

8.3. Head of Lake Whakatipu Natural Hazards Adaptation

Prepared for: Safety and Resilience Comm
Report No. HAZ2306
Activity: Governance Report
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Date: 8 February 2024

PURPOSE

- [1] To update the Committee on progress towards development of a natural hazards adaptation strategy for the Head of Lake Whakatipu area.

EXECUTIVE SUMMARY

- [2] The Otago Regional Council (ORC) led natural hazards adaptation programme for the area at the Head of Lake Whakatipu is progressing well, with three significant technical studies in progress and aiming for completion in early 2024.
- [3] The three technical studies, 1) socio-economic impact assessment, 2) natural hazard risk assessment, and 3) flood protection and nature-based solutions feasibility assessment, will contribute to the robust information base for evidence-based decision-making.
- [4] Community is at the centre of the Dynamic Adaptive Pathways Planning (DAPP) and their feedback is being considered in ORC's development and scheduling of the work programme. The community has conveyed a strong preference for receiving findings of two finalised technical studies (natural hazard risk assessment and socio-economic impact assessment) prior to engagement focused on pathways development.
- [5] In response to the community feedback, ORC has changed the sequence of engagement activities and is proposing to deliver the completed (first iteration) strategy by November 2024, rather than by June 2024. A draft of the strategy document is likely to be available for community/public consideration and feedback in Q3 2024.
- [6] The Strategy will include Action Plans that describe adaptation responses that are underway or in progress. Actions that are ORC responsibility will either continue as business-as-usual (e.g. river management), or continue investigations to confirm feasibility and/or support a business case for implementation (e.g. nature based solutions). This ORC work is independent of the publishing timeline for the Strategy.

RECOMMENDATION

That the Safety and Resilience Committee:

- 1) **Notes** this report.
 - 2) **Notes** the Head of Lake Whakatipu natural hazards adaptation work programme and community engagement.
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BACKGROUND

- [7] The area at the head of Lake Whakatipu (Whakatipu-Wai-Māori) is exposed to multiple natural hazard risks, including those due to seismic events, flooding and slope-related processes. This risk setting is compounded by a changing climate and landscape-scale geomorphic change.
- [8] ORC, in collaboration with project partners, is leading a programme of work to develop a natural hazard adaptation strategy for the head of Lake Whakatipu area.
- [9] The 2021-2023 Long-Term Plan (LTP) targets for the adaptation strategy are shown in Table 1.

Table 1: 2021-2023 Long-Term Plan (LTP) targets for the Head of Lake Whakatipu natural hazards adaptation strategy.

2021/22 TARGET	2022/23 TARGET	2023/24 TARGET
The Head of Lake Whakatipu natural hazards adaptation strategy progresses as per annual work plan.	The Head of Lake Whakatipu natural hazards adaptation strategy progresses as per annual work plan.	The first Head of Lake Whakatipu natural hazards adaptation strategy completed by 30 June.

- [10] The adaptation project approach and work activities completed are outlined in the papers previously presented in 2021-2023.¹⁻⁵ Quarterly update papers to the Safety and Resilience Committee will continue through until the delivery of the strategy in November 2024.
- [11] This paper is focused on updates about the development of the natural hazards adaptation strategy and adjustments to the key programme milestones in 2024, based on community feedback.
- [12] Updates for other current and planned activities in this work programme are included as Paragraphs 24-51. These include community engagement activities; socio-economic impact assessment; natural hazard risk assessment for Glenorchy and Kinloch; feasibility assessment for floodplain hazard management approaches for the Dart-Rees floodplain (including nature-based solutions); and Buckler Burn flooding hazards.

¹ 1. van Woerden T & Payan J, 2021. *Natural Hazards Adaptation in the Head of Lake Wakatipu*. ORC Report HAZ2105, Report to 27 May 2021 meeting of the Otago Regional Council.
 2. van Woerden T & Payan J, 2022. *Head of Lake Wakatipu flooding and liquefaction hazard investigations*. ORC Report HAZ2202, Report to 9 June 2022 meeting of the Otago Regional Council Data and Information Committee.
 3. van Woerden T & Payan J, 2023. *Head of Lake Whakatipu floodplain and liquefaction hazard intervention assessments*. ORC Report OPS2256, Report to the 10 May 2023 meeting of the Otago Regional Council Safety and Resilience Committee.
 4. Conroy A, van Woerden T, MacKenzie J & Payan J, 2023. *Head of Lake Whakatipu Natural Hazards Adaptation*. ORC Report HAZ2301, Report to 10 August 2023 meeting of the Otago Regional Council Safety and Resilience Committee.
 5. MacKenzie J, Conroy A, van Woerden T & Payan J, 2023. *Head of Lake Whakatipu Natural Hazards Adaptation*. ORC Report OPS2340, Report to 9 November 2023 meeting of the Otago Regional Council Safety and Resilience Committee.

- [13] Figure 1 shows an overview of key activities in the Head of Lake Whakatipu natural hazards adaptation work programme, with the programme currently focussing on the second and third phases “*What matters most?*” and “*What can we do about it?*” and building towards delivery of a first iteration of the strategy document by November 2024. Figure 1 updates the similar figure presented in the previous committee papers.

