TECHNICAL COMMITTEE AGENDA

Wednesday 28 November 2018

9:00am, Council Chamber

Level 2 Phillip Laing House, 144 Rattray Street, Dunedin

Membership

Cr Andrew Noone	*(Chairperson)*
Cr Ella Lawton	*(Deputy Chairperson)*
Cr Graeme Bell	
Cr Doug Brown	
Cr Michael Deaker	
Cr Carmen Hope	
Cr Trevor Kempton	
Cr Michael Laws	
Cr Sam Neill	
Cr Gretchen Robertson	
Cr Bryan Scott	
Cr Stephen Woodhead	

Disclaimer

Please note that there is an embargo on agenda items until 48 hours prior to the meeting. Reports and recommendations contained in this agenda are not to be considered as Council policy until adopted.

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1. APOLOGIES

Cr Kempton

2. LEAVE OF ABSENCE

Leave of Absence noted for Cr Woodhead

3. ATTENDANCE

4. CONFIRMATION OF AGENDA

5. CONFLICT OF INTEREST

Members are reminded of the need to stand aside from decision-making when a conflict arises between their role as an elected representative and any private or other external interest they might have.

6. PUBLIC FORUM

7. PRESENTATIONS

8. CONFIRMATION OF MINUTES

Recommendation

That the minutes of the meeting held on 18 October 2018 be received and confirmed as a true and accurate record.

Attachments

1. Technical Minutes 18 Oct 2018 **[8.1.1]**

9. ACTIONS

Status report on the resolutions of the Technical Committee.

Report	Meeting Date	Resolution	Status
An assessment of the Clean Heat Clean Air program's effectiveness	13/6/18	*That this report be used to inform the review of ongoing financial incentives for Air Quality, proposed for 2018/19 in the 2018-2018 Draft Long-Term Plan*	OPEN
Lake Hayes Restoration	1/8/18	*That the consultant report by Castalia be re-framed into a more public intelligible document.* *That staff develop options for consideration by Council on the remediation of Lake Hayes, including a comprehensive description and assessment of benefits, effectiveness, costs, precedents risks, implementation and timelines and funding.*	IN PROGRESS (Castalia have been briefed) CLOSED Discussed under Director's Report 17/10/18 meeting.

State of the Environment: Surface Water Quality in Otago (2006-2017)	12/9/18	*That this paper be referred to the Policy Committee for their consideration and review and policy recommendations related to this report*.	CLOSED
Lake Hayes Restoration	18/10/18	*Dr Palmer to follow up on receipt of the revised Castalia report*	OPEN
Community Response Plans	18/10/18	*That an updated and detailed time line and plan be provided to Council for 31 October, to include a resourcing update.*	
Lake Snow technical workshop recommendations	18/10/18	*The CE engage on the with CEs at the regional CEOs meeting on 8 November 2018 on the primary objectives from the workshop.* *Invite Regional Councils and MPI to formally endorse and support the proposed research programme and to discuss funding arrangements.*	

Attachments

Nil

10. MATTERS FOR COUNCIL DECISION

Nil

11. MATTERS FOR NOTING

11.1. Director's Report on Progress

Prepared for:	Technical Committee
Report No.	EHS1834
Activity:	Governance Report
Prepared by:	Gavin Palmer, Director Engineering, Hazards and Science
Date:	23 November 2018

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1. Précis

This report provides an update on the following matters:

- November 2018 Otago Flood;
- Regional Authority River Management 5-Year Implementation Plan;
- Christchurch City Multi-Hazard and Liquefaction Studies Peer Review Panel, and;
- Leith Flood Protection Scheme.

It is recommended that this report is received and noted.

2. November 2018 Otago Flood

Staff across council have been responding to the flood that is affecting the east coast of Otago, as far inland as the Manuherikia Valley. A summary of the event to date is presented below. This is an interim report until analysis of the flood and full assessment of flood and drainage infrastructure condition and performance have been completed. The flow and time information presented here is provisional.

The Lower Clutha Flood Protection and Drainage Scheme[1] and the Lower Taieri Flood Protection Scheme[2] reduced the flood hazard during the event for approximately 30,000 hectares of land including the townships of Balclutha and Mosgiel and Dunedin International Airport. The peak flow in the Clutha River/Mata-Au (2,700m^3/s) was the highest since 1999 (Figure 1). The flow came very close to the design flow for the Barnego flats (2,850m^3/s) but was less than the design flow (5,600m^3/s) for Balclutha (Figure 2). The Inch Clutha floodway operated for the first time since 1999 and for the first time since the spillway gates were removed in 2011. The gates were removed to eliminate risks associated with operating them.

