AGENDA

Meeting of the

Risk and Audit Committee

Commencing at the Conclusion of the Extraordinary Council Meeting

Wednesday 16 April 2025

To be held at the
Clocktower Chambers
Palmerston Street
Westport

BULLER DISTRICT COUNCIL
Te Kaunihera O Kawatiri

2025 CHARTER

CORE COUNCILLOR ROLE AND RESPONSIBILITIES

The Governance role entails:

- Strategic planning and decision-making;
- Policy and strategy review;
- Community leadership and engagement, and stewardship;
- Setting appropriate levels of service;
- Maintaining a financially sustainable organisation; and
- Oversight/scrutiny of Council's performance as one team.

The governance role focusses on the big picture of 'steering the boat' - management's role focusses on 'rowing the boat'

Our commitments to best support each other and meet the challenges and opportunities of 2025 include:

CLEAR AND RESPECTFUL COMMUNICATION

We are committed to:

Actively listening and not interrupting;

Remaining conscious of 'tone', body language, and amount of time speaking (allowing time for others);

Responding/answering in a timely manner; and

Being honest, reasonable, and transparent.

TRUST AND RESPECT

We recognise that trust and respect must be earned and that a team without trust isn't really a team. Trust can be built by:

Valuing long-term relationships; being honest; honouring commitments; admitting when you're wrong; communicating effectively; being transparent; standing up for what's right; showing people that you care; being helpful; and being vulnerable.

CONTINUOUS LEARNING AND IMPROVEMENT

Continuous learning and improvement are critical for growing together as a team.

We are committed to constantly reviewing what is going well and what needs to improve in relation to the way we work together, the processes we follow, and the outcomes we deliver.

NONE OF US IS AS SMART AS ALL OF US

Risk and Audit Committee

Reports to:	The Council
Independent Chairperson:	**Sharon Roche**
Membership:	The Mayor, all Councillors and Māori
Meeting Frequency:	Representative Bi-Monthly
Quorum:	A majority of members (including vacancies)

GENERAL PRINCIPAL

1. The work of this Committee will be in accordance with the priorities and work programme agreed by the Council.
2. This Committee has the powers necessary to perform the Committee's responsibilities, in accordance with the approved Long Term Plan and Annual Plan budgets. Subject to confirmation of compliance with the financial strategy.

PURPOSE

The Risk and Audit Committee is responsible for:

1. Monitoring Council's financial strategy, and financial performance against the Annual and Long Term Plans.
2. Monitoring Council's interests in its Council Controlled Organisations (CCOs).
3. Reviewing the Council's risk register and associated process for managing current and emerging risk.
4. Ensuring the independence and effectiveness of Council's External and Internal Audit processes.
5. Monitoring existing corporate policies and recommending new or amended policies as required.
6. Ensuring that Council policies and practices will prevent unethical, questionable or illegal activities.
7. Providing a communication link between management, internal auditors/external auditors and Council.
8. Supporting measures to improve management performance and internal controls.
9. Ensuring Council's Polices and Bylaws are fit for purpose and comply with all relevant legislation.
10. Guiding the development of Council's Climate Change Adaptation Plan

TERMS OF REFERENCE:

General

1. To receive regular reports regarding Council's financial and non-financial performance against Annual and Long Term Plans.
2. To consider reports related to significant expenditure outside of the Annual and Long Term Plans and make appropriate recommendations to Council.
3. To develop and monitor policy related to the following matters:
   a) Financial management;

b) Revenue generation;

c) Procurement and tendering; and

d) The appointment and remuneration of directors and CCOs

4. To monitor the probity of processes relating to policies developed by the Risk and Audit Committee.
5. To provide clear direction to Council's CCOs on Council's expectations, including feedback on draft statements of intent.
6. To receive Quarterly reports of Council's CCOs, including board performance.
7. To undertake any reviews of CCOs and make appropriate recommendations for approval by Council.
8. Review CCO requests for major transaction approval and recommend appropriate actions to Council.
9. To monitor Council's debt and investments to ensure compliance with Council policy.
10. To monitor the Council's outstanding debtors' positions.
11. Engage with Council's external auditors regarding the external audit work programme and agree the proposed terms and arrangements of the external audit.
12. Assess management response to audit reports and the extent to which external audit recommendations concerning internal accounting controls and other matters are implemented.

Internal Audit

13. Agree the scope of internal audits.
14. Monitor the delivery of the internal audit work programme and results
15. Assess whether Internal Audit's recommendations have been properly implemented by management.
16. Review the annual Internal Audit Plans to ensure appropriate organisational structures, authority, access, independence, resourcing and reporting arrangements are in place.

Strategy, plans and policy

17. Develop and agree to strategies, plans and policies for the purposes of consultation and/or engagement with community.
18. Recommend to Council for adoption.
19. Monitor and review as and when required.

Bylaws

20. Develop and agree to the statement of proposal for new or amended draft bylaws for consultation.
21. Recommend to Council new or amended bylaws for adoption.

Consultation and engagement

22. Ensure appropriate, effective and transparent engagement with the community, tangata whenua and other stakeholders.
23. Conduct any public engagement required on issues before the Committee, in accordance with Council's Significance and Engagement Policy.
24. Conduct hearings, where appropriate, to consider submissions from members of the public and external organisations, making determinations on such matters unless they are reserved for Council to decide.

Submissions and legislation

25. Approve submissions to external bodies/organisations on legislation and proposals, related to the Committee's areas of responsibility, that impact governance policy or matters.
26. Monitor and oversee strategic projects and programmes.
27. Monitor Council's Asset Management Plans/Strategic Infrastructure Plan.

Contracts

28. Approve and monitor contracts and other legally binding arrangements provided that such contracts/arrangements:
    a. Do not require the approval of the whole of Council; and
    b. Fall within the budget approved under the Long Term Plan or Annual Plan and have a value exceeding the Chief Executive's financial delegation.

Reserves and Halls Subcommittees

29. Monitor and oversee the Reserves and Halls Subcommittees.

Creative Communities Subcommittee

30. Monitor and oversee the Creative Communities Subcommittee.

Other Matters

31. Review the effectiveness of the risk control environment established by management to safeguard Council's financial and non-financial assets, including the adequacy and appropriateness of insurance policies in place and management's actions to mitigate risks
32. Review the effectiveness of the systems for monitoring the Council's compliance against legislation, regulation, policy, and guidelines (including health and safety).
33. Conduct and monitor special investigations in accordance with Council policy and approved budget or in response to material matters raised by staff or committee members, including engaging expert assistance, on matters within its Terms of Reference.
34. Provide an annual review of Council's risk management framework and amend as required.
35. Review and monitor business continuity planning.
36. Consider and make decisions which are within the Chief Executive Officer's delegations, and which the Chief Executive Officer has referred to the Committee for recommendation to Council.
37. Consider and make decisions on operational matters that fall within a Committee's area of responsibility that are outside of delegations to the Chief Executive Officer or other Council officers.
38. Commission new Committee reports and work required to respond to significant or compliance issues, or to complete the agreed programme of Council.
39. Monitor Audit recommendations and ensure completion.

The Committee is delegated the following powers:

- The Committee may make recommendations to Council.
- The Committee will provide three-monthly reports to Council on its activities with appropriate recommendations.

Special Notes:

- In fulfilling their role on the committee, members shall be impartial and independent at all times.
- The Chairperson will be an independent appointment, not an elected member, to strengthen the independent nature of the Committee's monitoring responsibility of Council activities.
- Members are appointed for an initial term of no more than three years that aligns with the triennial elections, after which they may be eligible for extension or reappointment.
- The Chief Executive Officer and Chief Financial Officer are required to attend all meetings but are not members and have no voting rights. Other Council officers may attend the Committee meetings, as required.
- The Chairperson of the Committee shall review the travel and other reimbursed expenses of the Chief Executive Officer and confirm compliance with Council policies and practice. This information will be provided to the Chairperson on a monthly basis.
- The Chairperson shall review the travel and other reimbursed expenses of the Mayor and confirm compliance with Council policies. This information will be provided to the Chairperson on a monthly basis.
- The Chief Executive Officer (Principal Advisor) shall be responsible for drawing to the Committee's immediate attention to any material matter that relates to the financial condition of Council, any material breakdown in internal controls, and any material event of fraud or malpractice.
- The Chairperson shall present an annual Audit and Risk Self Review to Council summarising the Committee's activities during the year and any related significant results and findings.

Risk and Audit Committee

Commencing at the Conclusion of the Extraordinary Council Meeting
Clock Tower Chambers,
Palmerston Street, Westport

16 April 2025 03:30 PM

Agenda Topic

Live Streamed to the Buller District Council YouTube Channel

RISK AND AUDIT COMMITTEE

16 APRIL 2025

AGENDA ITEM: 1

Prepared by Paul Numan
Group Manager Corporate Services

APOLOGIES

REPORT SUMMARY

1. That the Risk and Audit Committee receive any apologies or requests for leave of absence from elected members.

DRAFT RECOMMENDATION

2. **That there are no apologies to be received and no requests for leave of absence.**

OR

That the Risk and Audit Committee receive apologies from *name* and accepts *name* request for leave of absence.

RISK AND AUDIT COMMITTEE

16 APRIL 2025

AGENDA ITEM: 2

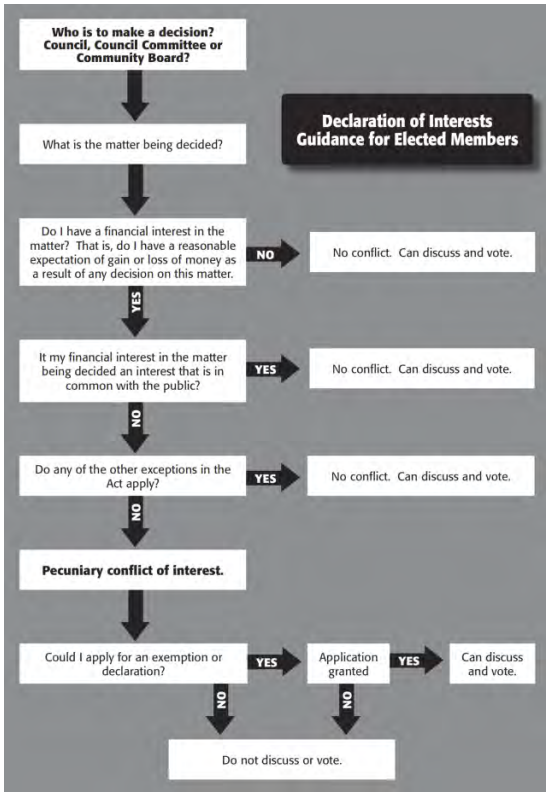
Prepared by Paul Numan
Group Manager Corporate Services

MEMBERS INTEREST

1. Members are encouraged to consider the items on the agenda and disclose whether they believe they have a financial or non-financial interest in any of the items in terms of Council's Code of Conduct.