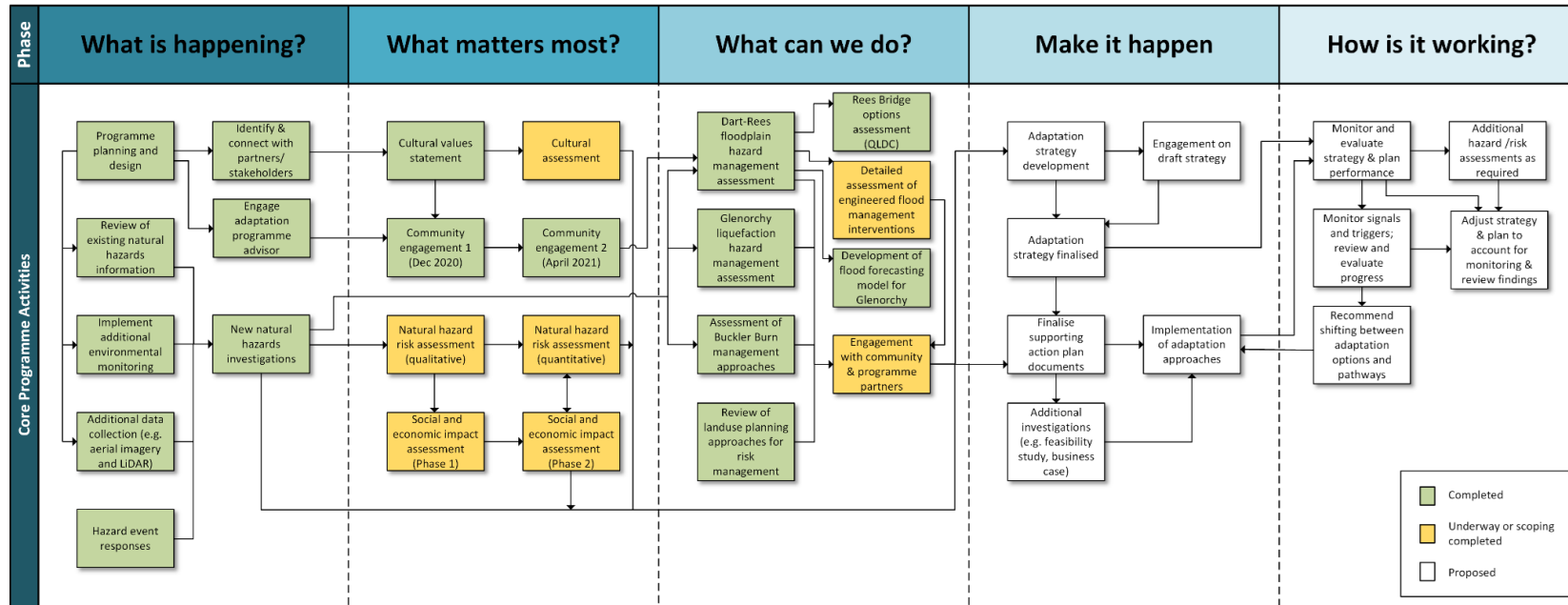


Figure 1: Head of Lake Whakatipu programme overview of key activities. This diagram updates from the previous (November 2023) committee paper.

DISCUSSION

- [14] The ORC-led natural hazards adaptation programme for the area at the Head of Lake Whakatipu is progressing well, with three significant technical studies in progress and aiming for completion in early 2024.
- [15] In response to community feedback (details in paragraph 27), ORC has changed the sequence of engagement activities and is proposing to deliver the completed (first iteration) strategy by November 2024. A draft of the strategy document is likely to be available for community/public consideration and feedback in Q3 2024.
- [16] The Strategy will include Action Plans that describe adaptation responses that are underway or in progress. Actions that are ORC responsibility will either continue as business-as-usual (e.g. river management), or continue investigations to confirm feasibility and/or support a business case for implementation (e.g. nature based solutions). This ORC work is independent of the publishing timeline for the Strategy. Actions to be delivered by other organisations will be agreed as part of consultation with those organisations.

ADAPTATION STRATEGY DEVELOPMENT

- [17] As noted above, ORC has adjusted the delivery schedule for the first iteration of the adaptation strategy in response to community feedback requesting to see the results of the risk assessment and socio-economic impact assessment first, before proceeding with other engagement activities.
- [18] The natural hazard risk assessment and socio-economic impact assessment (Phase 1) are underway. These technical assessments are expected to be finalized in Q2 2024.
- [19] The revised sequence of key programme activities with Council and community is as follows:
- Presentation of technical assessment results (Q2 2024)
 - Adaptation pathways discussion (end of Q2 2024)
 - Draft of strategy document released for feedback and comment (Q3 2024)
 - Finalised strategy document presented to Council (November 2024)
- [20] A screening assessment of the potential cultural significance of a long-list of possible adaptation responses at the Head of Lake Whakatipu is being undertaken separately by Aukaha to incorporate a Te Ao Māori worldview into decision-making processes.
- [21] Adaptation strategy development is currently focussed on drafting potential pathways, including suitable signals, triggers, and thresholds, to support community discussion and input (Figures 2-4).
- [22] Signals are indicators of change, and triggers are decision points that prompt a move to another pathway, before a harmful adaptation threshold is reached. Signals, triggers, and thresholds can include those based on the physical environment (e.g., riverbed levels, flood heights), as well as social aspects (e.g., community outcomes), policy changes, and economic factors (e.g., funding constraints or opportunities).
- [23] Community values and desired outcomes are a key part of adaptation pathways development and also provide a means to measure success.

