outlines the lizard ecological values at the site, potential adverse effects on native lizards, salvage methods and recommended effects management actions in accordance with the effects management hierarchy as per the National Policy Statement for Indigenous Biodiversity 2023 (NPS-IB). The NPS-IB does not apply to renewable electricity generation but provides a useful framework for the assessment and management of native lizards. The LMP includes the following key sections:

- Wildlife approvals sought under the FTAA (Section 1.4)
- Lizard ecological values (based on desktop assessment) and potential adverse impacts (Section 2)
- Lizard survey methods (Section 3)
- Lizard survey results (Section 4)
- Lizard salvage methods (Section 5)
- Effects management measures (Section 6)
- Compensation Management Plan (Appendix E)

The LMP has been developed in accordance with recommendations described in the Project Ecological Impact Assessment (EcIA) (T+T, 2025).

1.2 Associated documents

This report should be read in conjunction with the Ecological Impact Assessment (EcIA) for the project (T+T, 2025).

¹ T+T (27 June 2025). Variation 01: Fast Track Substantive Reporting. Job no. 1097626.0000.

² T+T (19 December 2024). Letter of Engagement. Blue Cascade: Lake Pūkaki technical assessments. Job no. 1097626.0000.

1.3 Description of project activities that may impact lizards

To enhance the Pūkaki Dam's resilience, protective riprap on the face of the dam will be installed on the slopes of the Pūkaki Dam's Main Dam Face (High Dam) and Left and Right Abutments (Figure 1.1). Construction works will involve the following:

- Constructing access tracks and ramps
- Transporting rock armour from the current location to a designated stockpile area
- Constructing work benches
- Constructing toe/key along High Dam
- Rock placement on High Dam
- Rock placement on abutments
- Temporary building
- Taking of materials from local stockpile sites
- Temporary stockpiling of material adjacent to works areas
- Decommissioning of the site

These works are proposed to occur during periods where the dam water level is at a sufficiently low level to access the works area. Material for the riprap will be sourced from nearby stockpile areas located off Twizel Town Tracks and Tekapo-Twizel Road (Figure 1.1). The stockpile areas are approximately 6.3 ha and 0.8 ha in size.

1.3.1 Works areas terminology and map references

For the purposes of this report, the following terms are used to describe the various works areas:

- Access tracks and dam resilience works areas: Access tracks, ramps, work benches, constructing toe along High Dam, rock placement on High Dam, rock placement on abutments.
 - North access refers to the 'left abutment' shown in Figure 1.1 below.
 - South access refers to the 'right abutment' shown in Figure 1.1 below.
- North and South stockpile laydown area: Stockpile laydown areas beside North and South access (refer to Appendix A Figure 1 and Figure 3).
- South stockpile: 6.3 ha stockpile site (refer to Appendix A Figure 2)
- North stockpile: 0.8 ha stockpile site (refer to Appendix A Figure 4)
- Adjacent habitats: Lizard survey site to the east of the North stockpile (refer to Appendix A Figure 4)
- Control site: Lizard survey site 1 km south of North stockpile (refer to Appendix A Figure 5)



Figure 1.1: Dam armouring works preliminary design footprint and stockpile locations (GHD, August 1, 2025)

1.4 Statutory context and approvals sought

Native lizards are protected by the Wildlife Act 1953. A project referred for FTC may apply to the Environmental Protection Authority (EPA) for a wildlife approval under section 42(4)(h) of the Fast-track Approvals Act 2024 as part of a Substantive Application.

Wildlife approvals authorise activities that would otherwise be an offence under the Wildlife Act 1953. Specifically, the wildlife approvals requiring authorisation for this project relate to protected native lizards and include:

- Kill wildlife (incidental)
- Catch and handle wildlife on site (including salvage and relocation)

1.5 Term

The term for which the wildlife approval is sought is 35 years. This timeframe allows for the term sought for the dam armouring resource consents.

A request for a 35 year term is sought but with a review of this LMP and dam armouring works progress every 10 years. A short report will be prepared and delivered to DOC every 10 years with a request to continue to manage the works under the existing wildlife approval.

1.6 Schedule 7 of the Fast Track Approvals Act requirements

Schedule 7 of the Fast Track Approvals Act outline the necessary information required to assess a Wildlife Approval. These are outlined in Table 1.1 below along with the associated Section of this LMP (or other document) where the information is provided.

Table 1.1:Fast Track Approvals Act Schedule 7 requirements

Schedule 7 requirement	Where this requirement has been addressed and/or justification
(1) For the purposes of section 43(3)(h), an application for a wildlife approval must— (a) specify the purpose of the proposed activity:	Section 1.3
(b) identify the actions the applicant wishes to carry out involving protected wildlife and where they will be carried out (whether on or off public conservation land):	The actions requested include: • Kill wildlife (incidental) • Catch and handle wildlife on site (including wildlife salvage)
(c) include an assessment of the activity and its impacts against the purpose of the Wildlife Act 1953:	The purpose of the Wildlife Act 1953 is to protect wildlife and manage game bird hunting in New Zealand. The Wildlife Act 1953 provides absolute protection to all native lizard species. The project activity relating to dam armouring works may result in injury or mortality to native lizards. Effects management measures include avoid, minimisation, remedy and compensation measures (Section 4).
(d) list protected wildlife species known or predicted to be in the area and, where possible, the numbers of wildlife present and numbers likely to be impacted:	Refer to Section 2.1.
(e) outline impacts on threatened, data deficient, and at-risk wildlife species (as defined in the New Zealand Threat Classification System):	Refer to Section 2.2
(f) state how the methods proposed to be used to conduct the actions specified under paragraph (b) will ensure that best practice standards are met:	Surveys were undertaken in accordance with DOC Herpetofauna Inventory and Monitoring Toolbox for lizard survey and salvage.
(g) describe the methods to be used to safely, efficiently, and humanely catch, hold, or kill the animals and identify relevant animal ethics processes:	Surveys were undertaken in accordance with DOC Herpetofauna Inventory and Monitoring Toolbox for lizard survey and salvage.
(h) state the location or locations in which the activity will be carried out, including a map (and GPS co-ordinates if available):	Dam armouring access tracks and material laydown: 44°11'24.7"S 170°08'31.6"E South stockpile (6.3 ha): 44°11'37.0"S 170°08'39.4"E North stockpile (0.8 ha): 44°11'16.7"S 170°09'02.4"E

Schedule 7 requirement	Where this requirement has been addressed and/or justification
	Refer to Appendix A Figures which outline lizard management areas.
(i) state whether authorisation is sought to temporarily hold or relocate wildlife:	Relocation is proposed, refer to Section 5.
(j) list all actual and potential wildlife effects (adverse or positive) of the proposed activity, including effects on the target species, other indigenous species, and the ecosystems at the site:	Refer to Section 2.2. Refer to the Ecological Impact Assessment (EclA; T+T, 2025) for a full assessment of actual and potential effects of the proposed activity.
(k) where adverse effects are identified, state what methods will be used to avoid and minimise those effects, and any offsetting or compensation proposed to address unmitigated adverse effects (including steps taken before the project begins, such as surveying, salvaging, and relocating protected wildlife):	Refer to Section 5.
(l) state whether the applicant or any company director, trustee, partner, or anyone else involved with the application has been convicted of any offence under the Wildlife Act 1953:	The applicant and company direct, trustee, partner or anyone else involved have not been convicted of any offence under the Wildlife Act 1953.
(m) state whether the applicant or any company director, trustee, partner, or anyone else involved with the application has any current criminal charges under the Wildlife Act 1953 pending before a court:	The applicant and company direct, trustee, partner or anyone else involved do not have any current criminal charges under the Wildlife Act 1953 pending before a court.
(n) provide proof and details of all consultation, including with hapū or iwi, on the application specific to wildlife impacts:	Refer to the full application.
(o) provide any additional written expert views, advice, or opinions the applicant has obtained concerning their proposal.	The project received a response from DOC during the referral application. This response is provided in Appendix E.

2 Summary of lizard ecological values, impacts and impact management

2.1 Lizard ecological values

Lizard ecological values were assessed through desktop assessment and field assessments. Field surveys were conducted between 27 and 31 October 2025. Detailed lizard survey methods and results are presented in Sections 3 and 4, respectively. Refer to Appendix D for photographs of the project footprint and lizard habitat values.

2.1.1 Lizard habitat values

For the purposes of dam armouring works, the project footprint includes (Table 2.2; Appendix A Figure 1-5):

- South access track
- North access track

- Material laydown areas including the South laydown area (near the Punatahu Visitor Centre) and North laydown area (near the North access track) (Appendix A Figure 1 and Figure 3)
- Material stockpile sites (North and South stockpiles)

Lizard habitat was assessed through a visual assessment of each footprint area. Higher-value areas were considered those that comprised small cobbles and gravels with interstitial spaces suitable for protection from pest mammals and other predators. Effective gecko habitat generally comprised rocks with 1-3 cm crevices and small piles or rocks with sediment and grasses formed on top of rock stacks.

Lizard habitat values and species records are summarised in Table 2.1 below. Lizard habitat was recorded in all of the potential impact areas. Lizard habitat values outlined below were assigned a qualitative measure of low, moderate or high based on the rock/cobble size and availability, interstitial micro-habitat availability and level of disturbance.

Overall, habitat quality was considered to be low to moderate, with the North and South stockpiles providing the higher quality lizard habitat compared to access tracks.

Table 2.1: Project areas, lizard habitat features and species suitability and records

Project area	Lizard habitat features and comparative habitat value	Lizard species recorded and potential lizard species present
Southern access track	Large boulders. Few small interstitial spaces, but suitable skink habitat on the margins where boulders adjoin with exotic grass bank. Marginal but potential gecko habitat where boulders form crevices 1-3 cm wide. Low quality habitat	McCann's skink (<i>Oligosoma maccani</i> ; Not Threatened; Hitchmough et al. 2021) recorded. Potential habitat for Southern Alps gecko (<i>Woodworthia</i> "Southern Alps"; At Risk – Declining).
Northern access track.	Bank comprises small rocks and boulders embedded in soft sediment, providing effective lizard habitat. Moderate quality habitat	McCann's skink and Southern Alps gecko recorded.
Material laydown areas.	Punatahu laydown area: Rank and short exotic grasslands, with occasional small-leaved pohuehue (<i>Muehlenbeckia complexa</i>) clumps. Regular disturbance from site management and people likely. Low quality habitat Northern laydown area: Short grassland with very few boulders/rocks. Disturbed area due to historic landuse impacts. Low quality habitat	McCann's skink likely to be present.
South stockpile of 6.3 ha.	Generally comprised large boulders with interstitial spaces unsuitable for lizards. Some piles comprised small boulders, cobbles, gravels and concrete rubble suitable for skinks and geckos. Moderate quality habitat	McCann's skink and Southern Alps gecko present across the area. Southern grass skink may be present.
North stockpile of 0.8 ha.	Generally comprised large boulders with interstitial spaces unsuitable for lizards. A couple of smaller piles comprised small boulders, cobbles, and gravels suitable for skinks and geckos.	McCann's skink and Southern Alps gecko recorded across the area. Southern grass skink (<i>O. aff. polychroma</i> Clade 5; At Risk –

	Soft sediment and vegetation had formed in some of the boulder crevices which provided effective gecko habitat. Boulders and rocks embedded into grass across the site provided effective skink habitat. Vegetation was dominated by short exotic grasses. Occasional exotic shrubs (<i>Rosa rubiginosa</i>) were present. <i>Muehlenbeckia complexa</i> was present in isolated patches, scrambling over the boulders and providing effective lizard cover. Moderate quality habitat	Declining) recorded in immediately adjacent habitat.
Adjacent habitats/control sites	Mix of short and medium-length grassland, various sized boulders, cobbles, and gravels, and occasional shrubs. <i>Muehlenbeckia complexa</i> was present in isolated patches, scrambling over the boulders and providing effective lizard cover. High quality habitat	McCann's skink, Southern Alps gecko, Southern grass skink, Mackenzie skink <i>O. prasinum</i> ; Threatened – Nationally Vulnerable) recorded.