2. Councillors are encouraged to advise the Governance Assistant, of any changes required to their declared Members Interest Register.

3. The attached flowchart may assist members in making that determination (Appendix A from Code of Conduct).



DRAFT RECOMMENDATION:

4. **That Members disclose any financial or non-financial interest in any of the agenda items.**

RISK AND AUDIT COMMITTEE

16 APRIL 2025

AGENDA ITEM: 3

Prepared by Paul Numan
Group Manager Corporate Services

Attachments 1. Risk and Audit Committee Public Meeting Minutes 12 February 2025

CONFIRMATION OF PREVIOUS MINUTES

DRAFT RECOMMENDATION

1. **That the Risk and Audit Committee receive and confirm the Public Meeting Minutes from 12 February 2025.**

MEETING OF THE RISK AND AUDIT COMMITTEE, HELD AT 3:30PM ON WEDNESDAY 12 FEBRUARY 2025 AT CLOCKTOWER CHAMBERS, PALMERSTON STREET, WESTPORT.

PRESENT: Independent Chair S Roche, Mayor J Cleine, Deputy Mayor A Basher, Cr A Pfahlert, Cr P Grafton, Cr Joanne Howard, Cr T O'Keefe, Cr L Webb

PRESENT VIA ELECTRONIC LINK: Cr R Sampson, Cr G Neylon, N Tauwhare (Iwi Representative), Cr C Reidy

IN ATTENDANCE: P Numan (Group Manager Corporate Services), K Trigg (Group Manager Community Services, J Salmond (Corporate and Strategic Planning Manager), D Venz (Harbourmaster), S Bastion (Group Manager Regulatory Services), S Pickford (Chief Executive Officer), J Curtis (Manager Capital Works), G Pellow (Financial Accountant), K Phipps (Manager Finance), P Bicknell (Programme Manager – Recovery), C McDonald (Governance Secretary), C Borrell (Governance Assistant)

IN ATTENDANCE VIA ELECTRONIC LINK: Nil.

MEDIA: Ellen Curnow (Westport News)

PUBLIC FORUM: Kevin Smith – Spoke to the Port, Dredge and the Manahau Barge/Westland Mineral Sands.

MEETING DECLARED OPEN AT: 3:44PM

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1. APOLOGIES (Page 9)

Discussion:

N Tauwhare (Iwi Representative) intending to join late
Cr G Weston
Cr A Pfahlert – departure time of 6:30PM
Cr T O'Keefe – departure time of 7:00PM
Cr L Webb – early departure.

RESOLVED

That the Risk and Audit Committee receive apologies from Cr G Weston and accepts N Tauwhare (Iwi Representative) request for leave of absence.

Cr P Grafton/Deputy Mayor A Basher
11/0
CARRIED UNANIMOUSLY

2. MEMBERS INTEREST (Page 10)
Discussion:
Nil.

RESOLVED that Members disclose any financial or non-financial interest in any of the agenda items.

Independent Chair S Roche/Cr A Pfahlert
11/0
CARRIED UNANIMOUSLY

3. CONFIRMATION OF MINUTES (Page 11)
Discussion:
Add Mayor J Cleine to the attendees as present – *noted and amended*

RESOLVED That the Risk and Audit Committee receive and confirm Public Meeting Minutes from 11 December 2024

Cr T O'Keefe/Cr Joanne Howard
11/0
CARRIED UNANIMOUSLY

4. ACTION POINTS (Page 20)
Discussion:

235: ~~Slumpage in Wharf Backwall – completed as it is now part of the Infrastructure Projects Report.~~

236: Crack in Buller Coal Ltd Shed Floor - ongoing

244: ~~Capital Receipts And Expenditure To 31 December 2023 Update - completed~~

248: Investments And Borrowings Report – As At 30 September 2024 – the update still needs to be brought back to next Risk and Audit Committee Meeting, as it needs to be made clearer to Elected Members

249: Capital Works Programme Report – updated

N Tauwhare (Iwi Representative) joined to meeting via Zoom at 3:52PM

250: ~~NEMA and BoF Project Status Report Summaries – completed~~

251: Debt Management and Recovery Workshop – Updated

RESOLVED That the Risk and Audit Committee receive the February Action Point report for information.

Mayor J Cleine/Cr A Pfahlert
12/0
CARRIED UNANIMOUSLY

5. RISK AND AUDIT WORKPLAN REPORT (Page 22)

Discussion:

It was asked of the Committee to decide on the frequency of the the PMO Audit Report and the LGOIMA Report being reported back.

Independent Chair S Roche suggested that the PMO Audit Report should be coming to every Risk and Audit Committee Meeting (bimonthly) and that the LGOIMA Report should be brought back every six months.

RESOLVED

That the Risk and Audit Committee receive Risk and Audit Work Plan for information and adoption

Deputy Mayor A Basher/Cr P Grafton
11/1
Cr C Reidy against
MOTION CARRIED

6. NEMA AND BETTER OFF FUNDING PROJECT STATUS REPORT SUMMARIES (Page 26)

Discussion:

P Bicknell spoke to the report, gave an update on work that has occurred since publication of the report and answered questions.

RESOLVED

That the NEMA and Better Off Funding Project Status Report Summaries dated 12 February 2025 be received.

Cr P Grafton/Deputy Mayor A Basher
12/0
CARRIED UNANIMOUSLY

7. INFRASTRUCTURE SERVICES PROJECTS CONTROL GROUP REPORT (Page 40)

Discussion:

J Curtis spoke to the report, gave and update on key projects and answered questions

RESOLVED

That the Infrastructure Services Projects Control Group Report dated 12 February 2025 be received.

Cr A Pfahlert/Mayor J Cleine
12/0
CARRIED UNANIMOUSLY

8. WESTPORT TRUNK MAIN STAGE 2 DESIGN AMENDMENT (Page 79)

Discussion:

J Curtis answered questions regarding the report.

RESOLVED

That the Westport Trunk Main Stage 2 Design Amendment dated 12 February 2025 be received.

Cr T O'Keefe/Cr P Grafton
12/0
CARRIED UNANIMOUSLY

9. PORT AND DREDGE – FEBRUARY 2025 OPERATIONS REPORT (Page 82)

Discussion:

D Venz spoke to the report, gave an update on the Bar depth and answered questions.

Some of Kevin Smith's Public Forum concerns were addressed.

RESOLVED

That the Port And Dredge – February 2025 Operations Report dated 12 February 2025 be received.

Cr T O'Keefe/Cr P Grafton
12/0
CARRIED UNANIMOUSLY

10. RESERVE AND HALL SUBCOMMITTEE UPDATE (Page 88)

Discussion:

K Trigg answered questions regarding the Subcommittee Liaison Officer position and who the Subcommittees are to report to in the interim.

RESOLVED

That the Reserve and Hall Subcommittee Update dated 12 February 2025 be received.

Deputy Mayor A Basher/Cr L Webb
12/0
CARRIED UNANIMOUSLY

11. SUBCOMMITTEE NEW APPOINTMENTS (Page 94)

Discussion:

It was confirmed that the Subcommittee will not be exceeding the number of members it is allowed.

RESOLVED

That the Risk and Audit Committee appoint Andrea Brown, Lindsay Brown, Kelsey Turpin, Nathan Jago and Paula Jean to the Inangahua Reserve and Hall Subcommittee**.**

Mayor J Cleine/Cr L Webb
12/0
CARRIED UNANIMOUSLY

12. REEFTON VISITOR AND SERVICE CENTRE AMALGAMATION (Page 95)

Discussion:

K Trigg answered questions in relation to the report.

Feedback was given from the Inanagahua Ward Councillors around the Service Centre.

RESOLVED

That the Reefton Visitor and Service Centre Amalgamation Report dated 12 February 2025 be received.

Independent Chair S Roche/Cr G Neylon
10/2
Cr C Reidy against
MOTION CARRIED

13. UPDATE OF THE 22/23 AND 23/24 ANNUAL REPORTS (Page 98)

Discussion:

Cr T O'Keefe departed the meeting at 4:57PM

J Salmond and P Numan gave an update on what has occurred since the publication of the agenda report and answered questions.

Cr T O'Keefe returned at 4:59PM

K Phipps answered questions regarding Audit costings and overrun.

RESOLVED

That the Update Of The 22/23 And 23/24 Annual Reports dated 12 February 2025 be received.

Deputy Mayor A Basher/Cr P Grafton
11/1
Cr C Reidy against
MOTION CARRIED

PUBLIC FORUM RESPONSE:

Kevin Smith – Good points were made when Agenda Item Nine was addressed, and a response will be crafted to Mr. Smith.

14. PUBLIC EXCLUDED REPORT (Page 102)

Discussion:

Concern was raised around making Agenda Item PE2 available to the Public. It was confirmed that Agenda Item 2 is commercially sensitive.

RESOLVED that the public be excluded from the following parts of the proceedings of this meeting.

Item No.	Minutes/ Report of:	General Subject	Reason For Passing Resolution under LGOIMA
PE 1	Paul Numan – Group Manager Corporate Services	Confirmation of Previous Public Excluded Minutes	**(s 7(2)(i))** - enable any local authority holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations); or **(s 7(2)(j))** - prevent the disclosure or use of official information for improper gain or improper advantage.
PE 2	Paul Numan – Group Manager Corporate Services	Update on the Buller Port Co. Limited.	**(s7(2)(bii))** - protect information where the making available of the information would: **ii.** Be likely unreasonably to prejudice the commercial position of the person who supplied or who is the subject of the information.