[1] *Natural Hazards on the Clutha Delta, Otago*, Otago Regional Council, May 2016, 135p.
[2] *Natural Hazards on the Taieri Plains, Otago*, Otago Regional Council, April 2013, 102p.

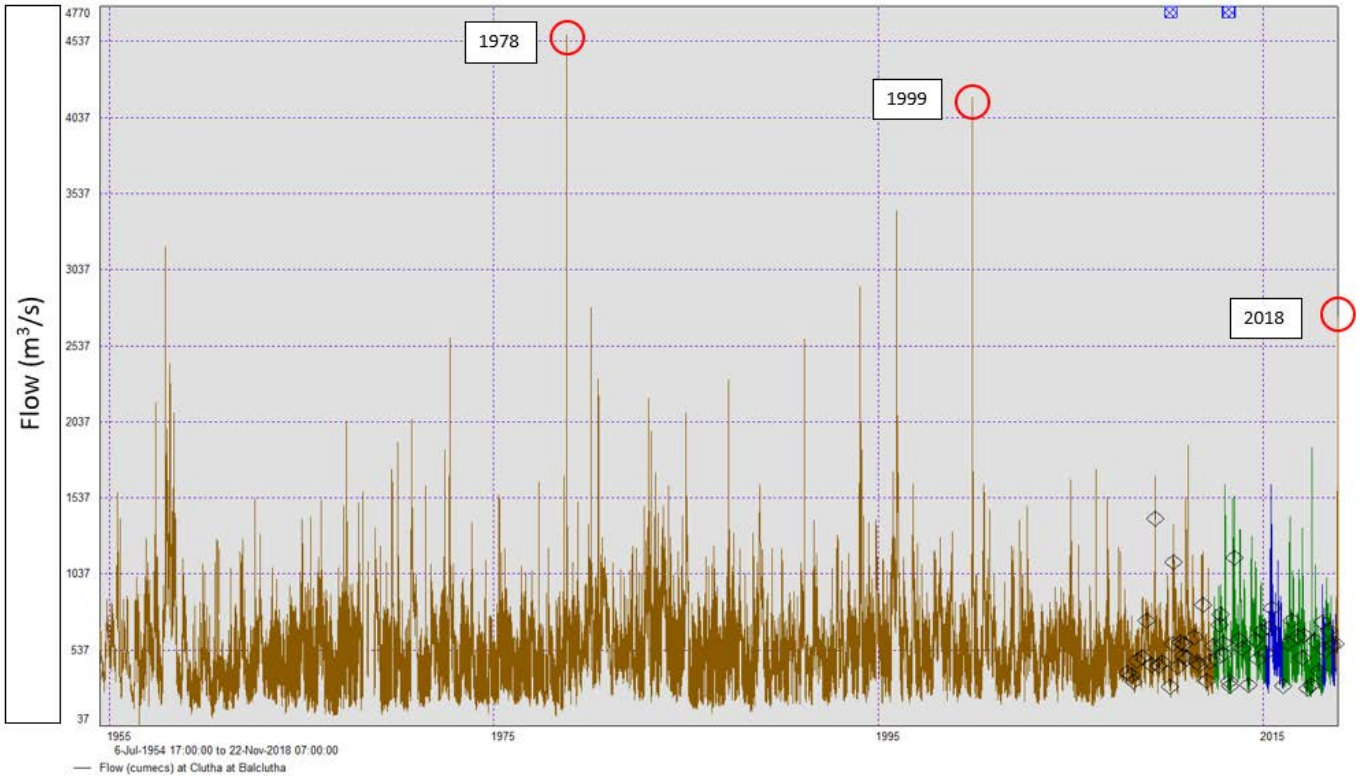

Figure 1. Flow in Clutha River/Mata-Au at Balclutha, 1954 to present.