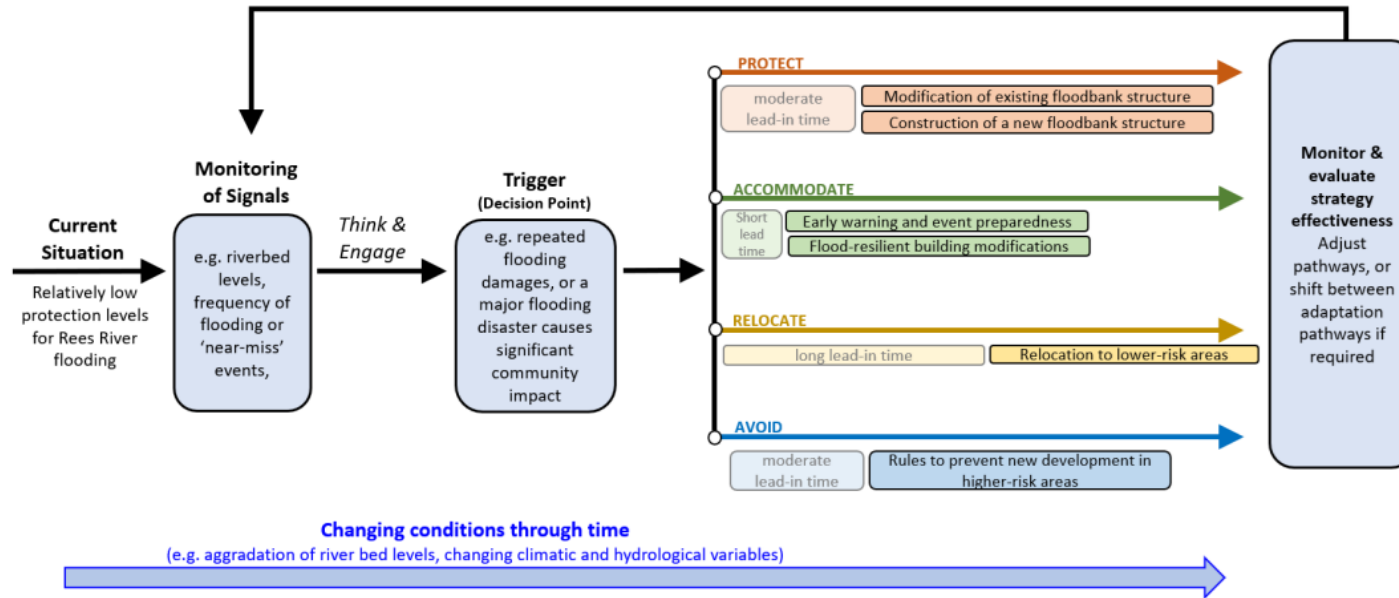


Figure 2: Example of the adaptation pathways concept showing some possible management responses for flood hazard

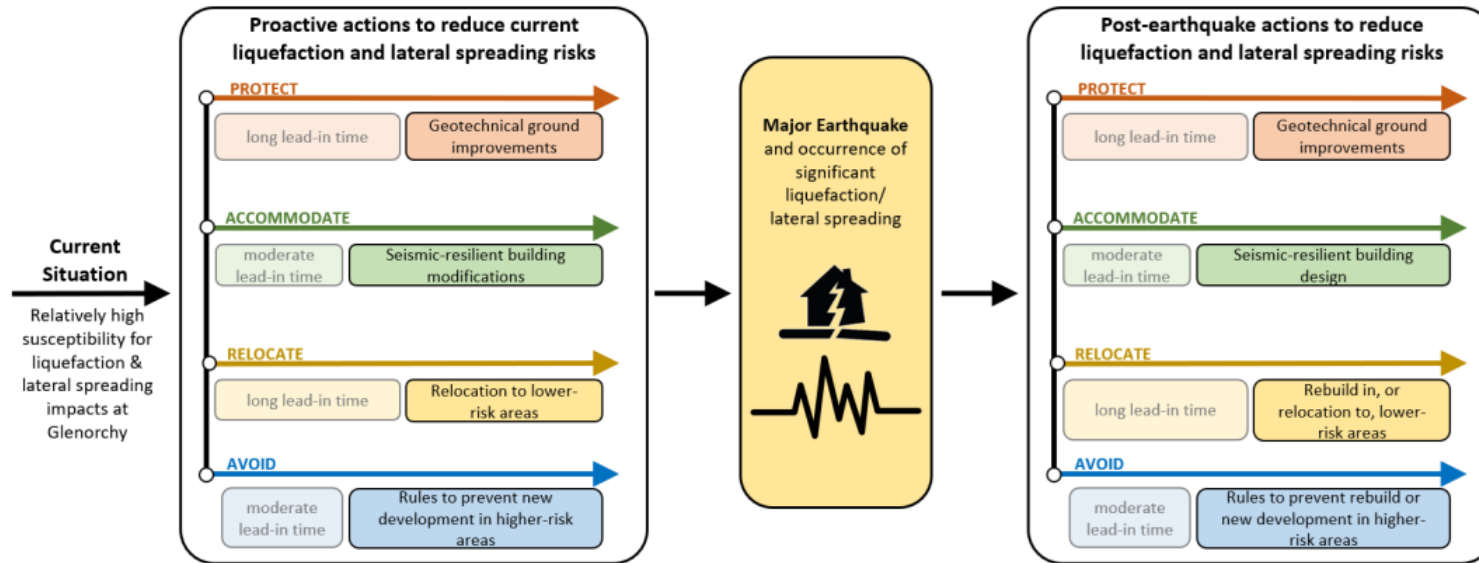


Figure 3: Example of the possible hazard management responses for liquefaction and lateral spreading hazards.