2.1.2 Lizard species

Lizard surveys were conducted between 27 and 31 October 2025. Lizard surveys comprised manual searches, funnel trapping, Visual Encounter Surveys (VES), and eDNA surveys. Surveys were undertaken in project footprint areas, adjacent habitats and at a control site.

Two native species were detected across all footprint areas:

- McCann's skink (*Oligosoma maccanni*; Not Threatened) (Hitchmough et al. 2021).
- Southern Alps gecko (*Woodworthia* "Southern Alps"; At Risk – Declining).

In addition, Southern grass skink (*O. polychroma* Clade 5; At Risk – Declining) was recorded adjacent to the stockpiles and may be present in the stockpiles.

Due to their Conservation Status and in accordance with EIANZ criteria (Roper-Lindsay et al. 2018), McCann's skink is of **low** ecological value, while Southern Alps gecko and Southern grass skink are of **high** ecological value. Of note, Mackenzie skink (*O. prasinum*; Threatened – Nationally Vulnerable) were recorded within 100 m of the North stockpile.

A full list of potential lizard species in the wider area as determined through desktop assessment is provided in Table 2.2 below.

2.1.3 Density estimates

Native lizard density estimates vary by habitat type and quality, and factors such as predation, historical site disturbance and immigration/emigration dynamics. Without detailed mark-recapture data, the reliability of density estimates is considered low.

Nonetheless, an attempt at estimating lizard densities at the site has been made to address Wildlife Approval Schedule 7 1(d).

Density estimates are available for Southern grass skink and McCann's skink (Wilson et al. 2017). In high quality habitat, Southern grass skink can reach up to 9,200 skinks per ha. McCann's skink can

similarly reach high numbers in high quality habitat, with density estimates of up to 2,250 skinks per ha.

The stockpile areas comprise 7.1 ha of moderate-quality habitat. Including the dam access and stockpile laydown areas, the total lizard habitat availability is approximately 7.3 ha.

Given the low to moderate habitat quality with no pest mammal management, a rough estimate of 500 skinks per ha could be expected. This would equate to 3,650 skinks in the project footprint and potentially affected by project works.

Density estimates of Southern Alps have not been formally published as of 21 November 2025. Studies on similar species *Woodworthia* spp. have reported densities of tens of individuals per ha (Towns et al. 2007).

Based on the above estimates, and low to moderate quality habitat, 50 individuals per ha may be an appropriate estimate. As such, 365 Southern Alps gecko could be expected across the project footprint areas.

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Table 2.2: Lizard species list recorded on Pūkaki River and wider area (30 km radius) (Boffa Miskell, 2022), conservation status and ecological value. Shaded cells indicate species recorded in the direct project footprint.

Common name	Species name	Conservation status (Hitchmough et al. 2021)	Ecological value (Roper-Lindsay et al. 2018)	Habitat preference (from NZHS, 2025)
Lakes skink	<i>Oligosoma</i> aff. <i>chloronoton</i> "West Otago"	Threatened – Nationally Vulnerable	Very high	Terrestrial/ saxicolous, and typically inhabit lowland or alpine tussock grassland, riverine debris (eroded stone), and screes/talus with woody vegetation.
Roamatimati skink	<i>Oligosoma</i> aff. <i>chloronoton</i> "southern"	At Risk - Declining	High	Saxicolous, rocky habitats in alpine environments (screes, gravel or boulder talus slopes, dry streambeds, and rock piles amongst low growing vegetation).
Cryptic skink	<i>Oligosoma inconspicuum</i>	At Risk - Declining	High	Terrestrial, variety of habitats. Rocky habitats, including rocky beaches, shrubland, screes, and tallus, although they do also occur in heavily-vegetated habitats.
McCann's skink	<i>Oligosoma maccanni</i>	Not Threatened	Low	Inhabit rock tor systems, boulderfields, tallus, scree, rocky herbfield, exotic grasses, herbfield, and tussockland.
Mackenzie skink	<i>Oligosoma prasinum</i>	Threatened – Nationally Vulnerable	Very high	Open/sunny areas such as open grassy areas, tussock grassland, rock piles, and scree slopes.
Southern grass skink	<i>Oligosoma</i> aff. <i>polychroma</i> Clade 5	At Risk - Declining	High	Wetlands, grassland, shrublands, rocky shrubland/herbfield, screes, tussock, stony river beds.
Scree skink	<i>Oligosoma waimatense</i>	Threatened – Nationally Vulnerable	Very high	Boulderfields, screes, tallus, stoney river terraces and banks, rocky shrubland, and rocky bluffs.
Jewelled gecko	<i>Naultinus gemmeus</i>	At Risk - Declining	High	Indigenous forests, shrublands, and tussock grasslands.
Southern Alps gecko	<i>Woodworthia</i> "Southern Alps"	At Risk - Declining	High	Terrestrial and saxicolous. Stable bases of scree slopes, rocky river terraces and shattered outcrops in dry sub-alpine.
Korero gecko	<i>Woodworthia</i> "Otago/Southland Large"	At Risk - Declining	High	Beech forest, podocarp/hardwood forests, rocky grasslands, and rocky alpine areas.

2.2 Potential impacts on lizards

Potential impacts of dam armouring works on native lizards include:

- Access tracks: temporary impacts to up to 1,200 m² of exposed boulder rock revetment lizard habitat to be removed and remediated following works.
- North and South laydown areas: temporary impacts to approximately 915 m² of lizard habitat comprising sparsely distributed shrubland and short-stature grassland, to be remediated following works.
- Two areas of approximately 6.3 ha and 0.8 ha of boulder material stockpiles will be drawn from for construction use (Figure 1.1). The areas comprise exotic grasslands where rock material has been stockpiled.
- Disturbance, injury or mortality during the armouring of the dam.
- Displacement: The existing rock stockpiles were first established in 2014 and are continuously added to as suitable local material becomes available. During this time, the stockpiles have incidentally provided effective lizard habitat. This lizard habitat will be lost for the purposes of dam remediation works. Lizards present may be displaced into adjacent areas potentially less suitable.

2.3 Lizard management measures

To address potential adverse impacts on lizards, the following measures are recommended:

- Avoidance, minimisation and remedying measures:
 - Lizard salvage across the North stockpile (refer to Section 5).
 - Lizard exclusion fencing around the North stockpile.
 - Remediation includes re-instating access tracks and laydown areas following works.
- Offsetting effects to lizards is challenging as it requires quantitative data, typically long-term information using mark-recapture studies.
- Compensation is proposed to address adverse residual effects to native lizards (refer to Section 6.2).

Note that the South Stockpile is an operational area on Meridian landholdings. The area would be challenging to exclude lizards from with fencing due to the large size of the area, and frequent operational access requirements. As such, lizards would be expected to re-colonise the stockpiles following any salvage attempt. Salvage would therefore be ineffective at protecting lizards. Based on the advice of Meridian, the site operates as a working hydroelectricity site of national significance. The ongoing addition of material to the stockpile means that the presence of fences would impede their operations and create unnecessary constraints. Instead, the compensation package has been proposed to address adverse impacts on lizards injured or killed during stockpile use.

The magnitude of effect on lizards, after efforts to avoid, minimise and remedy effects is considered to be **moderate** due to the loss of habitat and injury or mortality during construction. The magnitude of effect takes into account the quality of the habitat (low to moderate) and that the stockpiles have been developed in the past 14 years and have likely had a temporary 'positive' effect on the lizard population since that time. McCann's skink, Southern grass skink and Southern Alps gecko are also relatively abundant in the wider abundant (as determined by desktop assessment, surveys in a control site and surveys in adjacent habitats).

The overall level of effect depends on each species' conservation status and is as follows:

- For McCann's skink a **low** ecological value combined with a **moderate** magnitude of effect results in a **low** overall level of effect.
- For Southern Alps gecko and Southern grass skink, a **high** ecological value combined with a **moderate** magnitude of effect results in a **high** overall level of effect.

3 Lizard survey methods

Lizard surveys were undertaken to address the following questions and inform effects management for lizards:

- 1 Are any lizards using the rock stockpiles or proposed access track and stockpile laydown areas.
- 2 Are At Risk or Threatened species using the rock stockpiles or proposed access track/stockpile laydown areas and how are they distributed.
- 3 What is the level of usage of rock stockpiles and access track areas/stockpile laydown areas by lizards compared to nearby 'natural' areas.

Lizard surveys were undertaken in general accordance with the Principles of Lizard Management (Appendix C; DOC Technical Advisory Group, 2019; Appendix C) as outlined in the following Sections and outlined in Table Appendix C.1. Where survey methods varied from the principles, justification is provided in Table Appendix C.1.

3.1 Wildlife Act Authority

All survey methods and reporting requirements were undertaken in accordance with Wildlife Act Authority (WAA) (Authorisation no. 119794-FAU made out to Graham Ussher). All lizard handling undertaken under the direct supervision Graham Ussher.

3.2 Personnel undertaking lizard surveys

All surveys were undertaken by Graham Ussher (RMA Ecology), Holly Madden (RMA Ecology) and Sam Heggie-Gracie (T+T). All three ecologists are suitably qualified and experienced in lizard surveys, handling and identification (refer to Appendix B for experience summaries).

3.3 Survey locations

Surveys were undertaken across all potential dam armouring works management areas (Appendix A Figures 1-5). In addition, control surveys were undertaken adjacent to North stockpile and approximately 1 km downstream of North stockpile. In summary, surveys were undertaken across the following areas:

- North laydown area
- South laydown area
- North stockpile area
- South stockpile area
- Two control sites:
 - North stockpile adjacent habitat
 - Control site approximately 1 km downstream from the North stockpile adjacent to the Pūkaki River margin.

Refer to Appendix A Figures 1-5 for detailed survey designs for each area listed above.

3.4 Survey timings and weather conditions

Lizard surveys were undertaken from 27 to 31 October 2025. From 27 to 29 October, surveys were undertaken by three ecologists, and from 30 to 31 October, surveys were undertaken by two ecologists.

Survey weather conditions are described in Table 3.2 below. A qualitative assessment of lizard activity and basking opportunity is provided below. Despite cool weather conditions early in the survey week, the weather improved later in the week resulting in a number of survey days with good suitability for lizard detection.

Table 3.1: Weather conditions³ during the lizard survey

Date	Overnight low (°C)	High (°C)	Weather	Qualitative assessment of lizard activity and basking opportunities based on rock temperatures and sunlight availability
27 October 2025	0.1	11.4	Overcast, showers	Low – no sunshine
28 October 2025	-0.8	6.4	Overnight snow. Clear and sunny.	Moderate. Basking opportunities limited by snow on rocks, particularly on south-facing rock piles where snow was not melted. Temperatures low limiting lizard activity, however, sun on exposed rocks resulted in relatively warm rock temperatures. Southern grass skinks at a nearby site (used for training purposes) were observed basking, indicating at least moderate basking conditions.
29 October 2025	-1.5	15.6	Clear and sunny.	High – full sun
30 October 2025	2.1	16.9	Clear and sunny.	High – full sun
31 October 2025	1.5	18.8	Clear and sunny.	High – full sun

3.5 Pre-construction survey methods

3.5.1 Survey methods

The methods for the lizard survey included manual habitat searches, visual surveys and deployment of eDNA tunnels. The specific methods were designed to survey the suite of potential lizard species known in proximity to the site. They allowed for the detection of nationally Threatened species. The methods used are summarised below and in Table 3.2.

³ Weather data from MetService Twizel data (<https://www.metservice.com/rural/regions/canterbury-high-country/locations/twizel>)

3.5.1.1 Manual habitat searches

Manual habitat searches were undertaken in accordance with standard systematic searching protocols (DOC, 2012a). Manual habitat searches were undertaken from 29 to 31 October and included the turning of cover objects. The majority of available cover objects (small and medium size rocks) were turned on the edges of access tracks, laydown areas and stockpiles. Approximately 26 person-hours of manual searches were completed.

3.5.1.2 Visual Encounter Surveys

Visual Encounter Surveys (VES) targeted rock stockpiles using binoculars. VES were used to identify lizards basking or moving about habitat, targeting morning and late afternoon periods. VES surveys comprised slow walk transects across the edges of rock stockpiles and other potential habitats. Refer to Appendix A Figures 1-5 for the locations of all VES surveys.