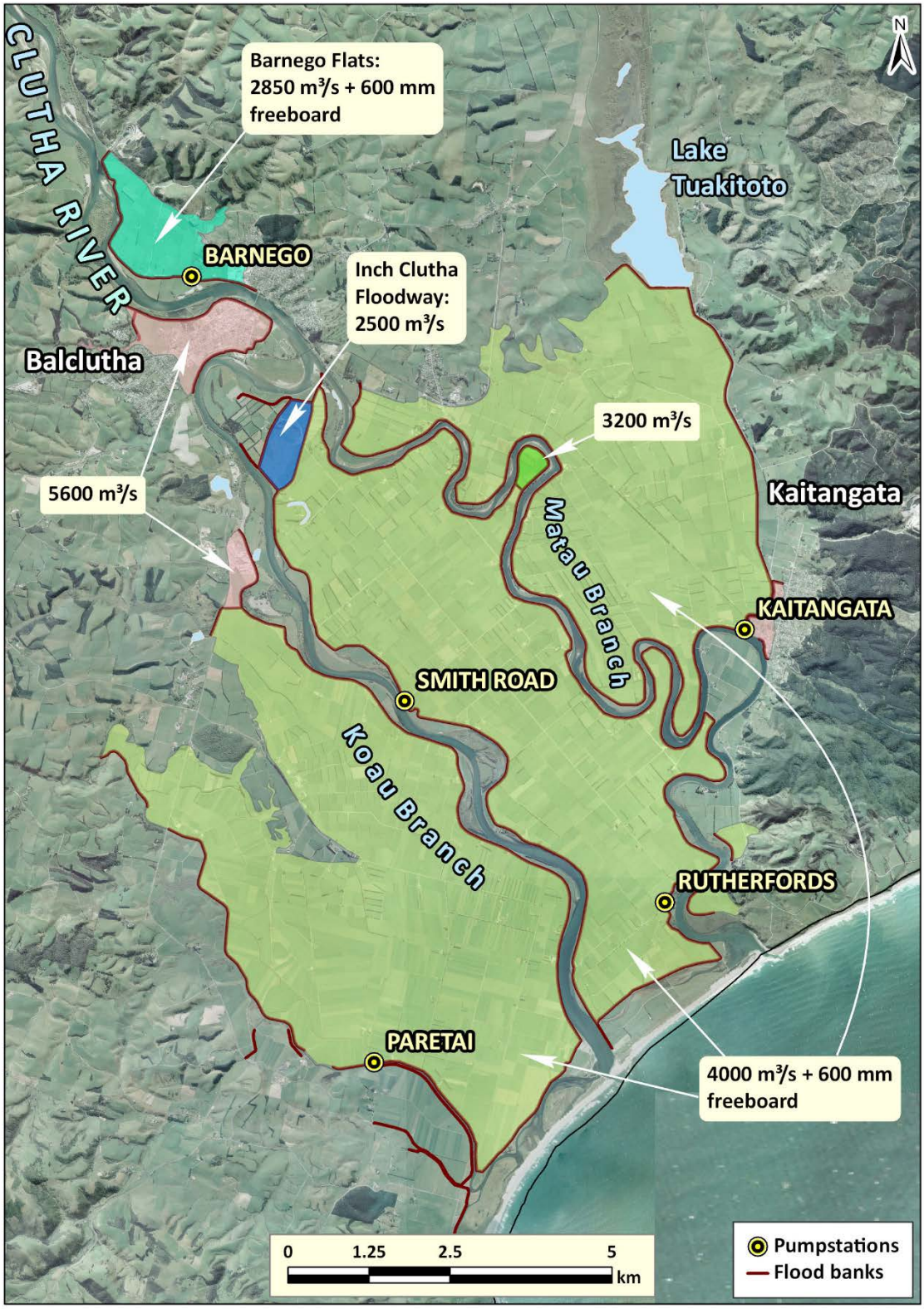

Figure 2. Design standards of flood protection for the Lower Clutha Flood Protection and Drainage Scheme.

Overflow occurred at the Riverside Spillway (Taieri River) for approximately 32 hours (Figure 3), commencing on the morning of 20 November. Up to 29 million cubic metres of water was detained in the East Taieri Upper Pond, reducing the peak flow in the Taieri

River further downstream. The ponding area has a capacity of approximately 35 million cubic metres. Water levels in the Lower Taieri River remain high and so the remaining capacity is being closely monitored.

Figure 3. Riverside Spillway (Lower Taieri Flood Protection Scheme) at 1052hrs on 21 November 2018. Water is flowing into the East Taieri Upper Pond at right. The Taieri River (at left) was flowing at approximately 900m^3/s, after peaking at 1,400m^3/s approximately 11 hours earlier.