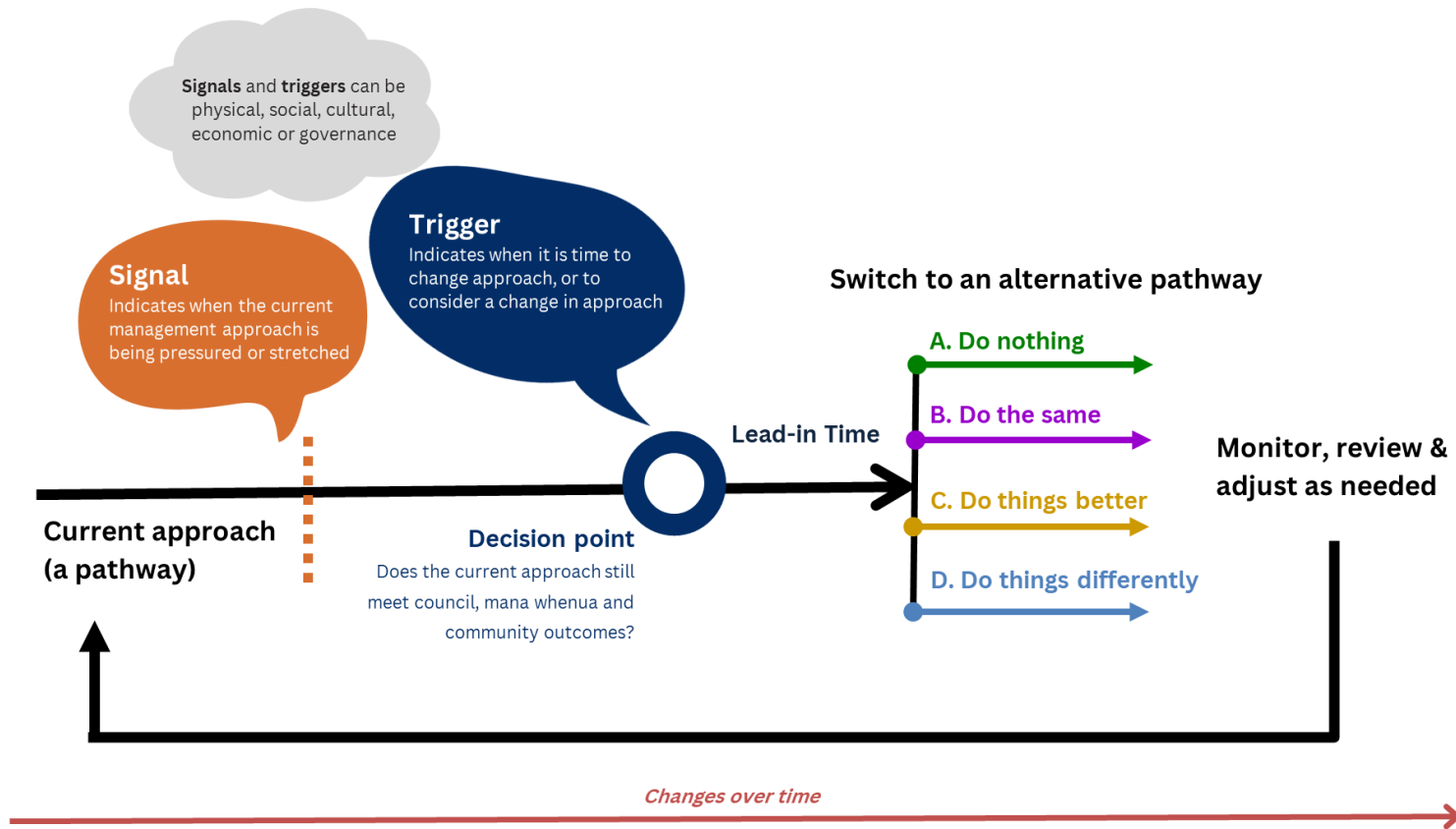


Figure 4: High level overview of the adaptation pathways concept, including signals and triggers.

COMMUNITY ENGAGEMENT

- [24] ORC is considering community suggestions when planning the format, design, and timing of upcoming engagement. Suggestions from the recent online survey included evening or weekend sessions, online or hybrid sessions, and including submissions or presentations from community members as part of the session. The Glenorchy Community Association (GCA) is providing ongoing feedback.
- [25] ORC has continued to provide an update newsletter monthly to the Head of Lake Whakatipu community. This newsletter was established in August 2020 and gives progress updates and an indication of upcoming work. There are 97 total newsletter subscribers at time of writing. A copy of the latest newsletter, which includes a summary of programme activities undertaken in 2023, is attached as Appendix A.
- [26] ORC and Emergency Management Otago (EMO) staff hosted a stall at the Glenorchy Village Fair in November 2023 to talk about community resilience and preparedness for natural hazard event response and recovery (Figure 5). This was an opportunity to build community awareness and understanding of community response planning and what is currently in place to manage flood hazard risk through event monitoring and response activities (i.e., flood forecasting, and environmental data monitoring)



Figure 5: Photo of ORC and Emergency Management Otago stall at the Glenorchy Village Fair, November 2023.

- [27] An engagement activity, planned for late 2023 to discuss potential adaptation pathways, did not go ahead at that time due to the following concerns and feedback:
- Overlap with socio-economic impact assessment fieldwork by Beca in November/December 2023
 - Overlap with busy period for the community (high tourist season)
 - Potential for engagement fatigue
 - Community feedback, through the GCA, requesting to see the results of the risk assessment and socio-economic impact assessment first, before other engagement activities.
- [28] The planned sequence and timing of community engagement activities has been adjusted in response to this feedback. The revised sequence will present the results of the technical assessments first; followed by a discussion of adaptation pathways; and then a review sequence for the draft strategy document (see paragraph 17-19 for details).
- [29] Planning is underway for engagement activities in 2024. NIWA² is continuing to provide ORC with expertise in implementing the adaptative pathways approach and engagement planning. Engagement planning is a collaborative process, working with QLDC and the community.