3.5.1.3 Funnel trapping

Funnel traps were established in lizard habitats across the North and South stockpiles and at the control site. Funnel trapping was undertaken in accordance with standard protocols (Department of Conservation, 2012b). Funnel trapping comprised deployment of shaded Gee's minnow traps (Photograph 3.5) and longitudinal funnels (dimension 18cm x 18cm x 79cm) (Photograph 3.6). A single Gee's minnow and longitudinal funnel were deployed together in pairs (32 funnel traps total).

Funnel traps were deployed with torn grass and fruit jelly. Each trap was covered with shade cloth to ensure shading and encourage use, and rocks were used to hold traps in place. Traps were checked daily (every 24 hours).

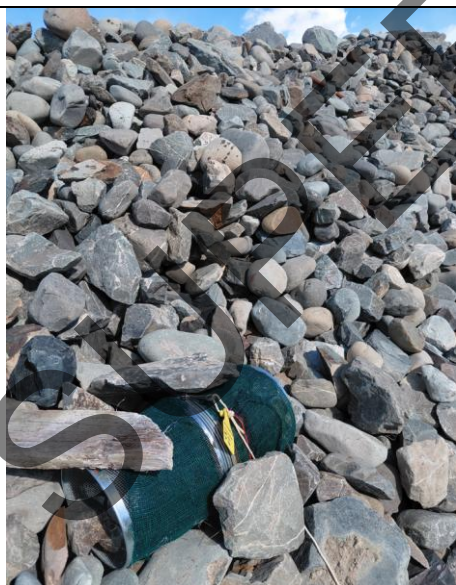
3.5.1.4 eDNA

A total 8 eDNA tunnels were deployed at the North and South stockpiles for five days (refer to Appendix A Figures for locations). In addition, lizard scat was collected into pottles for eDNA analysis.

Table 3.2: Summary of lizard survey methods across dam armouring management areas

Location	Search method and level of effort	eDNA methods
Access tracks and laydown areas	<u>Manual habitat search</u> Total effort: 6 person-hours	
Stockpiles	<u>Manual habitat search:</u> Total effort: 26 person-hours <u>Funnel trapping:</u> - North stockpile: 8 funnel traps checked daily for four days. - South stockpile: 24 funnel traps checked daily for four days. <u>Visual encounter survey</u> Undertaken 29 October and 30 October: 50 m long transects for binocular basking search each morning and/or late afternoon.	Lizard scat: - Lizard scat collection across rock stockpiles. Approximately 8 collection sites across all rock stockpiles with aggregation of samples from specific clusters or rock stockpiles. eDNA tunnels - Deployment of 3 tunnels in the South stockpile and 5 tunnels in the North stockpile.

Location	Search method and level of effort	eDNA methods
	16 transects split across 4 stack clusters⁴, with interior and exterior stockpiles within each cluster. Refer to Appendix A Figure 1-5. Total effort: 4.75 person-hrs	
Adjacent habitat Habitat adjacent to the North stockpile comprising exotic grasses, occasional boulders and cobbles.	<u>Manual search:</u> - Sampling of non-rock stack areas. - Opportunistic searches Total effort: 2 person-hrs <u>Visual encounter surveys:</u> Undertaken 30 and 31 October: - Opportunistic afternoon basking search. Total effort: 3 person-hrs	
Control site Cobbled river margin habitat 1 km downstream of north stockpile (control site)	<u>Funnel trapping:</u> 8 funnel traps checked each day for four days. <u>Visual encounter surveys:</u> Undertaken 30 October: 50 m long transects for binocular morning and afternoon basking search. Total effort: 1.5 person-hrs	



Photograph 3.1: Funnel trap (Gee's minnow)



Photograph 3.2: Funnel trap (longitudinal funnel)

3.6 Data collection

Each native lizard captured was assigned a number and the following information was recorded:

⁴ Stack clusters defined as a general group of rock stockpiles. There is one cluster at the northern stockpile site, and three clusters across the southern site.

- Date and time of capture.
- Weather conditions at time of capture.
- Capture methodology.
- GPS location.
- Age class.
- A minimum of one photograph of each captured lizard.

4 Lizard survey results

Across all surveys, four lizard species, and 78 individuals were recorded (Table 4.1). eDNA results are summarised in Appendix G.

4.1 Project footprint

Two lizard species were recorded in the project footprint:

- Southern Alps gecko (At Risk – Declining)
- McCann's skink (Not Threatened)

Adults, sub-adults and juveniles were recorded for both species indicating breeding populations.

Most lizards were detected through manual searches. VES surveys did not result in any lizard detections in the project footprint areas. Funnel traps resulted in one capture of a McCann's skink in the project footprint.

VES methods were likely unsuccessful due to the general lack of suitable basking habitats in the boulder stockpiles. Boulders were generally too large and disconnected from suitable grass habitat for lizards to safely access and retreat from. VES surveys at adjacent habitats were successful in detecting native lizards, supporting the find of low-quality basking habitat at the stockpiles.

Lizard scat was recorded from two locations at the South stockpile (Appendix A Figure 2). Scat samples were collected and sent for eDNA analysis (Appendix G Table Appendix G.1). Gecko sloughed skin was also recorded. Gecko skink was likely from Southern Alps gecko based on size of skink and the gecko species found during the survey.

eDNA tunnel results recorded a skink species (unknown) in the North stockpile (Appendix G). eDNA samples from scat resulted in detections of McCann's skink in the South and North stockpile.

In general, McCann's skink and Southern Alps gecko are likely to be present in low to moderate abundance across all potential footprint areas. Southern grass skink may also be present in footprint areas (detected in immediately adjacent habitat and suitable habitat is present).

4.2 Control site and adjacent habitats

In total, four lizard species were detected in the adjacent habitats and control site:

- Southern Alps gecko (At Risk – Declining)
- McCann's skink (Not Threatened)
- Southern grass skink (At Risk – Declining)
- Mackenzie skink (Threatened – Nationally Vulnerable)

At the downstream control site (Appendix A Figure 5), one Southern grass skink was captured in a funnel trap. McCann's skink and Southern Alps gecko were recorded in this area through manual

searches and incidental observations. VES surveys did not detect any lizards in this area. eDNA results recorded McCann's skink and Southern Alps gecko in at the downstream control site.

Both manual and VES surveys detected Mackenzie skink within 50 m of the North stockpile (Appendix A Figure 4). Manual and VES surveys also resulted in records of Southern Alps gecko, Southern grass skink and McCann's skink.

Table 4.1: Lizard results by survey area (Appendix A Figures 1-5).

Detection record	North access and laydown	North stockpile	South stockpile	South access and laydown	Control site (adjacent habitat to North stockpile)	Control site (downstream of North stockpile)	Total
Gecko sp. (scat)			1				1
Gecko sp. (skin)			2				2
Mackenzie skink					4		4
Mackenzie skink (deceased)					1		1
McCann's skink	4	4	41	1	4	1	55
Scat			1				1
Skink sp.*		3					3
Southern Alps gecko	1	4	1		1	2	9
Southern grass skink					1	1	2
Total	5	11	46	1	11	4	78

*note: missed skinks – considered to be Southern grass or McCann's skink based on size and dorsal colouration.

4.2.1 Mackenzie skink records at the control site (adjacent habitats)

Mackenzie skink was recorded within 50 m of the North stockpile (Appendix A Figure 4). On the 29 October, a large dead and degraded skink body was found beneath a rock stack. It was assumed it was a Mackenzie skink based on the large size. A live adult individual was subsequently recorded underneath a nearby boulder. Manual searches for Mackenzie skink stopped in this area so as not to further disturb the population. Further searches were undertaken downhill, south of the North stockpile on the spillway batter to assess their wider distribution. An additional live adult individual was recorded in a cluster of small to medium cobbles surrounded by medium-length grassland.

On the 30 and 31 October, VES were conducted across the known Mackenzie skink locations. A further two individuals were recorded basking on the spillway batter on the 30 October (Appendix A Figure 4). One individual (potentially one of the same individuals as recorded on 30 October) was also recorded on the 31 October. Both individuals were basking among small to medium cobbles and medium-length grassland.

4.2.2 Comment on likelihood of Mackenzie skink presence in project footprint areas

No Mackenzie skink individuals or sign (i.e. scat) were recorded in any of the project footprint areas. The access track and laydown areas are not considered to comprise effective Mackenzie skink habitat. The habitat in these areas comprise large boulders, managed grasslands and generally isolated and/or highly modified habitat. These areas are also divided from the known Mackenzie skink population by a busy motorway.

The habitats in the South stockpile are also not considered likely to support Mackenzie skink. This is due to surrounding habitats being highly modified, no records during surveys, general lack of effective habitat, and lack of connectivity to suitable Mackenzie skink habitat.

Given the records of Mackenzie skink near the North stockpile, this is the most likely footprint area they may be present. The Mackenzie skink is a highly specialised lizard. It is likely to seek out those habitat features which match its specific thermal requirements while also protecting them from mammalian predators. It is possible the large rock boulders in the North stockpile do not meet these specific niche conditions.

The presence of the stockpiles for approximately 14 years is considered long enough to allow Mackenzie skink to colonise the area if the habitat was suitable. Their preferred refuges of open grassy areas, scree slopes and small-medium cobble piles reduce their likelihood of presence in the North stockpile footprint, which largely comprised short exotic grassland and large boulder piles with wide interstitial spaces. Mackenzie skink were also found on steep slopes. It may be the North stockpile, being flat, does not drain water as quickly, resulting in sub-optimal (damp) micro-habitat conditions for Mackenzie skink.

Mackenzie skink were readily identified through manual and visual surveys in nearby habitat. If present in the North stockpile, we consider it likely they would have been detected during the targeted visual and manual searches. Given the above, we do not consider Mackenzie skink to be present in the South stockpile.

4.3 Pest mammals

Cat and possum scat was recorded across the North and South stockpiles. No pest mammal management is undertaken across these areas. Cats are known predators of native lizards and are likely impacting the lizard populations in these areas. It is likely that other pest predators of lizards are present such as rats and mice.

5 Lizard salvage plan

Lizard salvage is proposed across the North Stockpile prior to rock material use. Lizard salvage will only commence following the establishment of lizard exclusion fencing around the North Stockpile.

If, following 10 years, material in the North Stockpile remains, an additional lizard survey will be undertaken to determine if lizards have re-colonised the area. If lizards are present, another salvage effort, in accordance with this LMP, will be undertaken.

Similarly for the South Stockpile, where rock material remains after 10 years, a survey in accordance with this LMP will be conducted to quantify and assess the lizard population present.

5.1 Lizard exclusion fencing

Lizard exclusion fencing of the North Stockpile will be implemented to minimise lizards entering the North Stockpile, where Mackenzie skink was recorded within 50 m (Appendix A Figure 6). A lizard exclusion fence of approximately 200 m will be established to separate the known Mackenzie skink habitat areas and the North stockpile.

The fence will be constructed so that it sits approximately 50 cm off the ground and will be dug approximately 50-100 mm into the ground with a lip so that lizards cannot dig under the fence. Stakes will be established approximately 2 m apart to support the fence. A gate will form part of the fence to allow access to the rock material. The gate will need to be constructed in accordance with the rest of the fence specifications to prevent lizard access.

The fence will be maintained until all rock material from the North stockpile has been utilised. Annual inspections are recommended to ensure the fence continues to function as intended.

The construction method is described below and is consistent with a spotted skink fence established at Orana Wildlife Park⁵. The exact method may be changed to accommodate different material or construction methods that achieve the same outcome (exclusion of lizards from the North Stockpile). The method may also be updated to incorporate new technologies/methods (best practice lizard exclusion construction methods are still changing).

1. Plane a 60mm stripe down the edge of the post prior to driving it
2. Mark out the location of the posts and drive the posts into the desired depth
3. Dig a 400mm wide, 100mm deep ditch on the outer side of the posts and remove excess fill.
4. Cut & install the HDPE membrane 'bandage' by wrapping it around the post and secure it with 65mm gun nails into the post. The fence will not comprise silt-fencing or geotextile fabrics (lizards can climb these materials).
5. Roll out the HDPE membrane to allow for it to be installed 700mm high with the remainder as the buried skirt. There is a join at every second post, so the membrane needs to be measured and cut to ensure the joins meet on the post. They will be nailed in place using 65mm gun nails.
6. On every join post an alloy strip is used to sandwich the membrane to the flat surface of the post where it has been planned. The alloy strips have had holes predrilled in them.
7. Import appropriate aggregate to back fill the ditch and plate compact in place on the outside of the fence line.
8. Backfill and tamp the inside of the fence line with a pneumatic tamper.