Figure 4. Looking south to the East Taieri Upper Pond (Lower Taieri Flood Protection Scheme) at 0945hrs on 22 November 2018. The pond had just reached its maximum height and volume for this event, to date (approximately 29 million cubic metres of water). The Taieri River and Riverside Spillway (Figure 3) are at the far end of the pond.

The settlement of Henley was flooded and as at the date of this report parts of it remain underwater (Figure 5). Similar flooding occurred in 2006, 2007, 2010, 2013, 2015 and 2017. The settlement lies outside the primary floodbanks of the Lower Taieri Flood Protection Scheme and outside the West Taieri Drainage Scheme.

Figure 5. Henley settlement, looking north, at 1133hrs on 21 November 2018. The Taieri River and Silver Stream had peaked earlier that day. The Henley floodway (Henley Outer Bank Area) is at left. The road bridge across the Taieri River is at centre.

Overflow occurred at the Gordon Road spillway (Silver Stream) for approximately two hours, on 20 November. This water travels overland as well as within some of the scheduled drains of the East Taieri Drainage Scheme, to the East Taieri Upper Pond. The overflow did not make a significant contribution to the amount of water that accumulated in the Pond.

Lindsay Creek (North East Valley, Dunedin) briefly reached the flow at which overflow first occurs onto North Road ($24m^3/s$). The Water of Leith peaked at approximately $95m^3/s$, a similar flow to the peak flow in the July 2017 flood. The impact on the Union Street to Leith Footbridge works of the Leith Flood Protection Scheme is described below (section 5).

Staff have continuously monitored the weather, rainfall and river flows throughout the event and will do so until river levels return to normal and the East Taieri Upper Pond and Henley have drained. Staff have used numerical models of the Lower Clutha River/Mata-Au, Taieri River and Silver Stream catchments to predict peak flows and to estimate ponding area volumes. As in previous events, the absence of weather radar coverage for Otago made it difficult to confirm whether some rivers had peaked, especially the Silver Stream, Lindsay Creek and Water of Leith. Lake Wakatipu is high and is being monitored but has not reached the level at which advisories are issued.

Staff are closely monitoring the structural integrity of the Lower Clutha Flood Protection and Drainage Scheme and Lower Taieri Flood Protection Scheme floodbanks[3]. The focus is on locations that are known to have higher likelihood of foundation piping failure[4] and the Mill Creek and Silver Stream pump stations (East Taieri Drainage Scheme). This has been informed by the recent assessment of floodbank condition and integrity[5] and observations made by staff during the July 2017 flood. To date there have been no confirmed observations of developing or imminent failure. The floodbanks of the Alexandra Flood Protection Scheme have not required inspection as river levels are lower than the base of the floodbanks.

3. Regional Authority River Management 5-Year Implementation Plan

The 364 flood protection and river control schemes across New Zealand protect around 1.5 million hectares of land. One assessment puts the present net value of the schemes at $3.6 billion. Long Term Plans show operating expenditure of around $1 billion and capital expenditure of at least $1 billion in the period 2015-2025.

Most schemes are in places that could not be inhabited without those schemes. The schemes protect people and property from flood hazard and enable the productive use of land. Communities have become dependent on the schemes and therefore on effective management by regional councils for both their safety and their productivity.

The sector is facing a number of external and internal issues in the ongoing management of schemes. In the absence of legislated performance and condition standards there is a need to develop and apply nationally consistent asset management methodologies and standards. Capacity and capability of the sector has diminished during the transition from Catchment Boards to organisations with wider statutory responsibilities, such as freshwater management. Future funding requirements and the need to address the effects of future climate change present significant challenges for the sector.

The River Managers' Forum (RMF) has prepared a 5-year implementation plan to address these issues (Appendix 1). RMF is a regional authority Special Interest Group (SIG) made up of one or two staff from each council who have executive or functional responsibilities for flood protection and river control. I represent ORC at the RMF.

[3] The combined total length of floodbanks for the two Schemes equals 216km.

[4] During a flood, water can seep beneath a floodbank, especially where the floodbanks are relatively high, or foundation soils have some permeability, and where the flood has a relatively long duration. Piping is the process by which fine materials are removed by the seeping water from beneath a floodbank resulting in increased seepage and acceleration of sediment removal. This creates a cavity through the floodbank foundation which can lead to catastrophic settlement and collapse of the floodbank.

[5] *Floodbank Structural Integrity Assessment*, Report to 21 March 2018 meeting of the Otago Regional Council Technical Committee, 14 March 2018.