SOCIO-ECONOMIC IMPACT ASSESSMENT

- [30] A socio-economic impact assessment for the Head of Lake Whakatipu area is a key piece of work under the DAPP process to support decision making (Figure 1).
- [31] ORC has procured consultant expertise from Beca Group Limited (Beca) to undertake Phase 1 of the socio-economic impact assessment. A draft report was delivered in mid-December 2023 and is currently under review. The community has been invited to provide feedback on the draft community profile.
- [32] The Phase 1 methodology undertaken by Beca included both desktop analysis and fieldwork to develop the community profile. The goal was *“to ensure a wide range of stakeholders and community members experiences are captured and different types of local knowledge, experience and cultural values are reflected in the assessment”*. Desktop analysis included collating the available programme, community, and economic data, and identifying and filling gaps. Feedback from the community (through the Glenorchy Community Association) on the economic component of the assessment, led to a revision of the scope to include an increased level of detail in the economic component of the study.
- [33] A range of qualitative research methods were undertaken by Beca. The social research team spent 5 days gathering primary data at Head of Lake Whakatipu in November 2023, and utilized other engagement formats as well. The work built and expanded on the programme engagement that has already been undertaken by ORC. The social research team reached 70 people, through various primary data methods including:
- **Interviews** with key stakeholders (e.g. QLDC staff, Department of Conservation, emergency services providers, Glenorchy Community Nurse, Glenorchy Primary School Principal, Glenorchy Community Association); community organisation/club/group representatives; and business owners/operators.

² Dr Paula Blackett, Principal Scientist – Environmental Social Science

- **Semi-structured “drop in” interviews** with residents.
- **Focus groups** with Queenstown-based businesses operating at the Head of the Lake; community representatives (e.g. residents and representatives of community organisations/clubs/groups); Glenorchy Primary School students
- **Survey** of residents and businesses
- **Site observations**

[34] Phase 1 of the socio-economic impact assessment findings are intended to be used for the following purposes:

- To provide an understanding of the community profile and socio-economic impacts of various hazard events under “status quo” management actions. This information has been specifically requested by the community to help inform decision-making alongside technical and risk studies.
- To complement and provide information which will feed into other proposed studies, such as a risk assessment and Phase 2 of the socio-economic impact assessment.
- To provide information to inform next steps, for example, to help determine preferred adaptation pathways and to develop a robust evidence base for decision-making in the strategy.

[35] In first quarter 2024 (to be confirmed), Phase 2 will likely focus on screening a long-list of possible adaptation responses for their socio-economic risks and opportunities.

NATURAL HAZARD RISK ASSESSMENT

[36] A natural hazard risk assessment project for Glenorchy and Kinloch is being undertaken by Beca Group Limited (Beca). The project is systematically assessing the natural hazard risks in the Glenorchy and Kinloch areas, including those from flooding, seismic and alluvial fan hazards.

[37] Project work completed has included a site visit and a review of the available natural hazards datasets. A qualitative assessment of natural hazard risks is in progress, with qualitative risk assessments expected to be completed for the following hazards;

- a. Rees and Dart River flooding
- b. Lake Whakatipu flooding
- c. Seismic shaking
- d. Liquefaction and lateral spreading (at Glenorchy)
- e. Buckler Burn flooding and erosion

[38] Where appropriate based on qualitative risk levels and the detail of the available natural hazards information, a more detailed quantitative risk assessment approach will also be applied.

[39] All risk assessment findings will be presented to both the community and to councillors once they have been externally reviewed and finalised, expected to be by early April 2024.

FLOOD MITIGATION AND NATURE-BASED SOLUTIONS FEASIBILITY ASSESSMENTS

[40] A technical feasibility study to investigate potential floodplain hazard management approaches for the Dart-Rees floodplain is being undertaken by Damwatch Engineering Ltd.

- [41] This feasibility study builds on the initial high-level assessments of benefits, challenges and constraints for flood hazard management interventions outlined in the report completed in 2022.³ That previous report was presented to the May 2023 meeting of the ORC Safety and Resilience committee.⁴
- [42] For the lower Rees floodplain and Glenorchy township flood hazard, the proposed investigation scope includes consideration of (at least) the following potential engineered flood management interventions for the lower Rees River floodplain and Glenorchy township;
- a. raising or modifying the existing Rees-Glenorchy floodbank structure;
 - b. construction of bunding or new floodplain structures to reduce overland flood flows from the Rees River into Glenorchy Lagoon; or
 - c. the use of innovative 'nature based' approaches such as vegetative buffers to modify overland flood flows from the Rees River into Glenorchy Lagoon; or
 - d. any combinations of these interventions a-c.
- [43] For the Dart floodplain (including along Kinloch Road), and the upper Rees floodplain (upstream of the road bridge), the scope includes assessment of potential flood or erosion management interventions, with a focus on the use of 'nature-based' innovative approaches such as vegetative buffers for flood mitigation or erosion management.
- [44] Project work to be completed as part of the study will include;
- a. Development of conceptual designs for flood mitigations, and consideration of their resilience to future geomorphic changes, climate change effects and the occurrence of super-design flood events.
 - b. Investigation of the use of nature-based solutions for flooding and erosion management, such as the use of vegetation buffers along river banks.
 - c. The use of a computational hydraulic modelling approach to assess the effectiveness of the possible floodplain management interventions.
 - d. Assessment of the technical challenges and constraints for implementation of design concepts, potential environmental impacts, consenting requirements and indicative costings.
- [45] The 'nature-based solutions' aspects of the investigations are being supported financially by the Ministry for the Environment (MfE) funding programme, *Nature Based Solutions for Resilience Planning*.
- [46] All findings from this study will be presented to both the community and to councillors once they have been externally reviewed and finalised, expected to be by late April 2024.