Maintenance will need to be at least annual to ensure the fencing continues to mitigate lizard colonisation.

Further information, including specifications and example photographs are provided in Appendix H.

5.2 Lizard salvage protocols

Lizard salvage will be undertaken in general accordance with the Principles of Lizard Management (Appendix C; DOC Technical Advisory Group, 2019) as outlined in the following Sections. Where this plan varies from the principles, justification is provided in Table Appendix C.1.

5.2.1 Salvage footprint

The salvage footprint will comprise the North Stockpile as outlined in Appendix A Figure 6.

⁵ Fencing Contractors NZ, Certified Fencer (n.d.). Central Fencing Lincoln. Spotted Skink Enclosure Fence at Orana Wildlife Park.

5.2.2 Seasonal constraints and weather requirements

Lizard survey and salvage will be undertaken between October and April inclusive during suitable weather. Suitable weather will comprise:

- Minimum 12°C for daytime salvaging.
- Maximum of 25°C for daytime salvaging.
- Overnight minimum temperature (i.e. for funnel trapping salvage) of 10°C.
- General weather conditions that are fine, overcast or with light showers.

5.2.2.1 Best endeavour salvage approach

The North Stockpile may require access during May to September 2026. Where stockpiles require access during this period, a 'best endeavour' salvage will be implemented. This salvage will not need to meet the above listed seasonal and weather constraints. The salvage will be implemented to salvage as many lizards as practicable given potential weather constraints and lizards potentially in torpor.

Only where weather conditions are suitable will funnel and pitfall trapping be implemented. Where overnight temperatures are too low to safely trap lizards, trapping may be able to be successfully completed during the day time, with traps opened in the morning and checked/closed in the evening. Artificial Cover Objects (ACOs) checks and manual searching methods will likely be effective methods.

5.2.3 Artificial Cover Objects

Artificial Cover Objects (ACOs) will be established and checked in general accordance with standard protocols (Department of Conservation, 2012). ACOs will be established at least 8 weeks prior to ACO salvage commencing.

ACOs will be installed in suitable lizard micro-habitats and installed as double and triple layered ACOs. ACOs will be deployed at a minimum of 10 m spacings along the edges of the stockpiles. ACOs will be checked for four consecutive days.

5.2.4 Funnel trapping

Funnel trapping will be undertaken in general accordance with standard funnel trapping protocols (Department of Conservation, 2012).

Funnel traps will be installed every 10 m in suitable lizard micro-habitats. Funnel traps will be installed on the ground and on rock piles (to target both ground lizards and geckos higher up rock piles). Funnel traps will be deployed with torn grass in each end, and two slices of pear per trap. Each trap is to be covered with grass to ensure shading and encourage use, and rocks may be used to hold trap in place. A damp sponge is to be deployed in each trap to avoid lizard desiccation. Traps are to be baited with tinned pear.

Where mice are captured in traps it will be assumed that they are likely exploiting native lizards caught in traps. If this occurs, traps will be removed and salvage will focus on manual searches and ACO salvage.

5.2.5 Pitfall trapping

Pitfall trapping will be undertaken in accordance with standard pitfall trap protocols (Department of Conservation, 2012).

Pitfall traps will comprise 4L buckets dug flush with the ground. A layer of rocks will be placed in the traps to provide shelter for lizards. Traps are to be baited with tinned pear or fruit jelly. A damp sponge shall be deployed in each trap to reduce lizard desiccation. Several holes (less than 5 mm diameter) shall be drilled into the base of traps to prevent flooding.

Pitfall traps will be deployed in locations deemed suitable by the lead lizard ecologist. They will be targeted on the edges of stockpiles targeting the best micro-habitats, every 10 m.

Traps shall be checked daily (every 24 hours) for a minimum of four consecutive days.

Where mice are captured in traps it will be assumed that they are likely exploiting native lizards caught in traps. If this occurs, traps will be removed and salvage will focus on manual and construction-assisted salvage.

Where the ground is too hard to dig pitfall traps in, funnel traps may be placed instead.

5.2.6 Manual searches

Manual and destructive salvaging will comprise the turning of rocks on the edges or in-between stockpiles. Hand rakes can be used to search through grass or small cobble habitats.

Southern Alps gecko are often situated on the tops of stockpiles. Where it is safe to do so, rocks may be climbed to check for and salvage native geckos.

5.2.7 Level of effort

The level of effort is tailored to each of the salvage methods implemented as outlined in Table 5.1.

Table 5.1: Level of effort required for each salvage method across the North Stockpile.

Salvage method	Level of effort
Artificial Cover Objects	- Deployment of ACOs a minimum of every 10 m on the edges of stockpiles. - ACO checks for four consecutive days.
Funnel trapping	- Deployment of traps every 10 m. - Funnel traps will be deployed for four nights and checked every 24 hrs.
Pitfall trapping	- Deployment of traps every 10 m. - Pitfall traps will be deployed for four nights and checked every 24 hrs.
Manual salvage	A minimum of two person-hours per 100 m of stockpile edge will be undertaken.

5.2.8 Data collection

Each native lizard captured will be assigned a number and the following information will be recorded:

- Date and time of capture.
- Weather conditions at time of capture.
- Capture methodology.
- Capture and release locations (GPS coordinates), broad habitat types and microhabitat types.

- Species, sex (where possible), reproductive status for females, age class, snout to vent length (SVL), tail status (regenerating or original tail) and overall health and condition.
- A minimum of one photograph of each captured lizard, including at least one photograph showing the dorsal surface clearly.
- Photographs of the salvage site and release site.

5.3 Lizard relocation protocols

5.3.1 Capture, handling and transport

The following steps will be undertaken to ensure appropriate handling of lizards occurs. Capture, handling and relocation of lizards will be undertaken in accordance with the below methods:

- All field equipment that indigenous lizards may come into contact with (e.g. plastic enclosures, collection bags, scales, etc.) will be sterilised.
- Hand sterilisation will be undertaken.
- Salvaged lizards will either be transported in cloth bags or in suitably ventilated plastic containers.
 - Care will be taken so that the bags and containers are kept at a constant ambient temperature.
 - Grass will be added to plastic containers to shelter and protect lizards during transportation.
 - Different species will be kept in separate holding bags or containers.
 - Larger individuals will not be placed in the same container as smaller individuals to prevent aggressive interactions or predation.
 - Any injured skinks will be kept separately from healthy skinks.
- Cloth bags and/or containers will be kept in the shade prior to transportation to the relocation site.
- Lizards will not be held for more than three hours before release.

5.3.2 Relocation site description

Native lizards will be relocated to the east side of the Lake Pūkaki River, approximately 1 km downstream from the North Stockpile (refer to Appendix A Figure 6).

Key characteristics of the relocation site include:

- The habitat is contiguous with an additional 19 km of riparian margin habitat suitable for the species in the footprint.
- The habitat comprises river gravels and boulders, shrubland habitat, and rank grass. It is also contiguous with river terrace risers (Photograph 5.3).
- There is abundant micro-habitat availability in the form of rank grass, shrubs, rocks, screes of various sizes, and differing hillslope angles and basking opportunities.
- Southern Alp's gecko, Southern grass skink and McCann's skink were recorded in this habitat (indicating habitat suitability).



Photograph 5.3: River cobble habitat adjacent to the Pūkaki River suitable for lizard relocation. Southern Alps gecko, Southern grass skink and McCann's skink were all recorded in this habitat during original surveys.

6 Effects management measures

Effects management measures are provided below. The proposed measures aim to manage impacts to lizards to the extent practicable given the works constraints. The works constraints include:

- Access to stockpiles at short notice at any time (likely winter or early spring), in any given year for the life of consent.
- Seasonal constraints around lizard management (lizards are usually only salvaged October to April inclusive during suitably warm weather).

6.1 Avoid, remedy and minimise

Measures to avoid, remedy and minimise potential adverse effects are proposed. These measures are outlined in Table 6.2 and summarised below:

- A one-off lizard salvage is proposed to salvage lizard from the North Stockpile. Prior to the salvage, a lizard exclusion fence will be established around the salvaged zone, to prevent lizards from re-colonising the area.
- If, following 10 years, rock within the North Stockpile area has not all been removed, an additional lizard survey will be undertaken to understand if lizards are still present within the stockpile (despite the lizard exclusion fence present). If lizards are present, another salvage effort, in accordance with this LMP, will be undertaken.

6.2 Residual impacts management measures

Residual adverse effects on lizards occurs due to:

- Lizard injury or mortality during stockpile use and/or salvage outside of the active lizard season (to be avoided where practicable).
- Loss of lizard habitat.

Compensation is proposed to address residual adverse impacts and address impacts to lizards protected by the Wildlife Act 1953.

The recommended compensation contributions are provided in Table 6.1. Increasing contributions reflect higher impacts to those species with greater threat conservation statuses.

As nationally 'At Risk' species are present in the project footprints, it is recommended that a \$30,000 compensation fund is ring-fenced for lizard management. This fund will be used to implement the Compensation Management Plan (CMP; Appendix E).

Table 6.1: Proposed lizard compensation threshold table. Nationally 'At Risk' species were recorded in the footprint and therefore this compensation threshold has been recommended (greyed cell).

Pre-construction survey results	Proposed financial contribution (one-off payment)
No lizards recorded	No financial contribution required
Not Threatened species recorded	\$20,000
At Risk species recorded	\$30,000
Threatened species recorded*	\$40,000

*Note: Threatened Mackenzie skink was detected within 50 m of the north stockpile but not in the footprint itself.

6.2.1 Effects management summary

Effects management considerations in accordance with the effects management hierarchy (Roper-Lindsay et al. 2018) are summarised in Table 6.2 below. The proposed effects management measures may be subject to change following survey results.

Table 6.2: Effects management measures for native lizards

Effects management	Action	Justification
Avoid and minimise	Native lizards were detected throughout the project footprint areas. A one-off lizard salvage is proposed for the North Stockpile.	The North Stockpile will be fenced to prevent Mackenzie skink colonisation. A salvage in the North Stockpile is feasible as lizard recolonisation will be minimised due to the exclusion fence. A one-off lizard salvage would be ineffective in this area due to continual lizard re-colonisation.
Remedy	No remediation works are proposed for the stockpile areas. Dam armouring access tracks, temporary building, and stockpile laydown areas will be remediated following works.	All rock material is required for the dam armouring works. The stockpile areas are otherwise operational areas. Remediating these areas for lizards would result in future adverse impacts to lizards.
Offset	No offset is proposed.	Implementing offset for native lizards is difficult due to their cryptic nature and the difficulty in obtaining robust, quantifiable information required for offsetting.
Compensate	Compensation fund to support targeted lizard monitoring and management in accordance with the Compensation Management Plan. Increased compensation amounts have been provisioned for species with a higher Conservation Status (Hitchmough et al. 2021).	Compensation measures have been proposed to address impacts to native lizards protected by the Wildlife Act 1953. A Compensation Management Plan has been prepared and is outlined in Appendix E.

7 Changes to this LMP

To achieve the best outcomes for native lizards, and to align with any future changes to the Wildlife Act, including changes to the specific species protected by the Act, changes may need to be made to this LMP. The rationale behind any changes must be based on robust management techniques consistent with DOC guidelines, changes to legislation and only following confirmation from the Project Ecologist. Any changes to the LMP will also require confirmation with DOC.

8 Reporting requirements

This report will be submitted to DOC and Environment Canterbury following completion of lizard pre-construction surveys. A post-salvage report will also be prepared following salvage works at the North Stockpile.

The report will include the following:

- Confirmation that lizard surveys were undertaken in accordance with the LMP.
- Survey and salvage results.
- Representative photographs of the survey and salvage methodologies and lizards captured.
- Any other additional reporting requirements stipulated in the relevant consent and wildlife authority.
- Confirmation of the compensation financial contribution.