The plan represents the collective view of the sector on key issues, priorities and actions to do with how we deliver flood control and river management functions. RMF has been working to address these matters over a number of years however the plan ensures that a strategic and systematic approach will be taken in the future. The plan was approved by Regional Council Chief Executives on 5 November 2018.

The plan has four Task Groups (Strategy Collaboration, Approach, Quality People, Engagement), with supporting workstreams. Each task group has a champion, to provide oversight of direction and progress. I am the champion of the Engagement task group and a member of the plan's Steering Group.

The plan is being implemented by RMF members, in a collaborative way, with external assistance. Workstreams assessing national policy direction, developing and applying a common asset condition assessment tool and preparing information on scheme future funding requirements are underway. Planning for a sector forum in 2019 to share learnings from the 2017 Rangitaiki River (Edgecumbe) flood event[6] is underway. This is part of a programme of knowledge and experience transfer between councils.

For ORC the plan provides an effective and efficient way of improving our practices, especially in relation to asset management and staff skills and capability. It will help ensure that the management of schemes in Otago is aligned with good practice in the rest of our sector.

4. Christchurch City Multi-Hazard and Liquefaction Studies Peer Review Panel

At the invitation of Christchurch City Council (CCC), I am a member of a peer review panel for CCC's technical investigations on multi-hazard assessment for floodplain management purposes and liquefaction hazard assessment. The panel comprises people with expertise in economics, geotechnical engineering, river engineering, groundwater, hazards management and climate change adaptation. My participation on the panel provides the opportunity to learn about approaches being used elsewhere to manage natural hazard risks relevant to Otago, and to better understand the value of peer review panel input. The panel is expected to conclude its work in late 2019.

5. Leith Flood Protection Scheme

In accordance with the resolution made by Council on 31 October 2018, a contract for construction of the Dundas Street Bridge stage has been formed with Downer New Zealand Limited (Downer). The contract sum is $2,726,830.69 (excluding GST). The proposed works will complete the flood protection capital works of the Leith Flood Protection Scheme (Figures 6 and 7).

[6] *Rangitaiki River Scheme Review – April 2017 Flood Event*, Report to 29 November 2017 meeting of the Otago Regional Council Technical Committee, 9p.

Figure 6. Staging of construction of the Leith Flood Protection Scheme.

Figure 7. Looking west along Dundas Street to Dundas Street bridge (14 November 2018). The Water of Leith flows under the bridge from right to left.

Table 1 presents a summary of project milestones prepared by Downer.

Table 1 Summary of Construction Milestones for Dundas Street bridge stage

Milestone	Anticipated Date
Close Dundas Street Bridge	7 January 2019
Lift and install precast culverts	4 to 21 February 2019
Complete Upstream Right bank Retaining Wall	27 March 2019
Complete Downstream Right bank Retaining Wall	12 April 2019
Reopen Dundas Street Bridge	25 July 2019
End of Construction	26 July 2019

As previously advised to committee[7], the programme provides for "no work" on nine days that coincide with some of the University of Otago 150th celebrations and commemorations. I have met with the Acting Director Property Services for the University of Otago to discuss this matter and the arrangements for liaison and communication between our two organisations.

I attended the construction commencement meeting with Downer management on 22 November 2018. We discussed the matters that are important to each organisation for the success of this project, with health and safety having the highest importance for both organisations. I noted the importance also of the University of Otago 150th celebrations and commemorations and the management of pedestrian and vehicular traffic whilst Dundas Street bridge is closed.

[7] *Director's Report*, Report to 17 October 2018 meeting of Otago Regional Council Technical Committee, Report No. EHS1828, 11 October 2018, p12.

Engineering works on the Union to Leith Footbridge stage of the Scheme resumed on 12 November 2018 following the planned shutdown during the most recent university examination period (17 October to 11 November 2018). The shutdown avoided noise and disruption to students and staff. The last of the instream bed level control weirs are being constructed and rock riprap is being placed between the weirs (Figures 8 and 9). These works were disrupted by the flood that occurred on 20 November 2018 (see 2 above). Downer has advised that it will take approximately one week to reinstate the work site, including the haul road, to its pre-flood state. They advise that this stage of the Scheme will be completed in December 2018. For reasons of efficiency Downer has been retained to repair flood damage near the Leith footbridge, some of which occurred in earlier floods. This will require only a small area of land to be worked on, outside of the river bed.