Independent Chair S Roche/Cr P Grafton
11/1
Cr C Reidy against
CARRIED UNANIMOUSLY

MOVED INTO PUBLIC EXCLUDED AT: 5:20PM

Meeting adjourned at 5:20PM

RISK AND AUDIT COMMITTEE

16 APRIL 2025

AGENDA ITEM: 4

Prepared by Paul Numan
Group Manager Corporate Services

Attachment: 1. Risk and Audit Committee Action Points April 2025

ACTION POINTS

DRAFT RECOMMENDATION

1. **That the Risk and Audit Committee receive the April Action Point Report for information.**

RAC Action Points - CURRENT

No.	Meeting Of / Action Point	Responsible	Update:	Date Required By:
236	**14 Feb 2024** **Crack in Buller Coal Ltd shed floor** Recent media coverage was discussed about this topic. The shed is located on council owned land and councillors were concerned there might be an exposure to the council if this cracking became a larger problem. Staff advised that the problem is not that of council, but councillors asked to keep the matter on the Action Points for future monitoring.	~~D Marshall~~ P Numan	Staff to advise if any further issues arise.	On Going
248	**11 December 2024** **INVESTMENTS AND BORROWINGS REPORT – AS AT 30 SEPTEMBER 2024** B Murphy to check the NBS sponsorship rollover and relay this information.	B Murphy	Update 12 February 2025 Three-year agreement due for renewal in May 2025. Council has $2.9M invested with NBS at current interest rates plus receives 1% in sponsorship in exchange for the naming rights of the Council Theatre in Westport. Staff are currently in discussions with NBS with regards to renegotiation the sponsorship agreement.	~~12 February 2025~~ June Risk and Audit Committee Meeting
249	**11 December 2024** **CAPITAL WORKS PROGRAMME REPORT** The Waimangaroa Water Upgrade Surplus (from the Capital Works Programme Report) is to be updated in the bimonthly Risk and Audit Committee report around the progress of options for this surplus with the intention of a paper brought back Council regarding options for the surplus.	J Curtis	~~Update 23 January 2025~~ ~~A paper regarding the surplus will be brought to Council in April 2025~~ Update 1 April 2025 Draft paper being reviewed, aiming for May 2025 Council	~~12 February 2024~~ ~~30 April 2025~~ May 2025
251	**11 December 2024** Councillors to have a workshop around debt management and recovery options in the new year.	P Numan	~~Update 12 February 2025~~ ~~In progress - Finance currently working through an agenda and potential workshop dates.~~ Update 16 April 2025 Further detail provided in April RAC report with Debt management workshop being undertaken 11 June 2025.	~~12 February 2025~~ 16 April 2025

RISK AND AUDIT COMMITTEE

16 APRIL 2025

AGENDA ITEM: 5

Prepared by: Paul Numan
Group Manager Corporate Services

Attachments: 1. Risk and Audit Committee Work Plan April 2025

RISK AND AUDIT WORK PLAN

DRAFT RECOMMENDATION

1. **That the Risk and Audit Committee receive the Risk and Audit Work Plan for information.**

Risk and Audit Committee
Programme 2025 Calendar Year

Categories/Reports Proposed	SLT Member	Reporting Officer	February	March	April	May	June	July	August	September	October	November	December
Risk & Assurance Items													
Strategic Risk Register Update and Framework Review	GM Corporate Services	GM Corporate Services			√		√		√	√			√
Health and Safety Report Update	Human Resources	Human Resources			√				√				√
BHL Letter of Expectation	GM Corporate Services	Manager Finance											√
CCO Statements of Intent	GM Corporate Services	Manager Finance			Draft		Final						
CCO Director Appointments and Remuneration	GM Corporate Services	Manager Finance			√								
BHL Quarterly Financials	GM Corporate Services	Manager Finance			√		√		√				√
BHL Annual Report (adopt is required under law by 30 Sept each year)	GM Corporate Services	Manager Finance								√			
Westport Airport Authority Financials - 30 June	GM Corporate Services	Manager Finance								√			
Westport Airport Authority Financials - Half year	GM Corporate Services	Manager Finance			√								
Insurance	GM Corporate Services	Management Accountant											√
Update on By-law review process	CEO	GM Community Services			√				√				√
Review of BDC Created Policy	GM Community Services	GM Community Services			√				√				√
Review of Business Continuity Plan	CEO	GM Regulatory Services			√								
LGOIMA report	CEO	EA to Mayor and CEO			√					√			
RAC Project Status Reports	GM Corporate Services	Programme Manager - Recovery	√		√		√		√	√			√
Dredge/Harbour Activities	GM Corporate Services	Manager Finance	√				√			√			
Internal Audits													
Payroll/Creditors (PwC)	GM Corporate Services	Manager Finance			√								
Follow-up on Ernst & Young Matters in 22-23 Annual Report audit opinion	GM Corporate Services	Manager Finance	√										
Monitoring Items													
BDC Financial Performance Report	GM Corporate Services	Financial Accountant			√				√				√
BDC Investments and Borrowings	GM Corporate Services	Manager Finance			√				√				√
BDC Debt Management - Sundry and Rates	GM Corporate Services	Manager Finance			√				√				√
Infrastructure Services Projects Control Group Report	GM Infratructure Services	Manager Capital Works	√		√		√		√	√			√
KPMG Update	CEO	CEO			√		√		√	√			√

The following items are not directly related to the Risk & Audit work programme but are provided to note when staff have key programmes of work

Major Financially Based Reports to be Prepared in the 2025 Calendar Year													
Long Term Plan							Adoption		Preparation of draft	Preparation of draft	Preparation of draft	Preparation of draft	Preparation of draft
BDC 22-23 Annual Report					Adoption Annual Report - Audit opinion issued	Publish Annual Report & Summary Document							
BDC 23-24 Annual Report				Interim/Final Audit	Preparation of Annual Report	Preparation of Annual Report	Preparation of Annual Report	Adoption Annual Report - Audit opinion issued	Publish Annual Report & Summary Document				
BDC 24-25 Annual Report							Interim Audit	Preparation of Annual Report	Preparation of Annual Report	Preparation of Annual Report	Adoption Annual Report - Audit opinion issued	Publish Annual Report & Summary Document	

RISK AND AUDIT COMMITTEE

16 APRIL 2025

AGENDA ITEM: 6

Prepared by Francesca Welte
Health & Safety Advisor

Reviewed by Shantha Maharaj
Human Resource Manager

Public Excluded: No

HEALTH AND SAFETY REPORT FOR THE LAST TWO QUARTERS (1 OCTOBER 2024 – 31 DECEMBER 2024 AND 1 JANUARY 2025 – 30 MARCH 2025)

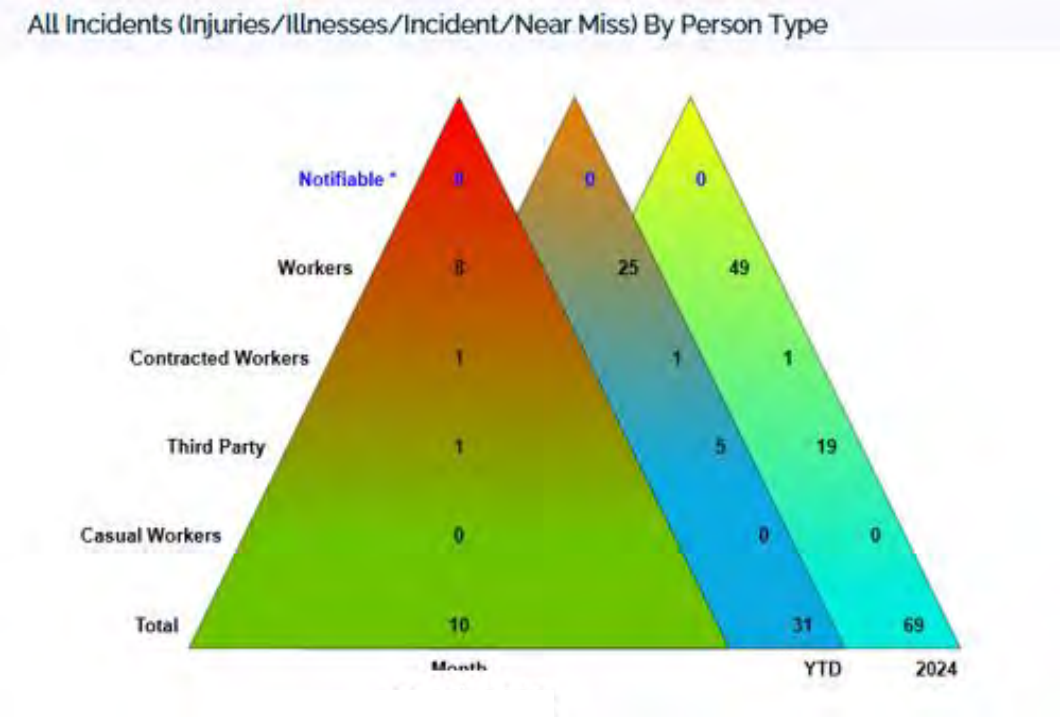
1. **REPORT PURPOSE**
   The purpose of this report is to provide the Risk and Audit Committee with a regular update on the Health & Safety performance of the organisation.

2. **EXECUTIVE SUMMARY**
   This report provides an overview of key health and safety activities and incidents within the organisation over the last two quarters. The primary focus areas over this period include health and safety training, policies and procedures, internal inspections, emergency management, employee wellbeing, and council vehicle safety.

3. The increasing number of observations is a positive ‘lead indicator’ suggesting a proactive approach to identifying potential hazards. Prioritising follow-up actions on these risks will help prevent future incidents.