An Amphibian and Reptile Distribution Scheme (ARDS) card will be completed following the lizard survey and sent to DOC.

SUPERSEDED

9 Applicability

This management plan has been prepared for the exclusive use of our client GHD Limited and Meridian Energy Limited, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

We understand and agree that our client will submit this report as part of an application under the Fast-track Approvals Act 2024 and that an Expert Panel as the consenting authority will use this report for the purpose of assessing that application. We understand and agree that this report will be used by the Expert Panel in undertaking its regulatory functions.

Compliance with the Environment Court Practice Note 2023: Sam Heggie-Gracie

I confirm that, in my capacity as author of this report, I have read and abided by the Environment Court of New Zealand's Code of Conduct for Expert Witnesses contained in the Practice Note 2023.

I am a Senior Ecologist at Tonkin & Taylor Ltd (T+T), where I specialise in terrestrial and wetland ecology. I have worked at T+T since 2017. Prior to joining T+T, I was an ecologist at Auckland Council.

I have 10 years' experience in terrestrial and wetland ecology. I am a Member of Birds New Zealand and the New Zealand Plant Conservation Network (NZPCN).

Recent relevant projects and services that I have been involved with include:

- Belfast to Pegasus Motorway and Woodend Bypass Fast-track Approvals Act application.
- Auckland Regional Landfill consent application.
- The re consenting of the water discharge consents at the NZ Steel Glenbrook Steel Mill.

Tonkin & Taylor Ltd
Environmental and Engineering Consultants

Report prepared by:



Sam Heggie-Gracie
Senior Ecologist

Authorised for Tonkin & Taylor Ltd by:



Rob Van de Munckhof
Project Director

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SUPERSEDED





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PROJECT No.		1097626	
DESIGNED	SHEG	NOV.25	
DRAWN	SHEG	NOV.25	
CHECKED	RANI	NOV.25	

CLIENT		GHD LIMITED	
PROJECT		LAKE PŪKAKI EASED ACCESS AND DAM ARMOURING	
TITLE		SOUTH ACCESS	

0	First version	SHEG	RANI	24/11/2025
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REV	DESCRIPTION	GIS	CHK	DATE	LOCATION PLAN	APPROVED	DATE
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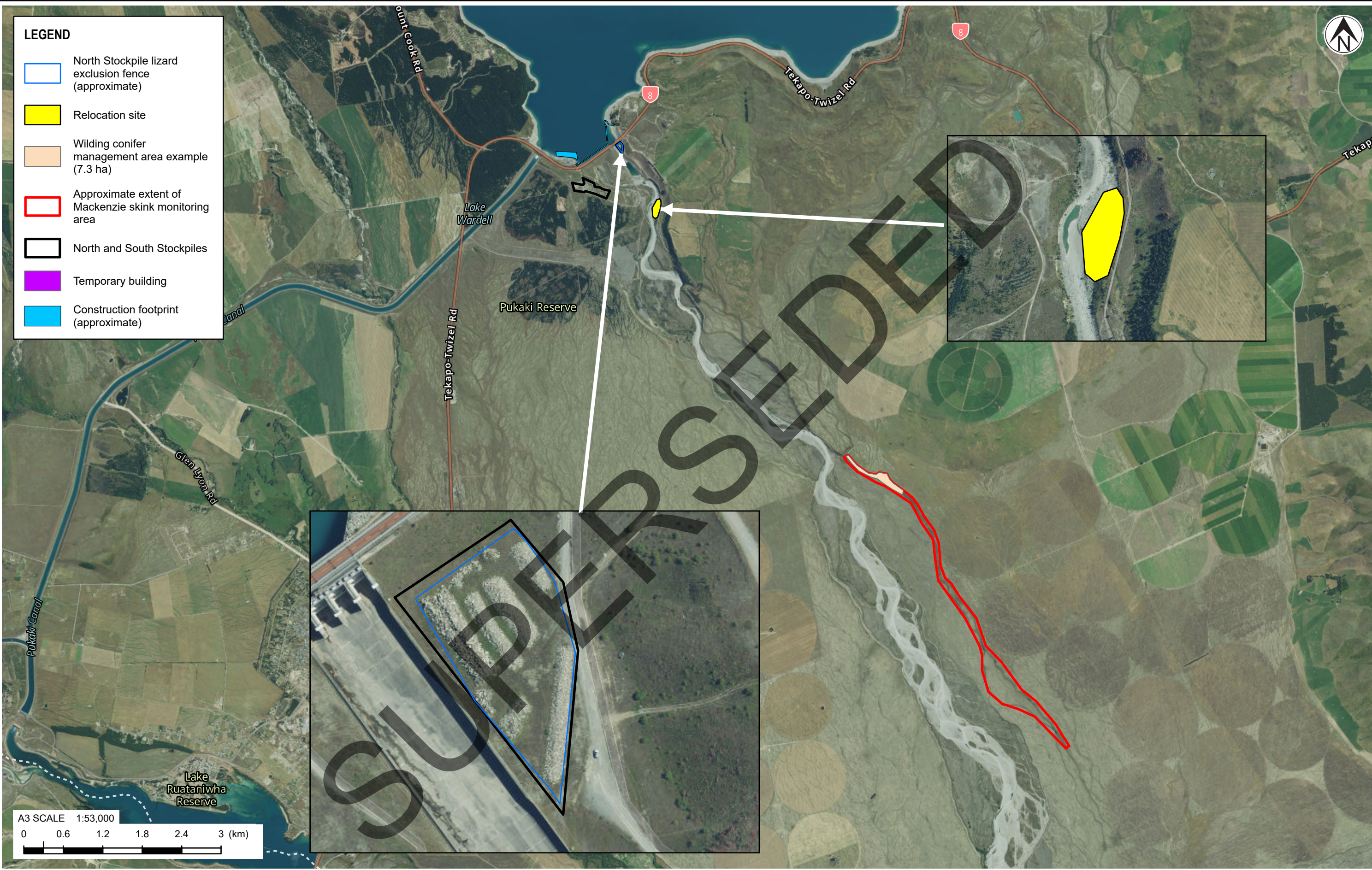
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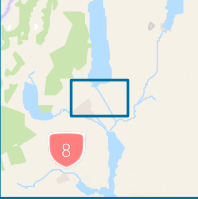






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PROJECT No.		1097626					
DESIGNED DRAWN CHECKED	SHEG	APR.26					
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REV	DESCRIPTION	GIS	CHK	DATE	LOCATION PLAN	APPROVED	DATE

CLIENT

GHD LIMITED

PROJECT

LAKE PŪKAKI EASED ACCESS AND DAM ARMOURING

TITLE

LIZARD MANAGEMENT FEATURES

SCALE (A3)

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FIG No.

FIGURE 6.

REV

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Appendix B Suitably qualified ecologists

B1 Summary

Lead ecologists led the initial survey works and be available for assistance where required. A lead ecologist was named on the Wildlife Act Authority under which the lizard survey of the site was undertaken. Support ecologists supported the lead ecologist during the initial stages of survey. Support ecologists were approved to lead surveys following the first three days of survey.

Lead ecologists

Graham Ussher – PhD (Conservation Ecology); MSc (1st Class Hons – ecology), BSc (ecology)

- 30 years' experience surveying reptiles and frogs in NZ, including for DOC, Councils, and commercial developers.
- Qualifications: PhD (Conservation Ecology) University of Auckland.
- Affiliations/ membership; SRARNZ, NZ Eco Society, EIANZ.

Previous/ Current Authorities held (in the name of Graham Ussher):

- Auckland Region Survey & salvage/ relocation: DOC file ref NHS 02-28-03; Permit number AK-13724 FAU; and DOC permit 37031 FAU NHS-12-03, 47967 FAU and 78350- FAU. Current regional Authority for Auckland is 101814- FAU, and 119558-FAU.
- Wellington/ Nelson Region: survey only 91417-FAU
- Wellington salvages: 91371-FAU, 118190-FAU, 119475-FAU, 119897-FAU, 119503-FAU
- Tasman (Pohara) salvage: 97668-FAU
- Mt Cass windfarm: multi-programme salvage: 81670-FAU and 86276-FAU
- Mackenzie Basin survey: 91677-FAU
- Current survey permits (as of October 2025)
 - Auckland
 - Waikato- Taranaki 117741-FAU
 - Hawkes Bay 119797-FAU
 - Wellington 117825-FAU
 - Nelson/ Top of South 117824-FAU
 - Canterbury 117740-FAU
 - Otago/ Southland 119794-FAU
 - West Coast 117742-FAU

Experience summary:

- Project manager & field lead for tuatara translocations to Whale Island (1996), Tiritiri Matangi (2003) and Motuihe Islands (2012).
- Lizard island surveyor (on contract) for DOC Auckland (1993 – 2000) undertaking spotlight, pitfall, ACO surveys of rare and threatened lizards on Mercury Islands, Alderman Islands, Hen & Chickens Islands and other outer Hauraki Gulf islands.
- Lizard surveys in Otago, Canterbury (Mt Cass wind farm) and MacKenzie Basin sites for windfarm and irrigation projects during 2003-2007.

- Currently managing major lizard survey, salvage, relocation, post-release monitoring and research programmes at sites in Christchurch (Mt Cass wind farm), Wellington (various land development projects), and Otago (Matakanui Gold Mine project).

Graham has undertaken approx. 75 other survey, salvage, rescue/relocations on private property from 2007 – 2025.

Graham has prepared more than 80 lizard management plans for consented development projects and has undertaken salvage works for most of those (some consented developments have not gone ahead).

Support ecologists

Sam Heggie-Gracie – MSc (Biosecurity and Conservation), CEnvP (General):

Sam holds a MSc in Biosecurity and Conservation and has eight years' experience as an ecological consultant. Sam is experienced in undertaking lizard salvaging on large construction projects such as the Pūhoi to Warkworth Motorway, Matawii Water Storage Reservoir and O Mahurangi - Penlink. Sam's experience surveying skinks and geckos has included a number of techniques including spotlighting, manual habitat searching, construction-assisted salvaging, tracking tunnels, Artificial Cover Objects, pitfall trapping, closed cell foam covers and funnel trapping. Sam has experience with a variety of species including copper skink, ornate skink, southern grass skink, Canterbury grass skink, striped skink, egg-laying skink, shore skink, Raukawa gecko, Pacific gecko, and forest gecko, with training experience from herpetologist Dr. Matt Baber. Sam has also undertaken monitoring and habitat mapping of Hochstetter's frog with Dr. Matt Baber and herpetologist Dylan Van Winkel. Sam has authored Lizard Management Plans including those for large construction projects such as Te Ahu a Turanga: Manawatū Tararua Highway, Te Ara o Te Ata – Mt Messenger Bypass and Auckland Regional Landfill.

Sam holds a personal lizard survey permit for the Auckland region (117239-FAU). Sam is a Certified Environmental Practitioner – General (CEnvP) and holds a Certificate in Tikanga (Mātauranga Māori) Level 3.

Holly Madden (BSc Env Sci):

Holly is a passionate ecologist with a background in field conservation and 5 years' experience in the ecological consulting, pest management, and biosecurity sectors. Her technical skills and experience span terrestrial and freshwater ecology including wetlands, streams, freshwater fauna, botany, herpetofauna, and avifauna, from base inventory surveys, through to effects assessments, construction monitoring, and compliance reporting.

Holly is lead ecologist/ herpetologist on several complex dam, wind farm, and mining projects, and has a personal portfolio of smaller projects where she provides end-to-end delivery. While she works across New Zealand, her focus is on infrastructure, extraction, energy generation, and land development in the South Island.

Holly strives to deliver positive ecological outcomes and forges strong relationships with clients and stakeholders. She is very organised, efficient, and applies a laser focus to client's needs.

Holly has a growing breadth of skills and experience with New Zealand herpetofauna, having worked solidly on lizard projects over the past three years, from small scale surveys and salvage, through to managing wind farm lizard salvage and monitoring programmes and a large mine site (survey area 4,300 ha) in Otago that has involved many of the same species of lizards as possibly present at this Lake Pukaki site.