BUCKLER BURN FLOODING HAZARDS

³ Damwatch Engineering Ltd, 2022. *Dart-Rees floodplain adaptation – Report on 23-24 February workshop*. Report prepared for Otago Regional Council.

⁴ van Woerden T & Payan J, 2023. *Head of Lake Whakatipu floodplain and liquefaction hazard intervention assessments*. ORC Report OPS2256, Report to the 10 May 2023 meeting of the Otago Regional Council Safety and Resilience Committee.

- [47] A flood hazard assessment for the Bucker Burn was completed in August 2023. The technical report by Land River Sea Consulting Ltd⁵ was included as an appendix to the November 2023 update paper to the Safety and Resilience Committee.
- [48] The technical report has been made publicly available on the adaptation programme webpage.⁶ A selection of the modelled scenario outputs have been uploaded to the ORC Natural Hazards Database.⁷
- [49] The flood hazard investigation findings are being used in the assessment of flooding risks for Glenorchy, as part of the assessments being currently undertaken by Beca.
- [50] The ORC Engineering team will consider the requirement for river management activities to address natural hazards issues (flooding or bank erosion), such as development of a target bed level profile and gravel management, depending on risk assessment findings and any additional technical advice.
- [51] The study identified a number of information gaps which may need to be addressed by additional investigations or monitoring. Actions relating to geomorphic monitoring and collection of flooding event data will be addressed in an 'action plan' being developed as part of the natural hazards adaptation strategy.

CONSIDERATIONS

Strategic Framework and Policy Considerations

- [52] The information presented and the adaptation approach discussed in this paper reflects Council's Strategic Directions where our vision states: communities that are resilient in the face of natural hazards, climate change, and other risks.
- [53] The proposed Otago Regional Policy Statement June 2021⁸, states that ORC and territorial authorities are both responsible for specifying objectives, policies, and methods in regional and district plans for managing land subject to natural hazard risk. ORC specifically is responsible for *"identifying areas in the region subject to natural hazards and describing their characteristics as required by Policy HAZ-NH-P1, mapping the extent of those areas in the relevant regional plan(s) and including those maps on a natural hazard register or database."*⁹

Financial Considerations

- [54] The budget in the 2023/24 Annual Plan provides for most of the forward work programme described in this paper. The budget for the 2023/24 financial year for professional services for the Head of Lake Whakatipu natural hazards adaptation programme is \$470,000.
- [55] The Ministry for the Environment (MfE) funding programme, *Nature Based Solutions for Resilience Planning* is financially supporting the 'nature-based solutions' aspects of the flood protection feasibility assessments.

⁵ Land River Sea Consulting Ltd, 2023. *Buckler Burn flood hazard modelling*. Prepared for Otago Regional Council.

⁶ <https://www.orc.govt.nz/managing-our-environment/natural-hazards/head-of-lake-wakatipu>

⁷ <http://hazards.orc.govt.nz>

⁸ Section HAZ-NH-M1

⁹ ORC Natural Hazards Portal: <http://hazards.orc.govt.nz>

- [56] The proposed budget in the draft 2024-34 LTP provides funding towards delivery, implementation and monitoring of the Head of Lake Whakatipu natural hazards adaptation strategy. The proposed budget for the 2024/25 financial year is approximately \$175,000.

Significance and Engagement Considerations

- [57] This noting paper in itself does not trigger ORC's He Mahi Rau Rika: ORC Significance, Engagement and Māori Participation Policy (He Mahi Rau Rika).
- [58] Engagement planning to inform the work programme requires consideration of He Mahi Rau Rika, as the Head of Lake Whakatipu adaptation programme is highly complex and may have significant impacts on communities. It should be noted that each stage and aspect of the engagement process will be designed to be consistent with He Mahi Rau Rika.

Legislative and Risk Considerations

- [59] The work described in this paper helps ORC fulfil its responsibilities under sections 30 and 35 of the RMA.
- [60] There is not currently a formalised programme governance agreement between ORC and QLDC for this adaptation programme, although there is a strong collaborative relationship at staff level. It will be critical to the successful delivery and implementation of the strategy that both councils endorse the strategy.
- [61] The new central government has repealed the Natural and Built Environment Act and the Spatial Planning Act.¹⁰ The implications of changes in legislative focus are not clear yet.
- [62] There is no clear, specific, mandated requirement to reduce risk through planning and implementation of adaptation or relocation. Gaps identified in the current adaptation planning and planned relocation frameworks include the lack of national direction, insufficient powers, tools and mechanisms, and the lack of articulated roles and responsibilities.¹¹

Climate Change Considerations

- [63] The effects of climate change have been considered in flood hazard assessments for Dart and Rees Rivers, and Buckler Burn, and in the assessment of risks and potential hazard management responses for those hazards.

Communications Considerations

- [64] ORC will continue to make all investigation findings available to the Head of Lake Whakatipu community and provide regular programme updates via the e-newsletter.¹²

¹⁰ <https://www.beehive.govt.nz/release/nba-and-spa-successfully-repealed#:~:text=Parliament%20has%20passed%20legislation%20repealing,Reform%20Minister%20Chris%20Bishop%20says>.

¹¹ Expert Working Group on Managed Retreat. 2023. *Report of the Expert Working Group on Managed Retreat: A Proposed System for Te Hekenga Rauora/Planned Relocation*. Wellington: Expert Working Group on Managed Retreat.