4. **DISCUSSION**

Organisational Overview

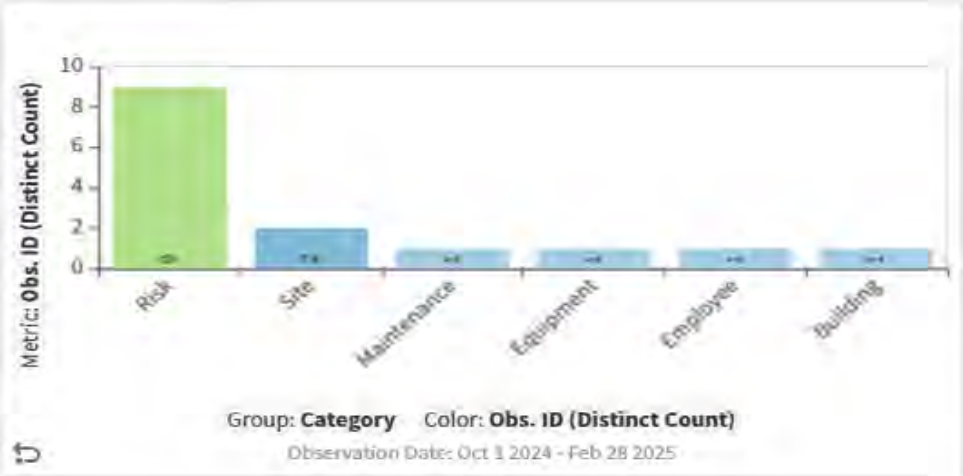


5. **Total Events Recorded**

Event Type	Q2 & Q3 2024-25	Q1 2024-25	YTD 2024-25
Incident	23	14	57
Injury	7	1	10
Injury - Lost time work	0	0	0
Near Miss / Hazard	7	1	12
Injury - non-work related	1	0	1
Injury - Lost time non-work	0	0	0
Observations	15	9	28

6. There were no significant or notifiable events. All incidents have been investigated, with five investigations still underway.

7. **Observations Recorded**



8. **Training**
The Health and Safety Committee has conducted targeted training sessions, including situational awareness training to equip staff with skills for handling workplace aggression. Staff continue to receive education on risk identification and appropriate response strategies.

9. **Completed Training**
- 5 staff members have completed their First Aid Refresher
- 4 staff members have completed their First Aid Certificate
- This ensures that we have adequate first aid coverage at all work sites
- 14 staff completed Personal Efficiency Programme Training.

10. **Upcoming Training**
In the coming months, several staff members will undertake First Aid Refresher and First Aid Certificate training. Additionally, Fire Warden Training will be conducted to enhance emergency preparedness.

11. **Policies, Procedures, and Processes**
A number of health and safety policies are under review or have been implemented:
- The Health & Safety Policy was approved and published for all staff in February 2025.
- The Working Alone Policy, Working with Children Policy, and Vehicle Policy are currently under review.
- Workplace safety reporting processes have been reinforced, ensuring employees utilise the appropriate channels to report concerns.

12. **Internal Health and Safety Inspections and Audits**
Site inspections have been carried out at the harbour to assess compliance with safety standards and identify hazards. Regular workplace and contractor inspections by managers and Health & Safety Committee members continue to address potential risks proactively.

13. **Emergency Management and Drills**
Emergency response protocols have been reviewed and updated. Staff participation in evacuation drills has been ongoing to ensure that emergency procedures are well understood and effectively executed.

14. **Wellbeing and Community Initiative**
Employee Welfare
During the reporting period, there were three cases related to employee welfare. These cases were addressed through discussions with the involved parties, counselling referrals, and HR intervention. Staff have access to an Employee Assistance Programme (EAP). EAP is a programme through which Council staff can access appropriate professional/specialist assistance for a wide range of life challenges.

15. **Council Vehicles & Driving**
A review of council vehicle use, and driver safety procedures was conducted to improve compliance and minimise risks. No incidents involving council vehicles were recorded during the last two quarters.

16. **Significant Incidents, Accidents and Near Miss Events**
Incident reporting has increased, which is indicative of a proactive safety culture within the organisation. All reported incidents have been investigated, and corrective actions have been implemented where required.

17. The standard considerations have been thoroughly evaluated, and there are no additional comments at this time

18. **DRAFT RECOMMENDATION**

That the Health and Safety Report for the last two Quarters (1 October 2024 – 31 December 2024 and 1 January 2025 - 30 March 2025) dated 16 April 2025 be received.

RISK AND AUDIT COMMITTEE

16 APRIL 2025

AGENDA ITEM: 7

Prepared by Di Rossiter
Climate Adaptation Project Lead

Reviewed by Simon Bastion
Regulatory Services, General Manager

Attachments 1. Buller District Climate Change Risk Assessment, 27 November 2024

Public Excluded: No

CLIMATE ADAPTATION PROJECT UPDATE

1. **EXECUTIVE SUMMARY**
The Climate Change Adaptation Planning Project is a joint long-term project between Buller District Council and the University of Canterbury to find ways to respond to the changing climate and related events now, and into the future.

2. One of the project tasks has been the creation of a full technical risk assessment report.

3. The Resilience Explorer tool (REx) and Risk Assessment report (Buller District Climate Change Risk Assessment report) represent a 'snapshot in time', based on the available climate hazard risk information. REx will continue to be updated as more information becomes available. The Risk Assessment report is being presented to this committee as an attachment to this report for noting.

4. **DRAFT RECOMMENDATION**

That the Risk and Audit Committee:
1. Receives the report

2. Notes that the first version of the Buller District Climate Change Risk Assessment report has been completed.

5. **ISSUES & DISCUSSION**

BACKGROUND

New Zealand is experiencing, and is likely to continue to experience, more frequent, and more intense weather events.

6. Buller's communities, during Council's Long-Term Plan 2021 – 2031 (LTP 2021-2031) consultation process, provided feedback to Council to prioritise investment into climate change resilience and environmental sustainability. Council responded accordingly in its LTP2021-2031 by prioritising a stepped approach across several years to build up a strategy to address this challenge. Further engagement with Buller's communities in 2023 rated the environment as an important outcome, with the top environmental priorities being sustainable environmental management, environmental protection and biodiversity, and climate change adaptation.

7. Within Central Government guidelines and Auditor-General reports, there are expectations that Council informs the public of the risks posed by natural hazards and climate change. Of note, several Councils have developed and released similar Resilience Explorer-type platforms in line with Central Government guidance.

8. This research-based Climate Change Adaptation Planning Project is a response to these drivers and will enable Council to plan for and prioritise the District's adaptation needs, and advocate to central government for essential funding support.

9. **PROJECT PROGRESS**

A strategic pause on the project was initiated since the last report to Council on 26 June 2024, for the following reasons:

a. The General Manager, Regulatory Services position (to which this project reports) needed to be permanently filled to ensure the establishment and maintenance of effective strategic project oversight.
b. Strategic oversight is needed because the project outcomes are likely to be significant for the district in terms of both scale and impact across time.
c. There is a need to establish internal processes to ensure effective integration with Council functions.
d. There are currently no clear pathways for the solutions needed to address the Buller's district-wide adaptation needs.

10. The project is broadly divided into three work programmes:

i) Risk assessment,
ii) Community engagement,
iii) Adaptation planning.

11. An update on progress to date on each of these work programmes is now provided:

i). Risk assessment:
The Resilience Explorer tool (REx) and Risk Assessment report (Buller District Climate Change Risk Assessment) is presented as **Attachment 1** to this report. The assessment report represents a 'snapshot in time' and has been developed to provide a paper-based summary of the district's climate hazard risk, based on available natural hazard information. The information in the assessment is sourced in the main from the district's existing risk information and centralises the information into one document.

12. The report will require periodic updating as:
- more natural hazard risk information becomes available; and
- climate science understanding continues to develop.

13. Consultants for the work, Urban Intelligence Limited, presented the most up-to-date version of the REx tool to staff from Buller District Council, West Coast Regional Council and Civil Defence and Emergency Management to increase staff familiarity with the functionality of the tool. Further, the Group Manager, Regulatory Services has started the process of engaging the West Coast Regional Council in the district's climate risk and adaptation planning needs. There is expectation that the West Coast Regional Council will assume some responsibility to address the district's vulnerability, and that the Councils will work collaboratively on the longer-term solutions for the district's adaptation needs.

ii) Community engagement:
Subsequent community engagement will remain on hold for now as integration with regional council functions is sought. This will ensure appropriate regional council involvement in natural hazard identification and management across the Buller District. The team is also conscious of the significant amount of other public engagement processes running across the Buller District – TTPP, Resilient Westport, and the upcoming LTP consultation.

iii) Adaptation planning:
Internal project review of adaptation options has been undertaken. However, in depth and specific adaptation planning for at-risk communities is linked to subsequent community engagement and will therefore also remain on hold.

14. **OPTIONS**

15. **Option 1 – Status Quo**
That Council does not receive this report or note the first version of the Buller District Climate Change Risk Assessment report (**Attachment 1**) has been completed.

16. **Advantages**

- No advantage identified

17. **Disadvantages**

- Council is not informed on the significant climate risk profile of the district and some of its communities.
- Council is not able to make informed prioritisation decisions for adaptation planning for its communities.
- Council will be deferring hard decisions and passing the burden to tomorrow's generations.
- Adaptation planning and action will only become more complex into the future. Post-disaster adaptation is highly stressful for communities, as has recently been experienced by the Westport community. Council runs the risk of not doing its part in preparing its at risk communities for future disasters.
- By not following Central Government's guidelines and expectations, and using best available scientific climate risk information, Council will not be positioned to advocate for its communities' specific adaptation needs, including essential funding that would support the district's extensive adaptation needs.

18. **Option 2 – Receive this report and note the Buller District Climate Change Risk Assessment (Attachment 1)**

That Council receives this report and notes the first version of the report (**Attachment 1**) has now been completed.