For lizard projects, Holly has undertaken surveys, habitat assessments, post-release monitoring programmes, salvage and relocations, and overseen the establishment of habitat creation within

lizard release sites on small and large-scale projects. She has prepared many lizard management plans and completed dozens of lizard-focussed technical reports. Holly has been exposed to a wide range of lizard species, in particular across the Canterbury and Otago regions, and has used this knowledge to adapt methods and techniques to ensure best practise standards are met for each target species, including helping develop new techniques and trial new lizard sampling technologies.

SUPERSEDED

Appendix C Principles of Lizard Management

Table Appendix C.1: Principles of Lizard Management (DOC Technical Advisory Group, 2019)

Nine Principles of Lizard Management (Department of Conservation Lizard Technical Advisory Group, 2019)	How/where each principle is addressed in this LMP <i>[example text]</i>
1. Lizard species' values and site significance must be assessed at both the impact (development) and receiving sites.	Lizard values have been assessed at the impact site through desktop assessment and on-site habitat assessment. A pre-construction survey was undertaken to determine which species were present.
2. Actual and potential development-related impacts and their significance must be assessed.	Actual and potential impacts described in Section 2.2.
3. Alternatives to moving lizards must be considered.	Rock armouring works cannot avoid potential lizard habitat. The access tracks will be kept as narrow as practicable to avoid potential lizard habitat.
4. Threatened lizard species require more careful consideration than less-threatened species.	The compensation financial contribution has been raised for At Risk species.
5. Lizard salvage, transfer and release must use the best available methodology.	Standard salvage methods are proposed. Due to project timeframes, salvage outside the standard lizard salvage season may be required, based on a 'best endeavour' approach.
6. Receiving sites and their carrying capacities must be suitable in the long term.	There is abundant habitat along the relocation site eastern margins and hillslopes of the Pūkaki River.
7. Monitoring is required to evaluate the salvage operation.	The financial contribution will be used to contribute to an existing lizard enhancement site where there is a population of lizards of the same species at the impact site. The proposed enhancement measures will benefit the Threatened Mackenzie skink.
8. Reporting is required to communicate outcomes of salvage operations and facilitate process improvements.	Reporting will be undertaken as outlined in Section 8.
9. Contingency actions are required when lizard salvage and transfer activities fail.	Financial contribution has been provided as it is acknowledged that some lizard injury and mortality will likely occur.

Appendix D Photographs

D1 Project footprint habitats



Photograph Appendix D.1: South access track boulder habitat.



Photograph Appendix D.2: North access track boulder and cobble habitat.



Photograph Appendix D.3: South stockpile boulder habitat overview.



Photograph Appendix D.4: South stockpile ground-based cobble habitat. This type of habitat was limited to a few isolated areas situated among the larger boulder piles.



Photograph Appendix D.5: North stockpile boulder habitat.



Photograph Appendix D.6: North stockpile boulder habitat overview.

D2 Lizard habitat adjacent to the North stockpile



Photograph Appendix D.7: Mackenzie skink habitat adjacent to North stockpile. Habitat comprised occasional large boulders and rank grass. Occasional sweet brier present. Habitat was also suitable for McCann's skink, Southern grass skink and Southern Alps gecko.



Photograph Appendix D.8: Mackenzie skink habitat on the batter to the Lake Pūkaki dam spillway. Habitat comprised short grasses, boulders and cobble piles to ~0.75-1 m depth.

D3 Control site habitat



Photograph Appendix D.9: Control site comprising cobble habitat beside the Pūkaki River.



Photograph Appendix D.10: Control site comprising cobble habitat beside the Pūkaki River.

D4 Representative lizard photographs



Photograph Appendix D.11: Southern Alps gecko.



Photograph Appendix D.12: Southern Alps gecko skin.



Photograph Appendix D.13: Southern grass skink.



Photograph Appendix D.14: McCann's skink.



Photograph Appendix D.15: Mackenzie skink basking.

Appendix E Compensation Management Plan

E1 Introduction

As a result of the proposed activities outlined in Section 2.2, the Lake Pūkaki armouring works will result in adverse impacts to native lizards, including At Risk species.

The overall level of effect, after efforts to avoid, minimise and remedy, is **high** for Southern Alps gecko and Southern grass skink and **low** for McCann's skink.

Residual adverse effects are expected due to:

- Lizard injury or mortality during construction works and/or stockpile use.
- Loss of lizard habitat.

Compensation is proposed to address residual adverse effects and effects to lizards protected by the Wildlife Act 1953.

A compensation contribution of \$30,000 is proposed to address adverse impacts on native lizards. The purpose of the fund is to provide ecological benefit to native lizards in the local environment. The compensation fund has been targeted toward the management of Mackenzie skink (Threatened – Nationally Vulnerable) but will also benefit Southern Alps gecko, Southern grass skink and McCann's skink which are also distributed across the compensation areas.

The proposed fund will be used to control wilding conifer over an area of 7.3 ha (e.g. equivalent amount of habitat impacted by the proposed works).

Any records of Mackenzie skink (or any other nationally Threatened species) during the lizard salvage works will trigger additional compensation of \$10,000 to be used in accordance with this CMP.

The fund will support DOC's wilding pine management the summer immediately following stockpile use.

E2 Proposed compensation area

In discussion with local Twizel DOC Office staff (18 November 2025) a potential compensation area was identified approximately 5 km south of the project footprint (refer to Appendix A Figure 6).

Through Project River Recovery (PRR) funding, DOC has been implementing wilding pine control to enhance the habitat at this site to benefit the lizard population, which includes Mackenzie skink (Threatened – Nationally Vulnerable). Regular lizard monitoring through pitfall trapping is undertaken at the site to assess the response of the lizard community to the pine management.

Through contributing to an existing management programme, it is expected that greater biodiversity gains would be achieved compared to establishing a new compensation management regime. The input of additional funds to this site allows for a continuation and/or expansion of wilding pine management to specifically target and enhance a known native lizard population.

Lizard habitat across the compensation site includes scree slopes, rock piles and complex shrubland. Mackenzie skink and other native lizard species are present. Wilding pine invasion has resulted in the shading of lizard habitat, reducing basking habitat availability. Pine needles also smother interstitial spaces that would otherwise provide effective lizard micro-habitats. Through the control of wilding pine, the site is enhanced by increasing basking sites and reducing pine needle fall, maintaining and enhancing suitable habitat for lizards.

The total area over which Mackenzie skink are monitored is more than 80 ha (Appendix A Figure 6). Figure 3 of the Fast-track Approvals Act wildlife approval report⁶ (Section 51(2)(c) presents:

- Wilding pines on LINZ land to the south/southeast of monitoring grids.
- Mackenzie skink habitat that includes 6 monitoring grids.

Wilding conifer management is proposed to target 7.3 ha of the Mackenzie skink habitat (refer to Appendix A Figure 6 for an example of the proposed management area). The target area for 7.3 ha will need to be focused across an area which ties into wider wilding conifer management in the catchment. The exact area will best be determined by DOC in coordination with the wilding pine contractor.

The exact location of wilding pine control and maintenance should be reviewed once funding is released. Wilding pine extent and maturity is constantly changing, and the management area should those areas that will maximise benefits to native lizards.

Meridian is already undertaking pine management on its landholdings. All wilding conifer management will be implemented outside existing planned management areas to meet the additionality principle of compensation.

The funding should be ring-fenced for wilding pine control in the Mackenzie skink monitoring area. Ring-fencing the funds will ensure lizards will directly benefit from the compensation (rather than the fund going toward unrelated biodiversity management).

E2.1 Wilding conifer control measures

The predominant species for control is lodgepole pine (*Pinus contorta*). Lodgepole pine can reach maturity and produce viable wind-spread seeds at 3 years of age.

The purpose of wilding conifer management comprises removal of potentially seeding wilding conifers (exotic conifers 3 years or older) across 7.3 ha, and follow-up maintenance control every 2nd year for 10 years. Works are expected to commence the summer immediately following stockpile use.

The contractor will work with DOC or a suitably qualified herpetologist to identify the areas of high quality vs low quality lizard habitat, and the most effective conifer control measure.

Across high quality lizard habitat (defined as boulder and gravel fields, often with native berry-producing shrubs), wilding conifer will be cut and poisoned. On low quality lizard habitat, dense infestations of wilding conifer can be aerially sprayed⁷. When controlling wilding conifers, effort will be made to avoid accidental impacts to native vegetation.

Initial control will require pines to be cut and poisoned. All material from wilding pine control (including cut trees from previous operations) will be removed to the base of the river terrace riser⁸.

For follow-up maintenance, small seedlings less than two years old can usually be pulled up by the base. Green needles and roots need to be removed to avoid regrowth.

E2.2 Measures to avoid and minimise lizard injury and mortality

Wilding conifer control should be undertaken in a manner that avoids lizard injury and mortality to the extent practicable. This includes:

⁶ Department of Conservation (23 March 2026). Fast-track Approvals Act wildlife approval report.

⁷ Any aerial spraying will need to be undertaken in accordance with relevant legislation around the use of chemicals.

⁸ Woody debris may be used by native lizards as additional habitat.

- Use of existing access tracks to access the site. There is an existing access track along the eastern side of the Pūkaki River to be used.
- Hand clearance and removal of wildling conifers where practicable.
- Avoid machinery tracking over high-value lizard habitat where practicable.

E3 Compensation principles

Although not a statutory requirement for renewable electricity generation assets and activities, the NPS-IB principles for compensation provide a useful framework for assessing the appropriateness of compensation measures. The principles and associated commentary related to the proposed compensation site are provided in Table Appendix E.1 below.

Table Appendix E.1: Compensation principles as detailed in the NPS-IB (Appendix 4).

Compensation principle	Description
Adherence to the mitigation/effects management hierarchy	Refer to Section 6.
When biodiversity compensation is not appropriate	The indigenous biodiversity values are not irreplaceable and are expected to respond to habitat enhancement measures.
Scale of biodiversity compensation	The indigenous biodiversity values lost through the activity to which the biodiversity compensation applies are addressed by positive effects to indigenous biodiversity that outweigh the adverse effects. Specifically, impacts to 'Not Threatened' and 'At Risk' species will be addressed through habitat enhancement that will benefit these species, as well as the 'Threatened' Mackenzie skink.
Additionality	The compensation site is managed under a current programme of wilding pine management and skink monitoring. However, the fund will be used to expand the area of pine management above and beyond that which would be undertaken in the absence of the additional funding.
Leakage	The proposed compensation is not expected to displace or harm existing indigenous biodiversity values.
Long-term outcomes	The area is managed by DOC. The existing funding for the management of wilding pine at this site is limited. Additional funding allows for further pine management at the site.
Landscape context	The proposed compensation is located in relatively close proximity to the impact site. The compensation site is 5 km away from the impact site.
Time lags	No delay between the impact and the compensation fund becoming available is expected. Wilding conifer will be controlled in the nearest appropriate season.
Trading up	The compensation fund comprises some trading up. The species impacted by the activity (McCann's skink, Southern grass skink and Southern Alps gecko) are likely to benefit from the pine management undertaken at the compensation site. However, the specific compensation site has been selected to benefit known habitat of the Mackenzie skink, a Threatened species. As such, the indigenous biodiversity gains are expected to be greater than those lost.
Financial contributions	A financial contribution has been considered as there are limited opportunities for delivering biodiversity gains at the impact site. The contribution directly funds biodiversity values identified in and near the impact site.
Science and mātauranga Māori	The design and implementation of the enhancement measures at the compensation is being informed by science. Iwi input into the current

Compensation principle	Description
	programme (Project River Recovery) has allowed for mātauranga Māori input to the proposed compensation.
Tangata whenua and stakeholder participation	Tangata whenua should be invited to participate in any future habitat enhancement and/or skink monitoring.
Transparency	The compensation site is already being managed and results are published regularly by DOC. It is expected that the design and implementation of the compensation measures are therefore transparent.

E4 Reporting requirements

A report will be completed within 30 days of the initial wilding conifer control being completed, as well as completion of follow-up control events and submitted to DOC.

The report will include the following:

- Conifer control methods and results, including extent of management.
- Any issues regarding conifer control and recommendations for future conifer management.
- Recommended follow-up control areas and timings.
- Incident reporting, including any impacts to lizards or lizard habitats.