Figure 8. Looking downstream along the bed of the Water of Leith towards the Information Technology Services (ITS) Building (14 November 2018). River flows have been temporarily diverted to the right.

Figure 9. Looking downstream along the bed of the Water of Leith under the Information Technology Services (ITS) Building (14 November 2018). Work is taking place on the last of the instream weirs.

6. Recommendation

That this report be received and noted

Endorsed by: Dr Gavin Palmer
Director Engineering, Hazards & Science

Attachments

Nil

APPENDICES

Appendix 1. 5-Year Strategic Implementation Plan Summary

River Managers SIG

River Management for Flood Protection, River Control and Drainage

Sector Resilience, Sustainability and Improvement Strategy

5 Year Strategic Implementation Plan Summary

Year One – 28 October 2018

RIVER MANAGEMENT SECTOR IMPROVEMENT STRATEGY

- Critical adaptation to climate change for a more resilient New Zealand.
- Enhancing freshwater quality, ecological biodiversity, aligned with community and tangata whenua aspirations.
- Communicate the role, state and value of river control, flood protection, drainage schemes and related activities to public and decision makers.
- Inform related policy development and advocacy at both regional and national levels.
- Improve individual and collective operational performance of river control, flood protection and drainage scheme management where such opportunities are identified.

APPROACH

Deliver key tasks working collaboratively over a five year period, through four work streams.

TASK GROUPS	WORKSTREAMS
STRATEGY COLLABORATION Working together across the sector	• Technical champions for effective knowledge transfer and best practice across the sector. • Connectivity and influence with the tertiary sector. • Better connection of SIGs to RM SIG action plan. • New future funding initiatives to respond to needs. • Strategic research agenda to better meet needs. • Communication improvements across the sector. • Climate change adaptation science focus to needs. • Shared experiences to build iwi relationships. • RM SIG website hub for information sharing.
APPROACH Practices, Methodologies and Standards	• Prepare nationally consistent asset management methodologies, metrics and frameworks. • Assess asset criticality and performance against asset condition on a scheme-by-scheme basis. • Understand the financial viability of the schemes and common funding issues. • Improve water quality and enhance environment. • Integrated catchment, risk and hazard management initiatives to better manage our water resources. • Partner with tangata whenua and others re new skills, networks, and views, in the river management sector.
QUALITY PEOPLE Capability and capacity	• Quality graduates pipeline with tertiary institutes. • Coaching competence for sector leaders to transfer unique knowledge and skills to future leaders. • Ideal persona profile of high performing river managers for selection, recruitment & development. • Attraction campaign that targets key talent. • Directory of key roles and resources. • Workforce profile across sector to inform decisions.
ENGAGEMENT Communications and enabling environment	• Stocktake on the national setting and drivers for the regulatory environment. • Analyse the stocktake findings , identify key issues and recommend a sector position on these issues. • Design a communication and engagement process for the sector to raise the profile and support advocacy, influence and relationships with stakeholders including the general public, other SIGs, CRIs, National Science Challenges et al.

TIMELINE

Year 1	Year 2	Year 3	Year 4	Year 5
Strategic priority actions planning, future funding, and cross sector communication collaboration.	Actively develop priority project plans, briefs and engagement initiatives	Review priorities enhance project plans, briefs and engagement initiatives	Further review and enhance project plans, briefs and engagement initiatives	Further review and enhance project plans, briefs and engagement initiatives
Asset Management development, online resources, FIVE Decision Support Tool, Research Agenda, incl. Fish Passage	Asset Management Tool application & Research Agenda progressed	Asset Management Tool application for all Councils,& Research Agenda progressed.	Asset Management Tool application for all Councils,& Research Agenda progressed	Asset Management Tool application for all Councils,& Research Agenda progressed.
Needs Assessment, Strategy and Action Plan including Ideal persons profiles.	Action Plan implementation, Graduates Pipeline, Attraction Campaign, & Resources Directory	Coaching, Iwi partnerships, Professional development, increase Networks & Knowledge transfer	On going Action Plan implementation, including Retention & Development	On going Action Plan implementation, including Retention & Development
Action Plan development understand & assess national direction of regulatory environment	Develop stakeholder engagement process	Development of informing and engagement with communities	Review and further develop stakeholder engagement	Review and further develop stakeholder engagement

12. NOTICES OF MOTION

13. CLOSURE