19. **Advantages**

- Council has the best available scientific climate risk information and is made aware of the significant climate risk profile that exists for the district and some of its communities.
- Taking a science and research-based risk approach will enable Council to make informed prioritisation decisions for adaptation planning for its communities. Given the scale of the district's climate exposure, hard decisions will need to be made regarding what actions to prioritise.
- By understanding what is at risk, to what extent, and by when, Council will be acting responsibly and doing what it can today to prepare for tomorrow's challenges, rather than passing the burden to tomorrow's generations.
- Adaptation planning and action will only become more complex into the future. Post-disaster adaptation is highly stressful for communities, as has recently been experienced by the Westport community. This report, and the Project in general, enables Council to prepare and 'get out in front' to reduce the cost of climate disasters, in terms of both financial cost, and cost to community well-being.
- By following Central Government's guidelines and expectations, and using best available scientific climate risk information, Council will be better positioned to advocate for its communities' specific adaptation needs, including resourcing essential funding.

20. **Disadvantages**

Compiling the district's existing risk information 'centralises' its availability and makes more accessible the significant climate related risk profile that exists for the district and some of its communities. This may create anxiety for some members of the community.

21. **PREFERRED OPTION**

Option 2 above is the preferred option as the Buller District Climate Change Risk Assessment provides this Council, the regional council and CDEM with the most current information and the best tool to move forward with adaptation plans for the District.

22. **NEXT STEPS**

1) Buller District Council staff work alongside colleagues from the West Coast Regional Council to confirm adaptation processes and options;
2) Develop and agree a programme of works;
3) Progress any actions agreed and proactively seek further funding to progress adaptation through annual plan and long-term plan processes in addition to external funding.

23. Further progress will be reported through the Chief Executive Officer's Report.

24. **CONSIDERATIONS**

Strategic Impact

The project directly supports three of Council's Community Outcomes identified in Council's LTP 2021 - 2031, as follows in Table 1:

25. **Table 1: Alignment with Community Outcomes**

Community outcome	Description	Relevant priority or project	How is the Project achieving this?
Social	Our communities are vibrant, healthy, safe, and inclusive.	N/A	Contributes to building future-fit, safe, and resilient communities.
Affordability	Our communities are supported by quality infrastructure, facilities and services that are efficient, fit-for-purpose, affordable, and met our current and future needs.	Develop partnerships or enable solutions that increase affordability.	The cost-sharing partnership with the University of Canterbury through the Building Innovation Partnership (BIP).
Environment	Our distinctive environment and natural resources are healthy and valued.	Develop strategies for climate change and natural hazard preparedness	Direct delivery of this priority.

26. **Significance Assessment**
Given this decision does not require any new action to be undertaken by Council it is deemed to be of low significance under Council's Significance and Engagement Policy.

27. **Risk Management Implications / Opportunities**
The following risks or opportunities are identified with the issues identified in this report.

28. ***Engagement – external.***
The community was engaged regarding climate change and the need for adaptation planning through the LTP 2021 – 2031 consultation process, subsequent engagement on strategic issues in 2023, and most recently through its enhanced annual planning process in 2024.

29. Feedback received from the community through its LTP 2021 – 2031 process prioritised investment into climate resilience and adaptation planning. Council responded accordingly by prioritising a stepped approach across several years within the LTP 2021 – 2031.

30. ***Engagement – internal.***
Engagement between teams on Council is on-going as is collaboration with staff at West Coast Regional Council.

31. ***On-going work.***
Staff are cognisant of the work which could flow on from the REx tool and first version of the Risk Assessment report and the on-going challenge of

funding for this work. Council will need to focus on pursuing external funding while recognising there may be some call on BDC which will be considered in future Annual and Long-Term Plans.

32. **Policy & Legislative Considerations**
Current Legislative Obligations.
Council has received legal guidance regarding the delivery of the Risk Assessment and Risk Explorer tool to Council.

33. A preliminary summary of this advice includes:
- There are expectations in Central Government guidance and Auditor-General reports that Council inform the public of the risks posed by natural hazards and climate change.
  From an BDC perspective Land Information Memorandums (LIMs) are the primary advice property owners can seek when purchasing a property. It is paramount that this information is sourced by BDC from a reliable source as there could be legal concerns if the information is inaccurate. BDC source all natural hazards information via the WCRC as the point of truth.
- Of note, several Councils have developed and released similar (Resilience Explorer) explorer-type platforms in line with Central Government guidance.
- There are no imminent statutory requirements to deliver either the Risk Assessment or the Explorer tool, and they are not statutory instruments under any Act.
- Accordingly, there is no decision for Council to make at this stage, in terms of receipt of the project deliverables; and therefore, it is not considered necessary for Council to adopt them in any formal sense.

34. However, it is recommended as good practice, given its importance, for Council to note receipt of these project deliverables for its information.

35. ***Future Legislative Obligations.***
Importantly, legal advice received also highlighted some key developing obligations upon Council to generate, release and consult the public with up-to-date information about hazards and the effects of climate change.

36. Again, whilst there is no imminent or express statutory requirement, both project deliverables (the Risk Assessment and the Resilience Explorer tool) will be crucial resources which contribute to Council's fulfilment of future obligations to comply with legislation.

37. **Māori Impact Statement**
Engagement with Ngāti Waewae has been ongoing since project inception with their representation at the Risk Screening workshops held in 2022.

Since this time, update reports (written and verbal) are provided on a regular basis.

38. The Project is seeking specific input from iwi regarding Matauranga Māori and Māori values-at-risk under the Kaupapa Māori Risk Domain.

39. It is important to note that the process of engagement with iwi sits apart from the process of consultation and communication that has been undertaken with the community and stakeholders, in recognition of Council's commitment to working in partnership with Ngāti Waewae.

40. **Financial Considerations**
Project budget has been made available through the LTP 2021 – 2031 and Business Innovation Partnership (BIP) with the University of Canterbury, as shown in Table 2 below.

41. **Table 2: Project financing**

Schedule of Work	Amount	BIP co-funding	Package of work	Remaining Budget March 2025	Comments
Jun-23	$130,000	$86,666.67	1	$0.00	
Jul-23	$100,000	$66,666.67	1	$0.00	
Feb-24	$111,000	$74,000.00	2	$0.00	
Jul-24	$ 53,000	$35,333.33	2	$48,319.50	Held by Resilience Organisations*
Feb-25	$ 53,000		3	$53,000	LTP (held by BDC)
Jul-25	$ 54,000		3	$54,000	LTP (held by BDC)
Feb-26	$ 54,000		4	$54,000	LTP (held by BDC)
	$555,000.00	$262,666.67		$209,319.50**	

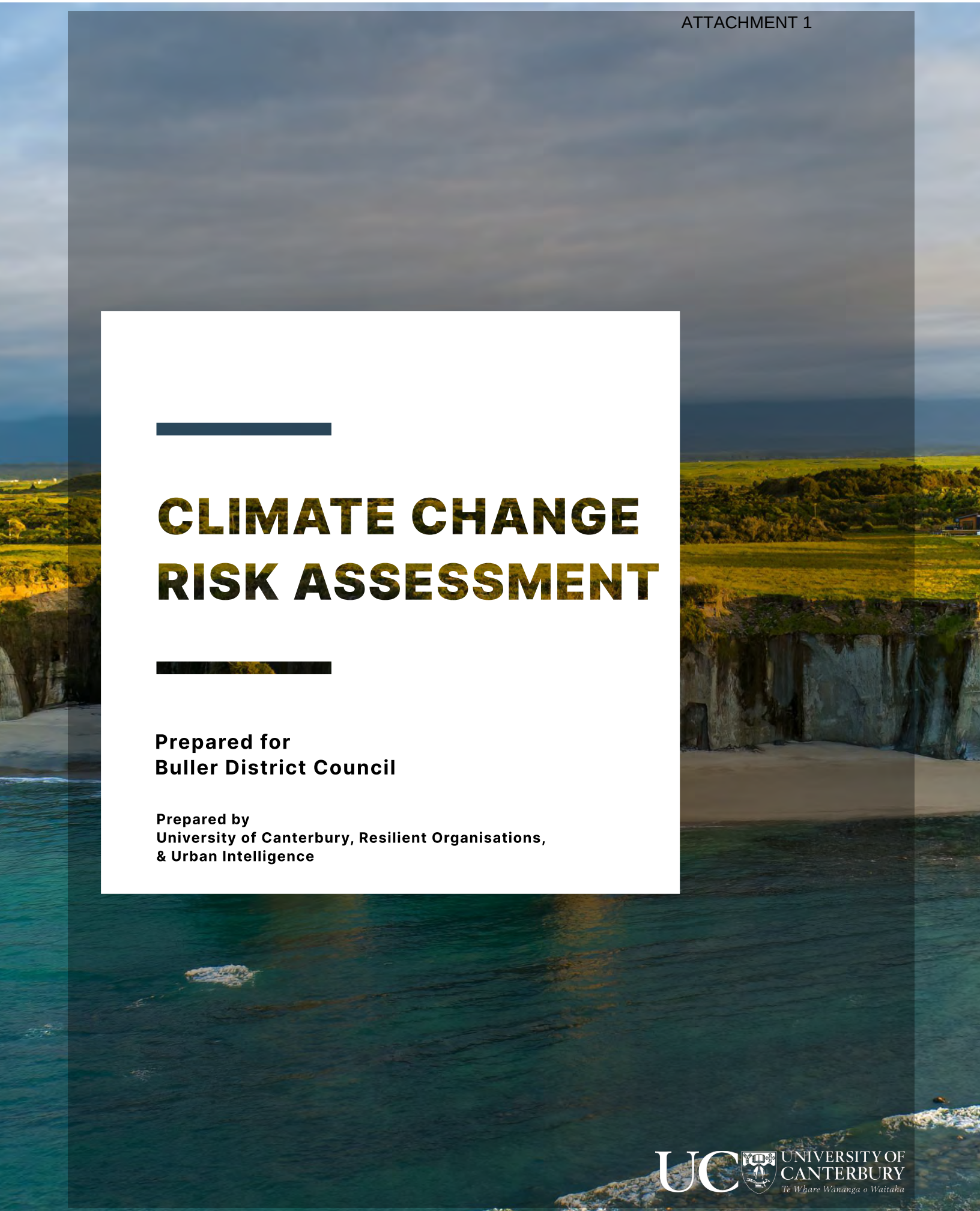
*Resilient Organisations are consultants based out of Christchurch who council tasked with coordinating the project.
**There are still some minor dispersals but the majority of the remaining budget for the project is unallocated.