E5 Summary

The Lake Pūkaki armouring works will cause adverse impacts on native lizards, including At Risk species. Despite efforts to avoid, minimise, and remedy effects, the residual level of impact is assessed as:

- High for Southern grass skink and Southern Alps gecko
- Low for McCann's skink

Residual adverse effects include:

- Potential injury or mortality during construction and stockpile use
- Loss of lizard habitat

To address these impacts and comply with the Wildlife Act 1953, a \$30,000 compensation fund is proposed. Discussions with DOC identified a compensation site approximately 5 km south of the project footprint (Appendix A Figure 6), which is already part of a Project River Recovery (PRR) initiative for wilding pine control and lizard monitoring.

Key features of the compensation approach:

- Builds on an existing DOC management programme for greater biodiversity gains.
- Enhances habitat for species including Mackenzie skink (Threatened – Nationally Vulnerable).
- Site area: ~7.3 ha, comprising scree slopes, rock piles, and shrubland.
- Wilding pine removal improves basking sites and micro-habitats by reducing shading and needle fall.

Funding will be ring-fenced for wilding pine control at the identified site to ensure direct benefits to native lizards. It is considered that this compensation management adequately addresses adverse effects to the lizard community associated with impacts related to the proposed dam armouring works.

Appendix F Fast-track pre-lodgement consultation summary

SUPERSEDED

Fast-Track Pre-Lodgement Consultation Summary

Purpose - This document provides a summary of information from DOC following a pre-lodgement consultation request.

Project Details

Project name:	Lake Pūkaki Hydro Storage and Dam Resilience Works
Engagement type:	Consultation for referral application
Applicant/agent:	Meridian Energy Limited
Proposal overview:	The following activities are proposed: - Permanent placement of rock armouring at Pūkaki Dam to enhance the resilience of the dam when operating at low lake levels. - Temporary approval (for three consecutive years immediately following the granting of consent) to ease access restrictions on Lake Pūkaki contingent storage, allowing it to operate between 518 mRL and 513 mRL (metres above mean sea level).
Location:	Lake Pūkaki, Mackenzie District.
Date pre-lodgement request received:	11 June 2025
Summary of pre-lodgement Consultation	
Fast track project lead DOC:	Amelia Wilkinson – Permissions Advisor – Fast-track (National Office)
DOC specialist input required:	Fast Track Project Lead RMA Planner Statutory Manager (Regional Office) Technical Advisors Ranger (Twizel)
DOC Permissions/ Approvals Identified by applicant in pre-lodgement request as potentially required:	• Authority under Wildlife Act 1953 For the disturbance of lizard habitat, and the capture, holding and relocation of any lizards present to an alternative area of established habitat.



DOC Commentary on Fast Track approvals and permissions identified: Note DOC's role in relation to specific	Wildlife Act Permissions <u>Potential issues to consider:</u> To install/construct the rock armour during lower than the status quo lake levels, several activities are proposed over habitats of indigenous lizards. These activities will have actual and potential adverse effects on lizard populations and their habitats, including mortality. The Project area and surrounds is known to provide habitat for five indigenous lizard species, four of which are At Risk or Threatened. Field surveys will be required to confirm if lizards are present within the project area. Known populations of Mackenzie skink and Lake's skink occur directly adjacent (within ca. 100 m) to both stockpiles. Given the length of time stockpiles have been present (11 years), there is a high chance these lizards have colonised the stockpiles. Disturbance of these may result in injury, death and/or displacement of lizards occupying these areas. There are multiple opportunities to avoid adverse effects on lizard populations and their habitats. Avoidance actions should be informed by robust best-practice survey and take precedence over attempts to move/relocate lizards. Avoidance of adverse effects should be prioritised over relocation for any Mackenzie or Lake's skink (both Threatened – Nationally Vulnerable) populations detected through survey. <u>To mitigate some of the highest risk activities of the proposal the following is recommended:</u> • Seek to avoid rocky habitat for stockpile sites, choose area over existing hard surfaces where no lizard habitat exists. Suggest project herpetologist to approve stockpile site. • Investigate alternative sources of rock for armouring work, if not possible appropriate methods of relocation (including identification of release site) will need to be provided. • Suggest spoil disposal sites are selected by the project herpetologist or failing this, are confined to already disturbed sites. Spoil disposal should avoid rocky areas and areas of vegetation including exotic grasslands • Consider risks that lowering of the lake for extended periods may have on lizards inhabiting the area i.e. lizards may colonise exposed rock as lake levels are lowered and be at risk of drowning if water levels are raised during winter months (when they are not active).

	<u>Information requirements:</u> The substantive application should contain a Lizard Management Plan containing the information requirements specified in Schedule 7 of the Fast-track Approvals Act (including details of proposed avoidance and mitigation measures). This should adhere to relevant Department of Conservation lizard salvage principles and be informed by a best practice lizard survey. If lizard salvage is proposed a suitable release site will need to be identified. Guidance for applying for a wildlife approval under the Fast-track Approvals Act 2024 can be viewed here: Guidance for applying for a wildlife approval
Treaty partners:	DOC is aware of the following Treaty partners with interests that may be relevant to this site: Te Rūnanga, Ngai Tahu We encourage the applicant to engage directly with relevant Māori groups as required by section 29 of the Act.
Treaty Settlement implications/considerations:	DOC is aware of the following Treaty settlement obligations that may be relevant to this site: - A Statutory Acknowledgement applies to Lake Pūkaki and provides formal acknowledgment of the relationship that Ngāi Tahu have with Lake Pūkaki. - DOC notes species known or likely to be present on the project area include Taonga Species listed in a schedule to the Ngāi Tahu Claims Settlement Act 1998 and that the Act requires DOC work together with Te Rūnanga to discuss the approach to resource management issues. - Te Rūnanga o Ngāi Tahu participates in the Species Recovery Group for kakī (a taonga species), with DOC.
Section 4 Conservation Act 1987 implications/considerations	In the time available, DOC has not carried out a process to identify section 4 implications/ considerations specifically relevant to this site
Potential Resource Management Act (RMA) considerations and effects: <i>Note: DOC's role in relation to 53(2)(m)(i) FTAA</i>	The proposed activity of lowering the lake levels may result in adverse impacts to indigenous lakeshore turf and wetland plant communities (including Threatened and At-Risk plant species). Understand the effects the activity may have on braided riverbed. If the project is referred, appropriate conditions should be included in the substantive application that ensure lake levels are managed in a way that means current time periods at high levels are maintained. Return to high

	lake levels is particularly important in Spring to minimise weed invasion and erosion. Ongoing monitoring of lakeshore turfs and wetlands, particularly those supporting threatened species, should also be a condition in order to inform lake level management strategies and minimise adverse effects.
DOC Statutory Planning Document considerations in relation to site (e.g. CGP/CMS/CMP):	The alignment of the proposed project's impacts on wildlife with statutory planning documents should be considered as part of the overall assessment, noting the site is not (but is adjacent to) public conservation land. Canterbury (Waitaha) Conservation Management Strategy 2016.
Any specific information requests to applicant(s)/agent for pre-app engagement at this point:	Recommend further engagement prior to lodging substantive application if the project progresses as this would allow us to give more focused feedback on the application.
Any further information/considerations:	Extended periods of low lake levels may impact the feeding habitat for kakī and other braided river bird species. DOC recommends that any extension of the legal operating range of Lake Pūkaki is accompanied by ongoing monitoring of the responses of kakī. Monitoring should focus on the number of kakī that use the Tasman Delta and ultimately on their survival and breeding success. Additional mitigation measures may be required to account for any observed impacts. In addition to the information required for the wildlife approval, the substantive application should also include the following information: • A full ecological assessment, including assessment of actual and potential effects on vegetation, wetlands, freshwater, and fauna including avifauna and lizards. • Proposed consent conditions, including details of lakeshore turf, wetland and avifauna monitoring and mitigation, including any adaptive management requirements.

Additional Notes:	While DOC will assist applicants as much as we can when they engage in pre-lodgement consultation, it is the applicants' responsibility to comply with the FTAA and to ensure they have applied for all permissions they need. Note that a panel will invite the statutory bodies listed in clause 4 of Schedule 7 to comment on the application (NZCA, conservation boards, Fish and Game Council, and Game Animal Council). We encourage applicants to engage with these bodies in advance of filing a substantive application. It is recommended that the information contained in the application documents addresses each of the information requirements for the various approval sought, including any additional information requirements for listed projects. A checklist of information requirements is attached, including checklist E (Wildlife Approval information requirements). Use of clear headings for each information requirement would assist with navigating the documents.
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Table Appendix G.1: eDNA results lizard summary. Numbers relate to the sequence count (the number of times a unique sequence was detected in each sample taken; a low sequence count is considered a tentative detection).

Common name	North Stockpile	North Stockpile	North stockpile	South stockpile	South stockpile	South stockpile	South stockpile	South stockpile	Control site	Control site	South stockpile	South stockpile	North stockpile
	eDNA tunnel									Scat	Scat	Scat	Specimen
McCanns skink	0	0	0	0	0	0	0	0	0	12686	22888	23836	28852
McCanns skink	0	0	0	0	0	0	0	0	0	61	885	781	6384
Southern Alps gecko	0	0	0	0	0	0	0	0	699	0	0	0	0
Skink sp.	6	0	0	0	0	0	0	0	0	0	0	0	0
Lepidosaurs	0	0	0	0	0	0	0	0	145	0	0	0	0

Appendix H Lizard exclusion fence specifications

Lizard exclusion fencing specifications are provided in Table Appendix H.1 below. The exact method may be changed to accommodate different material or construction methods that achieve the same outcome (exclusion of lizards from the North Stockpile).

Table Appendix H.1: Fencing specifications for North Stockpile.

Function	Product	Dimension
Wall sheet	High Density Polyethylene (HDPE) smooth membrane 1.5mm	1m x 50m rolls
Post 'bandage'	'Permaflex' Flexible Polyethylene (PE) Geomembrane 0.3mm thick x 500mm wide	4m x 4m packs
Posts, at 2m spacing	1.8m x ~110mm. No. 2 rounds. H4.	No. 2 rounds. 1.8m x 90mm >115mm. Or No. 1 rounds 1.8 x 125mm >140.
HDPE sheet end joining. Aluminium rectangular 'batten', 800mm long piece per joint.	50mm wide x 6.0mm thick x 4m long flat bar (Vulcan part No. F506MI4L)	50mm x 6mm x 800mm lengths (=5 lengths per 4m long part)
For fixing 'bandage' & wall membrane to posts.	Nail gun nails	
For fixing aluminium batten + HDPE membrane to post. Also for fixing penny washers where there is no aluminium batten.	14G X 40 CLASS 4 GALV HWF T17 TEK SCREW (Hex head washer face self tapping = "wood biters").	14G x 40mm
For fixing wall membrane to posts that don't have a wall membrane joint on them).	penny washers, stainless steel	
For fixing HDPE skirt to 200mm x 50mm x 200mm horizontal underground joiner block	14G X 40 CLASS 4 GALV HWF T17 TEK SCREW (Hex head washer face self tapping = wood biters)	14G x 40mm
Below-ground membrane skirt joint backing	200mm x 50mm x 200mm long H4 timber piece	120mm x 50mm x 200mm
Other costs include freight and labour time.		

Notes regarding fence installation include:

- Consider utilisation of back fill aggregate and tamping with a pneumatic tamper on the inside of the fence.

- Use of alloy strips 50mm x 6mm.
- Holes should be predrilled in the alloy stripes. The time it takes to install the fasteners (nails and tech screws) can reduce lowering the labour cost.
- Refer to example photographs below.



Photograph Appendix H.1: HDPE membrane which mitigates lizard climbing.



Photograph Appendix H.2: HDPE membrane attached to post.



Photograph Appendix H.3: Fencing establishment.



Photograph Appendix H.4: HDPE membrane attached to post.

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APPENDIX B: EXPERTS RELIED ON

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Appendix B: Experts relied on

This table lists persons who provided expert evidence, technical reports, technical advice or RFI material for the application, comments or responses, and whose material records compliance with the Environment Court Code of Conduct for Expert Witnesses. It excludes counsel, Ministers, organisational comments without individual expert material, and Andrew Balme's Genesis material because Genesis expressly described it as lay evidence rather than expert evidence.