¹² <https://www.orc.govt.nz/managing-our-environment/natural-hazards/head-of-lake-whakatipu/community-get-in-touch-be-involved>

[65] The programme team are working with the Communications team to ensure alignment for engagement and communications planning.

[66] A series of community engagement activities are part of the adaptation strategy development process. Engagement input from the community will continue to inform the next stages of the DAPP process as we move through “What can we do about it?” and “Make it happen”.

NEXT STEPS

[67] The key next step activities for the work programme which are in progress or scheduled are identified in Figure 1.

[68] A high-level timeline for key programme and engagement activities, and development of an adaptation strategy, is given in Table 2.

Table 2: High-level timeline for key programme and engagement activities, and development of an adaptation strategy, for the Head of Lake Whakatipu programme.

	Programme Activity	Community Engagement
2024 Q1	Progress technical assessments Strategy development and design	Planning
2024 Q2	Deliver technical studies: <ul style="list-style-type: none"> • Socio- economic assessment • Cultural assessment • Natural hazard risk assessment for Glenorchy and Kinloch • Flood management interventions and nature-based solutions for floodplain hazard management 	Focus of community engagement: <ul style="list-style-type: none"> • Technical studies update • Discussion of adaptation pathways
2024 Q3	Deliver draft strategy and action plans (for comment)	Focus of community engagement: <ul style="list-style-type: none"> • Draft strategy
2024 Q4	November – deliver final Strategy	Focus of community engagement: <ul style="list-style-type: none"> • Final strategy

[69] Quarterly programme updates for the Safety and Resilience Committee are scheduled for 2024. These may include workshops and/or committee papers, as appropriate.

ATTACHMENTS

1. Appendix A - Head of Lake Whakatipu Newsletter_December 2023 [8.3.1 - 11 pages]

08/01/2024, 14:45

Head of Lake Whakatipu - Update 32 | December 2023

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HEAD OF LAKE WHAKATIPU



COMMUNITY UPDATE 32 | DECEMBER 2023

Kia ora koutou,

Here is our final programme update for 2023. It includes a summary of the milestones we've achieved together this year, progress updates on some ongoing projects, information about ORC's Environmental Data Portal, and an introduction to some more members of our team.

This year, we have achieved some major milestones in the programme of work toward a natural hazard adaptation strategy for the Head of Lake Whakatipu.

We're very grateful to the community members who continue to share their experiences, perspectives and ideas to help us develop this collaborative work.

We will be back with another update in February. Have a lovely summer break and we look forward to seeing you again in 2024!

Reflecting on 2023

It's been a busy year for the Head of Lake Whakatipu natural hazards adaptation programme, and we wanted to give a quick overview of everything that has been achieved over the past 12 months. Thank you to everyone who has been involved.

<https://mailchi.mp/orc/head-of-lake-whakatipu-update-32-december-6154045?e=64efad4f20>

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08/01/2024, 14:45

Head of Lake Whakatipu - Update 32 | December 2023

Reports 2023:

- An assessment [report](#) by Tonkin + Taylor Ltd looks at possible engineered hazard mitigation or management approaches for liquefaction and lateral spreading. You can watch a presentation from Mike Jacka, who wrote this report, [here](#).
- A flood hazard [report](#) and [summary document](#) were completed on the Buckler Burn.

Archive for reports from previous years can be found on the [ORC website](#).

Glenorchy Flood Forecasting Model

- A flood forecasting model was developed for Glenorchy Lagoon, allowing early warning of potential high water levels or possible flooding into Glenorchy.
- The model was tested in the late September weather event as a tool for forecasting the floodwater level from the lagoon. The performance and accuracy of the model are being evaluated, and the model will be refined following monitoring observations from this event.

Council updates

- There were three update reports to the ORC Safety and Resilience Committee in [May](#), [August](#) and [November](#).

Telling the Head of the Lake Whakatipu story

Natural Hazards Adaptation Specialist Jamie MacKenzie completed her [master's research](#) on storytelling and the ORC's community engagement process in developing the Head of Lake Whakatipu Adaptation Strategy. Jamie presented the findings of her research to the Glenorchy Community Association in August.

Staff and team updates

We welcomed four new team members to the ORC Natural Hazards team – Jamie MacKenzie, Ann Conroy, Simon Robinson and, most recently, Toan Nguyen! Check out his profile below. Ann and Simon lead the Adaptation and Analysis teams respectively.

Talking to the community

<https://mailchi.mp/orc/head-of-lake-whakatipu-update-32-december-6154045?e=64efad4f20>

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Head of Lake Whakatipu - Update 32 | December 2023

- We held two in-person workshops at the end of August. The workshops focused on draft community outcomes and discussed a 'long list' of possible adaptation options.
- We conducted an online survey in September/October about community values, draft outcome statements and how we should engage with the community in the future. There were 47 responses.
- We had a stall at the Glenorchy Village Fair in November alongside Emergency Management Otago to talk about community resilience, readiness and response.