42. Conversations are occurring with the West Coast Regional Council on leveraging the work to date and adding further capabilities to the program via the Resilience Explorer tool.

43. BDC are also in negotiation with Urban Intelligence Limited to invest in a licence for 2 years for the Risk Explorer Tool.

44. The $108K allocated for the 2025/2026 financial year in the BDC LTP 2021-2031 has been reallocated to a Climate Adaptation budget line and will be allocated based on business needs.

45. **Communication Internal / External**
There has been local and regional media interest in climate adaptation since the Project commenced. A media release has been prepared in accordance with Council policy.



CLIMATE CHANGE RISK ASSESSMENT

Prepared for
Buller District Council

Prepared by
University of Canterbury, Resilient Organisations, & Urban Intelligence

UC UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha

Buller Climate Change Risk Assessment

Prepared by: University of Canterbury, Resilient Organisations, & Urban Intelligence

Revision	Description	Date
Version 0.1	Draft	16 August, 2024
	Integrating requested figures and text changes following internal review	

Ihirangi | Contents

Whakarāpopototanga | Executive Summary

Climate change poses significant and increasing risks to Buller District's communities, infrastructure, and natural environments. This risk assessment aims to provide an evidence base to support risk-informed decision making and adaptation planning across the district.

Key Findings

- Buller District faces substantial risks from multiple climate-related hazards, including coastal flooding, river flooding, landslides, and sea level rise.
- Buller ranks third nationally for property exposure to coastal flooding, with nearly 20% of properties at risk under a 1% Annual Exceedance Probability (AEP) event with 20cm of sea level rise.
- Buller ranks second in terms of property isolation risk, with approximately 30% of properties potentially cut off from essential services during such an event.
- River flooding presents an immediate and severe threat, particularly in Greater Westport where over 75% of residential buildings are currently at risk.
- Landslides pose significant risks to infrastructure and road access, potentially isolating communities.
- Climate change impacts are likely to exacerbate existing socioeconomic challenges in the district.

Adaptation Hotspots

Several areas within Buller District require urgent attention for adaptation planning:

- **Greater Westport**: As the district's economic and social hub, Westport faces severe risks from river flooding, coastal flooding, and potential groundwater rise. Over 75% of residential buildings are currently at risk from river flooding, with this expected to increase with climate change.
- **Coastal Communities** (e.g., Hector, Granity, Ngākawau): These settlements face immediate threats from coastal erosion and flooding. Many are already experiencing impacts and have limited long-term adaptive capacity.
- **Karamea**: This northern settlement faces significant risks of isolation due to coastal flooding and landslides affecting road access. Its economic base, particularly dairy farming and tourism, is vulnerable to disruption.
- **Punakaiki**: A key tourist destination, Punakaiki faces increasing coastal flooding risks and potential isolation. Its economy and infrastructure are highly exposed to climate impacts.

Importance of Local Adaptation

The Climate Change Commission's 2024 report on adaptation progress emphasises that "existing legislative, planning, and decision-making frameworks are not well-suited to planning for and dealing with

changing and uncertain risks from climate change". The Commission found "limited evidence that the first national adaptation plan is driving adaptation at the scale or pace needed."

This national context underscores the critical importance of local-level action and planning. While national frameworks and support are crucial, local governments and communities play a vital role in understanding and addressing their specific climate risks. This Buller climate change risk assessment is a key step in the district's journey towards adapting to the impacts of climate change, and an important example of local-level action in the face of national-level challenges.

Risk-Informed Decision Making

It is crucial that adaptation strategies and interventions are based on robust risk assessments to ensure their effectiveness. This assessment aims to provide that foundation by:

- Identifying areas potentially affected by coastal hazards and climate change over at least the next 100 years.
- Evaluating exposure, vulnerability, and potential consequences across various sectors and systems.
- Considering both current and future risks under different climate change scenarios.
- Assessing social and environmental vulnerability alongside physical and economic impacts.

This approach helps avoid the perils of disaster-driven decision making, where immediate responses to climate-related disasters may provide short-term relief but risk being inefficient or even maladaptive in the long term.

Adaptation Areas

This assessment focuses on eight distinct geographical areas within Buller District, referred to as Adaptation Areas: Karamea Highway North, Mokihinui and Seddonville, Fairdown to Hector, Greater Westport, Carters Beach, Reefton and Inland, Charleston and the Cape, and Fox River to Punakaiki.

These areas form the basis for the next phase of community engagement and adaptation planning, allowing for strategies tailored to the unique characteristics and challenges of each locality.

Value Domains

The assessment is structured around five value domains:

- **Natural Environment**: Including terrestrial, freshwater, and marine ecosystems.
- **Built Environment**: Encompassing infrastructure, transport, and buildings.
- **Human**: Covering skills, knowledge, health, social norms, and cultural aspects.
- **Economic**: Assessing impacts on production, distribution, trade, and consumption.

- **Governance**: Examining governance processes and institutions.

This framework allows for a comprehensive understanding of climate risks and their interconnected impacts across different aspects of community wellbeing.

Next Steps

This risk assessment provides a foundation for the next phases of adaptation planning in Buller District. A more detailed discussion of next steps and recommendations can be found near the end of this assessment. In brief, after completion of this Risk Assessment, the Buller District's next steps are:

1. Identify options and pathways
2. Evaluate options and pathways
3. Develop adaptive planning strategies
4. Implement strategies
5. Monitor and review progress

Throughout these steps, ongoing engagement with communities, iwi/hapū, and stakeholders will be crucial to ensure adaptation planning reflects local values, priorities, and knowledge.

By taking a proactive, risk-informed approach to adaptation planning, Buller District can work towards building resilience to climate change impacts and safeguarding the wellbeing of its communities for generations to come.

Kuputaka | Glossary

Term	Definition
Adaptation	The process of adjustment to actual or possible climate change and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities [1].
Adaptive Capacity	The system's ability to adjust to moderate negative consequences or maximise positive consequences [1].
AEP	Annual Exceedance Probability. The probability that an event of a certain size or greater will occur in a given year.
Consequences	The positive and negative outcomes or impacts that result from interaction with a risk source or an event [2].
Criticality	The relative importance of a system aspect (e.g., road, electrical substation, etc.) to the functionality of the system as a whole.
Domain	Wellbeing or value domains are a hybrid of the NZ Treasury's Living Standards Framework and group values, assets, and systems that could be affected by climate change. These domains were defined and used in the first NCCRA.
Element	The assets, taonga, people, places, and specific systems that may be at risk.
Exposure	The state or condition of being subjected to or encountering a risk source, which can occur in a binary manner where one is either exposed or not, or in a continuous manner where the level or intensity of exposure varies [2].
Fragility	The system's likelihood to experience negative consequences, given some amount of exposure.
Interest	Risk is assessed to what is valued and the interests are these values, e.g., 'the tourism sector' or 'transportation'.
IPCC	Intergovernmental Panel on Climate Change.
Hazard	A natural or human-induced event or trend that has the potential to cause consequences.
Island (Community Isolation)	A situation where an entire community becomes inaccessible from outside areas due to hazard impacts on critical access routes, such as when the only road in and out is blocked. This state is also referred to as a community becoming an "island". Contrast with: Isolation.
Isolation	The state of property temporarily or permanently losing access to one or more essential services (school, hospital, or fire station) due to hazard impacts on the transportation network. Contrast with: Island.
Mitigation [Climate Change]	The process of reducing the severity of climate change through emissions reduction or carbon sequestration. Contrast with: Risk Mitigation.
NAP	National Adaptation Plan.
NCCRA	National Climate Change Risk Assessment.
RCP	Representative Concentration Pathway. A set of scenarios that describe different greenhouse gas concentration trajectories based on varying levels of atmospheric carbon dioxide and other greenhouse gases. Each pathway corresponds to a specific level of radiative forcing (the change in energy balance in the Earth's atmosphere) by the year 2100, expressed in watts per square meter (W/m^2).
Risk	The consequences and associated uncertainties [2].
Risk Mitigation	The process of identifying, assessing, and prioritising risks, followed by the coordinated application of resources to minimise, monitor, and control the probability or impact of adverse events. Risk mitigation strategies include avoidance, reduction, transfer, and acceptance of risks. Contrast with: Mitigation [Climate Change].
Risk Source	An entity, activity, or condition that has the potential to generate risk [2].
Resilience	The capacity and characteristics of a system that reduces negative consequences.
Resilient	A system is judged to be resilient if the negative consequences and their associated uncertainty is considered acceptably low.

Scenario	A plausible description of how the future may develop based on a coherent and internally consistent set of assumptions about key driving forces (e.g., rate of technological change, prices) and relationships. Scenarios are neither predictions nor forecasts, but are used to provide a view of the implications of decisions [1].
Sensitivity	The degree to which something is impacted by hazards.
Sustainable	The capacity to endure and thrive over time, balancing social, economic, and environmental considerations.
SSP	Shared Socio-economic Pathways (SSPs) are scenarios of projected socio-economic global changes up to 2100 as defined in the IPCC's Sixth Assessment Report on climate change in 2021. They are used to derive greenhouse gas emissions scenarios with different climate policies. They also describe the challenges for mitigation and adaptation to climate change under different levels of development and cooperation.
Uncertainty	Imperfect or incomplete information/knowledge about a hypothesis, quantity, or occurrence of an event.
Vulnerability	The system's susceptibility to negative consequences.
Vulnerability Function	A mathematical function that describes the relationship between the intensity of a hazard and the percentage loss or damage to a specific element. This is contrasted with a fragility function, which is the relationship between the intensity of a hazard and the probability of loss or damage to a specific element.
Vulnerable Populations	Individuals or collectives that have characteristics that would traditionally represent a lower adaptive capacity or ability to cope and respond to different events.

1.1 Whakatakinga | Introduction

Climate change poses significant and increasing risks to the Buller District. The coastal communities, settlements on the flood plain, the built infrastructure, and natural environments are all susceptible to the changing climate and extreme weather events. Sea-level rise, coastal erosion, flooding, and other climate-related hazards are expected to worsen over time, requiring proactive planning and adaptation. These hazards also add to the cascading risk in Buller's socio-economic and political context. This risk assessment aims to identify where these impacts need attention in order to develop adaptation strategies and actions.