Expert	Called by	Qualifications and experience stated in record	Technical / expert topics and issues
Thomas Brent Layton	Meridian Energy Limited	BCA in Economics; BA with First Class Honours in Economic History and Econometrics; PhD in Economic History, Victoria University of Wellington. Former Chair of the Electricity Authority and Chair of the 2009 Brownlee Review Technical Advisory Group; extensive electricity market and energy economics experience.	Economic benefits and costs; dry-year risk; electricity market design and security of supply; response to comments and late Minister for Energy comment.
Rory Peter Blundell		BCom majoring in Economics and BE with First Class Honours, University of Auckland. More than 20 years' electricity industry experience, including General Manager Market Performance at the Electricity Authority and senior roles at Contact Energy; Meridian General Manager Strategy and Portfolio.	Electricity system roles; market operation; water valuations; regulatory responsibilities; response to Transpower and Electricity Authority comments.
Grant John Barnard Telfar		MSc, Victoria University of Wellington. Thirty years' experience advising on and practising power system analysis, economics, strategy and modelling in New Zealand, Australia and the United Kingdom; Principal Advisor at Meridian.	Power system modelling and economic benefits; restricted and eased access scenarios for Lake Pūkaki storage; response to Electricity Authority, Transpower, PCE and Genesis material.
Amy Louise Callaghan		Bachelor of Resource and Environmental Planning (Hons), Massey University. Full member of NZPI; approximately 23-24 years' planning experience; Technical Director - Planning at GHD.	Planning assessment/AEE; statutory and policy assessment; proposed conditions; responses to comments and RFI planning/ecology matters.
Jeff Tuck		Master of Engineering (2016) and BE (Hons) (2010). Senior Water Engineer, GHD; member of Engineering New Zealand; approximately 10 years' experience.	Erosion and sediment control; construction water and sediment controls for rock armouring and associated works.
Dr Rebecca Wilson		PhD in Environmental Science and Atmospheric and Environmental Science; MSc in Public Health Environmental Sciences and Engineering; BSc in Meteorology. Certified Air Quality Professional; Senior Air Quality Consultant, GHD; approximately 11 years' experience.	Air quality assessment for wind erosion/lake lowering and construction dust from rip-rap placement; dust modelling and management.
Matthew Michael Dodson		MSc with First Class Honours in Engineering Geology and BSc in Geology, University of Canterbury. GHD Technical Lead - Hydrogeology; approximately 15-17 years' experience in hydrogeology and related assessments.	Groundwater assessment; wetland hydrology; Tasman Delta groundwater connection; response to CRC and DOC hydrology/ecology concerns.
Dr Lucy Ellis		PhD in Fluvial Geomorphology, University of Nottingham; MPhil in Fluvial Geomorphology; BSc (Hons) in Geography. Technical Director - Geomorphology, GHD; more than 20 years' experience.	Lake processes and geomorphology; shoreline/lakebed geomorphic effects; assessment of effects from lake lowering.
Andre Bresler		BE (Civil), University of Pretoria. Chartered Member of Engineering New Zealand and member of Water NZ; Technical Director/Project Director, GHD; approximately 30 years' experience in water-related infrastructure design, review and construction monitoring.	Engineering structures assessment; Pūkaki Dam rip-rap and dam resilience works; design/construction methodology review.
Kim Goodfellow		Landscape Assessment records that the lead author's qualifications and experience are set out in Appendix A and confirms Code compliance. Appendix A not included. Appropriate qualifications and experience assumed.	Landscape and visual effects; comparison with Plan Change 1 landscape assessment; rock armouring landscape effects and visual simulations for lower lake levels.
Alex Jepsen		Master of Legal Studies (Environmental Law) (Hons); Bachelor of Planning (Hons); New Zealand Diploma in Te Reo Māori (Level 5). MNZPI and RMLA; Technical Director, GHD; approximately 18 years' experience.	Socio-economic impact assessment; tourism, recreation and community effects; social impact and stakeholder/community context.
Peter Warwick Stacey		BSc, University of Auckland; Graduate Diploma in Business, Auckland University of Technology. Member of the Clean Air Society of Australia and New Zealand and Certified Air Quality Professional; more than 20 years' experience assessing air discharges.	Air quality and dust effects; response to CRC and NZTA comments; Dust Management Plan and RFI/expert conferencing on dust conditions.

Expert	Called by	Qualifications and experience stated in record	Technical / expert topics and issues
Patrick Lees		BSc, University of Canterbury. Freshwater Ecologist at Tonkin & Taylor; approximately 16 years' freshwater ecology experience across Aotearoa New Zealand.	Freshwater ecology; lake littoral habitat values; ecological effects of lower lake levels; response to CRC lake ecosystem comments.
Samuel David Heggie-Gracie		BSc in Ecology; PGDip in Biosecurity and Conservation; MSc in Biosecurity and Conservation, University of Auckland. Senior Ecologist at Tonkin & Taylor; approximately 9-10 years' ecological experience; experience in herpetology and avifauna assessments.	Terrestrial and wetland ecology; ecological impact assessment; lizards, birds, wetlands and vegetation; response to DOC and CRC comments.
Dean Craig Miller		BSc and MSc (Tech) with First Class Honours in Biological Sciences, University of Waikato. Principal Freshwater Ecologist at Tonkin & Taylor; 24 years with T+T; member of the NZ Freshwater Sciences Society.	Freshwater ecology and ecological impact assessment; review/support for freshwater and wetland ecology matters in response evidence.
Dr Graham Thomas Ussher		BSc in Zoology; MSc in Conservation Ecology; PhD in Conservation Management, University of Auckland. Principal Ecologist, RMA Ecology; more than 30 years' ecological research/consulting experience, including specialist herpetology and lizard management.	Herpetology and terrestrial ecology; lizard management, salvage/monitoring and Wildlife Act approval matters.
Dr Murray Grant Webby		BE with First Class Honours in Civil Engineering and PhD in Civil Engineering, University of Canterbury. Chartered Professional Engineer, Recognised Engineer (PIC and DSAP), Fellow of Engineering New Zealand; nearly 45 years' hydraulic engineering experience.	Hydraulic engineering; Tekapo B tailrace weir and rock chute; assessment of risks from lower Lake Pūkaki levels and response to Genesis/WSP evidence.
Viculp Lal		BE (Civil), University of Delhi. Chartered Engineer and Fellow of the Institution of Engineers (India); member of Engineering New Zealand, NZSOLD, NZGS and ISRM. Principal Structural Engineer, Damwatch; more than 27 years' dams and hydro infrastructure experience.	Structural and dam safety engineering; Tekapo B tailrace weir and chute condition/risk assessment; response to WSP/Genesis material.
Susanah Black	Canterbury Regional Council	Master of Applied Science in Environmental Management, Lincoln University; BSc, University of Canterbury. Qualified hearings commissioner; Principal Consents Planner, Canterbury Regional Council; 18 years' planning experience.	CRC planning assessment; RMA/FTAA assessment; recommended consent conditions; RFI expert conferencing on dust management conditions.
Kate Bailue		Bachelor of Environmental Science (Hons), La Trobe University. Senior Scientist - Groundwater Resources, Canterbury Regional Council; 17 years' experience in groundwater science.	Groundwater technical advice; wetland hydrology and groundwater effects, particularly Tasman Delta connection to Lake Pūkaki.
Dr Tina Bayer		MSc in Environmental Science and PhD in Freshwater Ecology, University of Otago. Senior Scientist - Surface Water Ecology, Canterbury Regional Council; 9 years' experience.	Lake ecosystems and water quality; littoral-zone habitat and productivity; ecological effects of lakebed exposure between 518 mRL and 513 mRL.
Dr Jean Jack		PhD in Ecology and PGCert in Environmental Management, Lincoln University; BCom and Administration, Victoria University of Wellington. Team Leader - Land Ecology, Canterbury Regional Council; 15 years' biodiversity experience.	Terrestrial biodiversity; wetlands, threatened flora and avifauna; ecological effects and monitoring implications.
Suzanne Cawood		BSc (Hons) and MSc in Geography, University of the Witwatersrand. Senior Environmental Scientist, Beca; 12 years' air quality experience.	Air quality and dust; technical review of rock armouring and lake-lowering air quality assessments; Dust Management Plan and RFI expert conferencing.
Mathew Noonan		BSc in Pure Mathematics, BE (First Class) in Mechanical Engineering and MSc (First Class) in Environmental Science, University of Auckland; PGCert in Biostatistics, University of Sydney. Senior Associate - Environmental, Beca; 26 years' air quality experience.	Air quality and dust; technical review of construction dust and lakebed wind-erosion assessment.
Chris Glasson		BA and Diploma in Landscape Architecture; Fellow of the New Zealand Institute of Landscape Architects. Senior Consultant Landscape Architect, Glasson Huxtable; 7 years with Department of Lands and Survey and approximately 35 years in private landscape practice, with extensive Mackenzie Basin experience.	Landscape technical review; landscape and visual effects of eased access and rock armouring.
Dan Clark		BSc in Environmental Science and PGDip in Water Resource Management, Lincoln University; Master of Water Resource Management, University of Canterbury. Senior Scientist - Surface Water Resources, Canterbury Regional Council; 19 years' hydrology experience.	Hydrology; potential changes to Pūkaki River flows/spill events and related groundwater/ecological implications.

Expert	Called by	Qualifications and experience stated in record	Technical / expert topics and issues
Dr Susan Walker	DOC	MSc (1994) and PhD (1997), University of Otago. Terrestrial ecologist and Principal Researcher, Manaaki Whenua/Bioeconomy Science Institute; extensive peer-reviewed publication record and specialist Mackenzie Basin dryland and wetland ecology experience.	DOC ecological evidence; vegetation and plant species; lake margin turf wetlands, Tasman Deltawetlands, ecological significance and effects of lower lake levels.
Dr Mandy Tocher		The DOC section 51 report identifies Dr Tocher as a herpetologist/lizard expert (LizardExpertNZ) and records her Code-compliant assessment. The text does not state academic qualifications, however. Appropriate qualifications and experience assumed.	Wildlife Act/lizard advice; review of the Lizard Management Plan and compensation/conditions for lizard values.
Jan Stanway	Genesis Energy Limited	Chartered Professional Engineer (CPEng) in building and marine structures; Fellow of Engineering New Zealand; WSP Senior Technical Director - Marine and Building Structures.	Structural engineering; Tekapo submerged weir condition assessment; review of Damwatch material.
Mark Groves		ONC and HNC in Civil Engineering; Chartered Engineer (CPEngNZ); 28 years' experience.	Water engineering; Tekapo B weir assessment, bathymetric survey and hydraulic assessment.
David Weaver		BSc majoring in Physics and minoring in Statistics and Mathematics, University of Auckland. Associate Director, Concept Consulting; with Concept since 2008; leads Concept's electricity market modelling team.	Electricity market modelling; likely market impact of failure of the Tekapo temporary tailrace and weir.
Simon Coates		First Class Honours degree in Physics, Bristol University; Masters in Environmental Technology specialising in Energy Policy, Imperial College. Director, Concept Consulting; 18 years at Concept; leads market modelling and forecasting practice.	Electricity market policy, modelling and forecasting; review of Meridian's proposal and economic/security-of-supply implications.
Dr Philip Mitchell		BE (Hons) and PhD, University of Canterbury. Partner, Mitchell Daysh; past RMLA President; full member NZPI; NZPI Distinguished Service Award recipient; accredited hearings commissioner with Chair endorsement; 40 years' resource management practice.	Planning and resource management conditions; Genesis proposed conditions addressing Tekapo B tailrace/weir risk; RFI response on condition effectiveness.
John Culy	Transpower Limited	BSc in Physics and Mathematics and Diploma in Statistics and Operations Research. Energy and utility economist with more than 40 years' experience; independent consultant and Concept Consulting associate; specialist in hydro-thermal modelling, security analysis, electricity/transmission pricing and energy economics.	Transpower-commissioned costs and benefits analysis; security of supply, contingency scenarios and economic implications of eased access.