In progress

- The natural hazard risk assessment led by Beca is on track to be completed early next year.
 - The socio-economic impact assessment, also led by Beca, is progressing, and the first phase is due to be completed by the end of the year.
 - An assessment of potential engineered flood management and 'nature-based solutions' approach for the Rees and Dart floodplain areas and the Glenorchy township is now underway with the team from Damwatch Ltd. This project is partially funded by the Ministry for the Environment through the 'Nature Based Solutions for Resilience Planning' programme.
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08/01/2024, 14:45

Head of Lake Whakatipu - Update 32 | December 2023



Image: Glenorchy's Red Shed

Check out ORC's new portal for water data

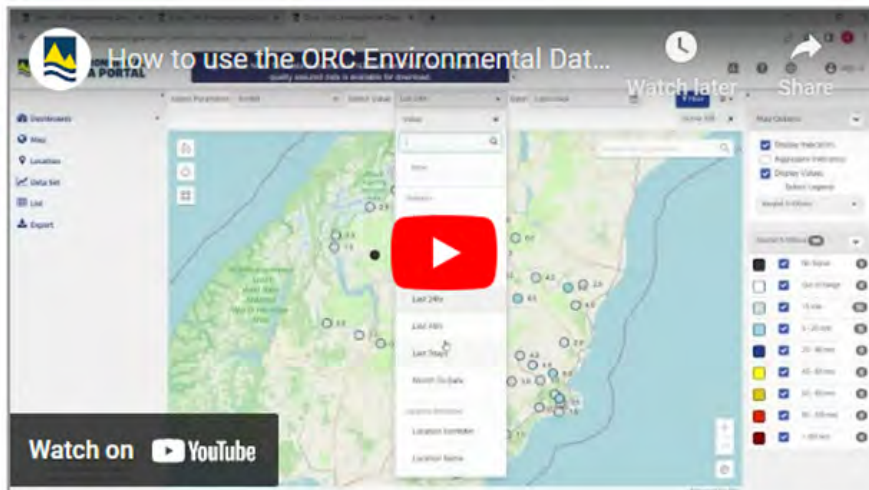
You may have used ORC's website to check monitoring data for rainfall, water levels and river flows. The old system has been replaced with a [new water monitoring data portal](#) that will give you access to even more data in an easy-to-navigate map-based format.

You can access the Environmental Data Portal [here](#). Please note that the old WaterInfo monitoring sites no longer work.

The Environmental Data Portal includes user guides and a training video if you need help. Each monitoring site has a dashboard with data for the last 30 and 180 days, but you can also view the full historical dataset for each site.

08/01/2024, 14:45

Head of Lake Whakatipu - Update 32 | December 2023



Examples of the monitored parameters (rainfall, river flow and water level) for the ORC-monitored sites in the Head of Lake Whakatipu area are shown below.



<https://mailchi.mp/orc/head-of-lake-whakatipu-update-32-december-6154045?e=64efad4f20>

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Head of Lake Whakatipu - Update 32 | December 2023



Out and about in Glenorchy

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08/01/2024, 14:45

Head of Lake Whakatipu - Update 32 | December 2023

If you stopped by the Glenorchy Village Fair on Sunday, 19 November, you may have seen Jamie from the Natural Hazards team with Craig Gibson from Emergency Management Otago. It was a beautiful sunny day and a great chance to see some of the awesome things happening in the community.

Jamie and Craig had some good conversations about the natural hazards adaptation programme, community resilience, and what you can do to be better prepared for a potential hazard event!

It was great to hear what some of you are already doing at home, work and across the community to be more resilient.



08/01/2024, 14:45

Head of Lake Whakatipu - Update 32 | December 2023



Images: Jamie MacKenzie (top) and Graig Gibson at the Glenorchy Village Fair in November

Progress on the socio-economic impact assessment

Jo and Kaitlyn from Beca, who are leading the socio-economic impact assessment, visited Glenorchy in early November.

They spoke to key stakeholders, held a community focus group, ran a session at Glenorchy Primary School, spoke to some parents from the local playgroup, and held drop-in sessions.

Thank you to those who spoke with them.

To capture additional information, there is also a residents and business survey: <https://forms.office.com/r/tVLTvWPGzb>.

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The survey will close today, Friday, 8 December, so get in quick if you want to participate. A range of businesses are also being spoken to.

Meet the Team

Jean-Luc Payan – Manager Natural Hazards



Image: Jean-Luc Payan

Jean-Luc has been with ORC for 15 years. His role is to ensure the various natural hazard investigations and adaptation programmes, including the Head of Lake Whakatipu, are progressing well.

He has a background in hydrology and river management and a solid understanding of natural hazards in Otago.

Originally from France, Jean-Luc came to New Zealand in 2008, and Otago's outstanding landscape (and fishing spots!) convinced him to stay.

Toan Nguyen – Senior Natural Hazards Adaptation Specialist

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Image: Toan Nguyen

Toan joined the ORC in the role of Senior Natural Hazards Adaptation Specialist in November. He recently completed a PhD in natural hazards and climate change adaptation and has many years of experience working in this space in Asia, the Pacific and New Zealand.

Toan will be providing expert advice and analysis to help develop a Natural Hazards Adaptation Strategy for the Head of Lake Whakatipu area and deliver work supporting natural hazards and climate change adaptation across the Otago region.

As always, we value your feedback

This adaptation programme was initiated because complex, increasing natural hazards in the Head of Lake Whakatipu require a comprehensive management response that takes a long-term view and encompasses all types of natural hazards.

<https://mailchi.mp/orc/head-of-lake-whakatipu-update-32-december-6154045?e=64efad4f20>

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This is your community, and we want to work with you to develop understanding and resilience. Check [here](#) to learn more about the whole programme.

If you have questions or need information, visit our [website](#) to see the [reports](#) and get [answers](#).

You can also speak to a member of the ORC Natural Hazards team on 0800 474 082 or email us for more information at headofthelake@orc.govt.nz.

We will provide responses to any emailed questions and facilitate answers from our consultants if needed.

Head of Lake Whakatipu newsletter sign-up

If you are currently not receiving our monthly newsletters, you can [sign up here](#) and view archives of past editions.

Contacts

If you have any questions or would like to get in touch with us, please email us at headofthelake@orc.govt.nz.



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