Risk assessments provide decision-makers with an evidence base to support and inform future planning, identifying what is known as well as what is unknown. The process for a climate change and natural hazard risk assessment is Step 4 of the Ministry for the Environment's ten-step adaptation cycle (Figure 1.1). The process incorporates the range of hazard and risk source information available and seeks to evaluate the importance and priority of these hazards and their impacts. The analysis includes what, who, and (critically) where is exposed and vulnerable to those hazards. The purpose is to enable priority areas to be identified, gaps in knowledge to be identified and evaluated for their importance, and interventions to be evaluated.

While national-level planning and frameworks are crucial, effective adaptation ultimately requires local action. The Climate Change Commission's 2024 report on adaptation progress emphasises that "existing legislative, planning, and decision-making frameworks are not well-suited to planning for and dealing with changing and uncertain risks from climate change" [3]. In this context, local risk assessments and adaptation planning become even more critical. This Buller climate change risk assessment is a key step in the district's journey towards adapting to the impacts of climate change, and an important example of local-level action in the face of national-level challenges.

Understanding risk is an ongoing process as information about hazards and the trajectory of climate change continues to update. Therefore, this report is only a snapshot of the current understanding of the risk. The Resilience Explorer, the software licensed to the Buller District Council as part of this assessment, provides a living, interactive, and detailed picture of the risk and how it changes over time. This assessment builds on previous work to understand coastal hazards and climate projections (Step 2). The risk assessment integrates this information to provide a comprehensive understanding of climate risks facing the district.

Specifically, this assessment:

- Identifies areas potentially affected by coastal hazards and climate change over at least the next 100 years, as required by Policy 24 of the New Zealand Coastal Policy Statement 2010 [5].
- Evaluates the exposure, vulnerability, and potential consequences of climate hazards on various sectors and systems within Buller.
- Considers both current and future risks under different climate change scenarios, including relative sea-level change projections specific to the district.
- Assesses social and environmental vulnerability alongside physical and economic impacts.

Māori and iwi partnership is an important part of risk and adaptation planning. However, iwi and hapū engagement was limited in the risk assessment process, with more work needed for effective partnership moving forward. The information provided through the interactive and updating dashboard (Resilience Explorer) can facilitate future planning and ongoing engagement as we work through the adaptation process.

The findings from this assessment will directly inform the next phases of the adaptation process, which include:

1. **Identify options and pathways (Step 5):** Based on the risks identified, develop a range of potential adaptation options and pathways.
2. **Evaluate options and pathways (Step 6):** Assess the effectiveness, feasibility, and potential impacts of different adaptation strategies.
3. **Develop the adaptive planning strategy (Step 7):** Create a flexible, long-term strategy that can respond to changing conditions and new information.
4. **Implement the strategy (Step 8):** Begin putting adaptation measures into practice through various planning and policy mechanisms.
5. **Monitor (Step 9) and review (Step 10):** Continuously track progress and adjust the strategy as needed based on new data and changing circumstances.

Throughout these next steps, ongoing engagement with communities, iwi/hapū, and stakeholders is necessary to ensure adaptation planning reflects local values, priorities, and knowledge.

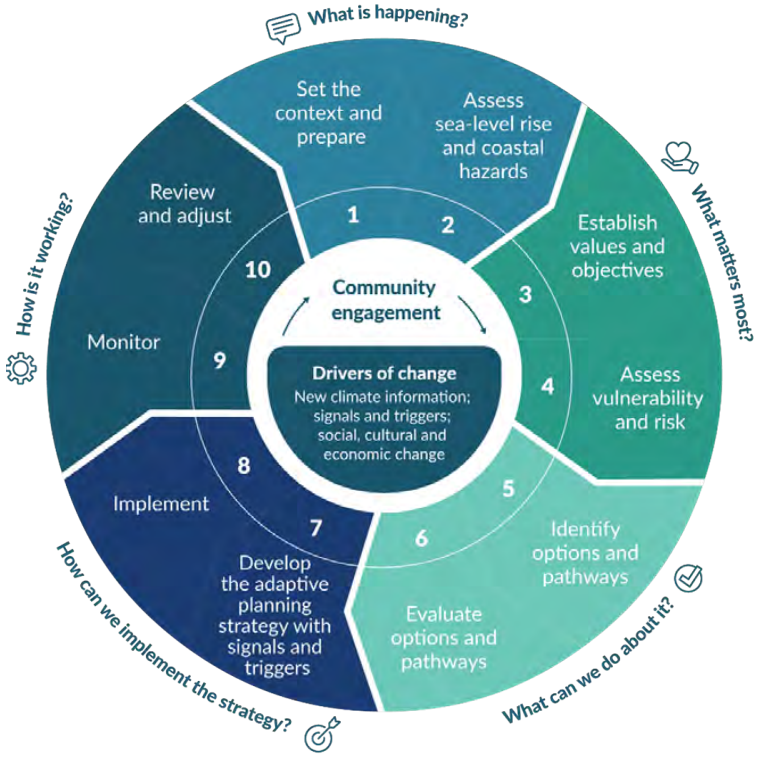


Figure 1.1: The 10-step decision cycle for coastal adaptation planning. Source: MfE [4].

2.1 Aramahi | Methodology

Our methodology for assessing climate change risk aligns with established guidance, drawing from and building upon:

- Ministry for the Environment (MfE) guidance on Local Climate Risk Assessment, Coastal Hazard Risk Assessment, and use of new sea-level rise projections
- AS/NZS ISO 31000:2009 Risk Management Standard
- ISO 14091:2021 Adaptation to climate change

This risk assessment follows best practices outlined in the Ministry for the Environment's guidance, incorporating both quantitative and qualitative methods. Key components include use of the latest climate projections and sea-level rise scenarios, consideration of multiple hazards (including coastal flooding, landslide, river flooding, and earthquakes), engagement with local communities and stakeholders to incorporate local knowledge and values, and assessment of risks across the value domains (natural environment, built environment, economy, human/social, and governance).

Risk is defined as consequence and associated uncertainty (Figure 2.1) [2]. For physical hazards, we assess risk for an event as a function of an element's exposure to a hazard, the intensity of that exposure, and the element's vulnerability. The Resilience Explorer approach considers whether an element is impacted by a hazard and to what degree. For example, a residential home's vulnerability to coastal inundation depends on factors like building materials and floor height, as well as hazard intensity (e.g., flood velocity and depth).

Additionally, we estimate indirect effects such as isolation risk. Isolation occurs when properties are cut off from critical services due to impacts on the transport network. In some areas, isolation may occur decades earlier than direct exposure because transport routes are often more exposed and vulnerable than the properties themselves [6]. Isolation provides a complementary metric to exposure.

The distribution of direct and indirect impacts between sociodemographic groups and economic sectors helps to evaluate intervention options. These groups have varying sensitivity and adaptive capacities to the hazards they may experience, which needs to be considered when prioritising adaptation actions.

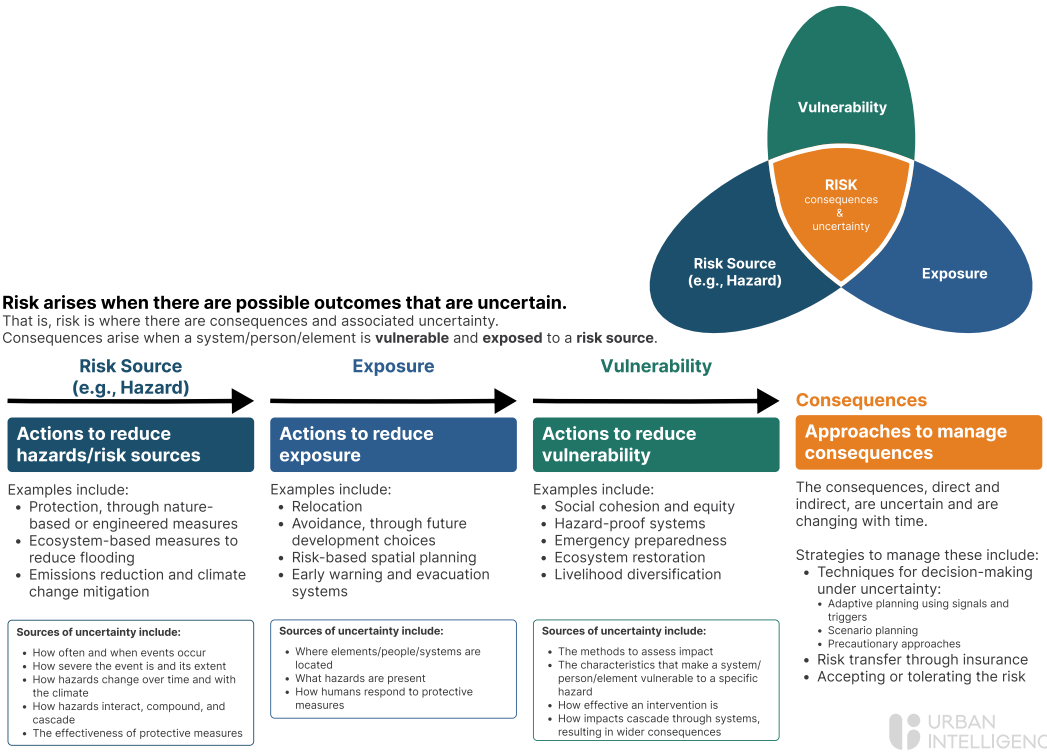


Figure 2.1: Risk conceptualisation diagram showing the relationship between risk sources, exposure, vulnerability, and consequences, including ways of managing risk by addressing each of these stages.

Our assessment process involves multiple stages:

1. Domain-specific workshops with subject matter experts in the district to inform both quantitative and qualitative understanding of risks across domains. Table 2.1 provides a list of workshop attendees and invitees.
2. District-level conversations with community stakeholders and leaders to discuss quantified physical risks and evaluate potential cascading effects between domains.
3. Detailed assessment at the locality level within the district.
4. Compilation of a district summary based on the locality-level assessments.

This report summarises the exposure risk across the district and selected localities, while detailed asset-level information about consequences and vulnerability methods is provided in the Resilience Explorer. The methodology used to derive the locality-level assessments is included in Section 4, following the local assessments.

The domain-specific workshops included a diverse range of experts from local and regional councils, iwi representatives, central government, environmental organisations, infrastructure providers, health professionals, and academic institutions. These workshops focused on identifying and assessing risks specific to each domain and exploring potential interdependencies between domains.

This risk assessment focuses on the physical risk associated with climate change and does not address transitional risks associated with the shift to a low-emissions, climate-resilient society (such as changing migration patterns, shifts in supply chains, reduced international travel, and changes in consumer preferences) or external factors (such as geopolitical tensions, disruptions to supply chains due to climate change, migration or climate refugees, and other impacts beyond the borders of Buller).

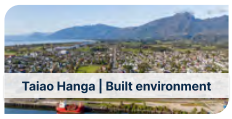
Table 2.1: Workshop Attendees and Invitees

Attendees	Invited but unable to attend
Department of Conservation	West Coast Regional Council
Tourism West Coast	KiwiRail
Ngāti Waewae	Ministry of Education
The Nature Conservancy	Buller High School
Buller District Council Staff & Elected Members	Kawatiri Youth Voice
Buller Electricity	Ministry for Primary Industries
Waka Kotahi	Talleys
National Emergency Management Agency	Westland Mineral Sands
West Coast District Health Board	World Farming Organisation
Aged Concern	Ministry for the Environment
Buller Flood Recovery	Local Government New Zealand
Home Builders	Nelson Building Society
Development West Coast	
Department of Internal Affairs	
Bathurst Resources	

2.1.1 Value Domains

Our risk assessment is structured around five value domains, consistent with the Ministry for the Environment - Manatū Mō Te Taiao guidance [7]:

Natural Environment: All aspects of the natural environment that support the full range of our indigenous species, he kura taiao (living treasures), and the ecosystems in terrestrial, freshwater, and marine environments.



Built Environment: The set and configuration of physical infrastructure, transport, and buildings.

Human: People's skills, knowledge, and physical and mental health (human); the norms, rules, and institutions of society (social); and the knowledge, heritage, beliefs, arts, morals, laws, and customs that infuse society, including culturally significant buildings and structures (cultural).

Economic: The set and arrangement of inter-related production, distribution, trade, and consumption that allocate scarce resources.

Governance: The governance architecture and processes in and between governments, and economic and social institutions. Institutions hold the rules and norms that shape interactions and decisions, and the agents that act within their frameworks.

These domains provide a framework for assessing our complex and interconnected world. Importantly, the assessment and workshops consider not only the impacts within each domain but reflect on the interconnections and cascading effects across domains.

Understanding cascading risk is critical for assessing climate change impacts. Cascading risks refer to the chain reactions of impacts that can occur across different domains and systems, often resulting in consequences that are far more severe and wide-reaching than the initial impact. For example, one quantitative way of capturing indirect risk is if a road is damaged, we consider the potential isolation of communities.

We further evaluate indirect and cascading risks through workshops with technical experts and stakeholders. Based on the identified direct and indirect risks, we explore the potential implications of these failures and how they may interact and cascade through other domains.

It is important to note that these cascading impacts can be orders of magnitude higher than direct risk alone and often relate to what communities value most. This means that actions and priorities may change significantly when cascading risks are taken into account.

Figure 2.2 provides a generic example of an impact or cascade chain that can be created through participatory workshops and hui, underpinned by relevant hazard and risk exposure mapping.

As noted in the Ministry for the Environment guidance [4], assessment of climate risks is inherently complex and uncertain. Local governments need to cope with rising risks that cascade and compound at a distance from the hazard drivers and those emerging in many different coastal areas simultaneously. This approach to risk assessment, considering cascading impacts, allows for a more comprehensive understanding of potential climate change impacts and informs more effective adaptation strategies.

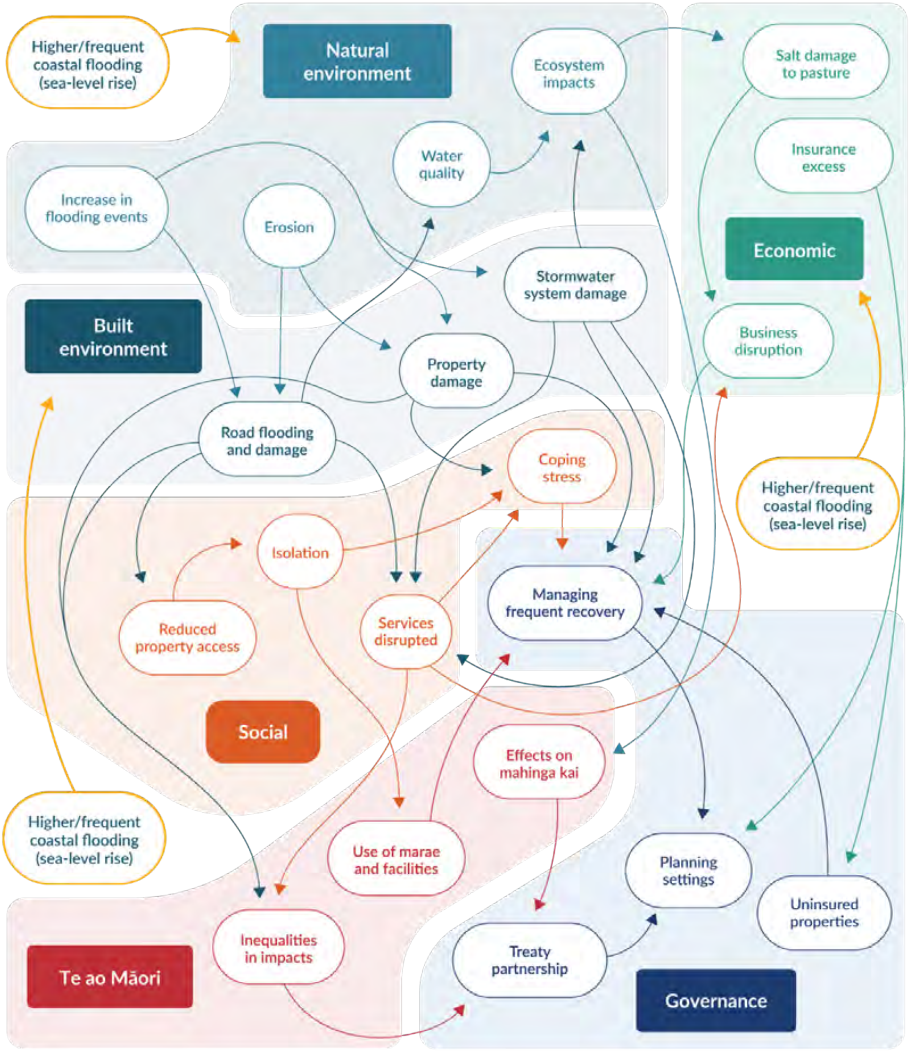


Figure 2.2: Generic example of an impact or cascades chain. Source: MfE [4].

2.2 Future Scenarios

The Shared Socioeconomic Pathways (SSPs) and Representative Concentration Pathways (RCPs) are used together in climate change planning to explore how different socioeconomic developments might impact future greenhouse gas emissions and climate change, as well as the challenges for mitigation and adaptation.

SSPs describe plausible changes in aspects of society such as demographic, economic, technological, social, governance and environmental factors. They provide narratives of potential future worlds and societies, which can be used to analyse how different socioeconomic conditions might affect the challenges for climate change mitigation and adaptation. For example, Figure 2.3 shows how selected indicators of global climate change would change under these scenarios.

RCPs, on the other hand, describe different 21st century pathways of greenhouse gas emissions and atmospheric concentrations, air pollutant emissions and land use. The RCP number (e.g., 2.6, 4.5, etc.) refers to the target radiative forcing, in watts per square meter, by the year 2100.

The combination of an SSP and an RCP allows for an integrated analysis of future climate impacts, vulnerabilities, adaptation and mitigation. For example, SSP1-2.6 combines the "Sustainability" socioeconomic pathway with a low emissions scenario (RCP2.6).

Further, newly released Sea Level Rise (SLR) projections for Aotearoa have been recommended for use with coastal hazards. The SLR and Relative Sea Level Rise (RSLR) projections are derived from the same framework used by the IPCC AR6 with the additional inclusion of climate-ocean responses, earth crustal and gravitational changes and Vertical Land Movement (VLM) rates across Aotearoa [4] . The five representative SLR projections for Aotearoa are based on four of the previous SSP scenarios and their associated local RSLR projections. As the RCPs were used to derive the SLR projections, the RCP number has been carried over. The M tells us to use the median value, or the middle of the likely range for each RSLR. The H+ tells us to use the upper bound of the likely range as it represents a plausible range and reflects the deep uncertainties around future sea levels. For coastal hazards the combination of SSPs and SLR projections is as above with the addition of a second SSP5-8.5 using the H+.

		Estimated warming range by 2100 (°C)
SSP1-1.9	A world that shifts towards a more sustainable path, focusing on inclusive development and respecting environmental boundaries.	1.0 – 1.8
SSP1-2.6 M	Similar to SSP1-1.9, but with slightly higher emissions. Still represents a sustainable pathway.	1.3 – 2.4
SSP2-4.5 M	A "middle of the road" future where trends broadly follow historical patterns.	2.1 – 3.5
SSP3-7.0 M	A future with regional rivalries, where countries focus on domestic issues due to concerns about security and competitiveness.	2.8 – 4.6
SSP5-8.5 M,H+	A world that relies heavily on fossil fuels, with rapid technological progress and development of human capital.	3.3 – 5.7

It should be noted that most guidance documents discourage the use of the SSP1-1.9 scenario, as while aspirational, is not useful for planning coastal adaptation as emissions have surpassed the RCP number.

These scenarios are used to manage uncertainty and ensure our communities and infrastructure are prepared and resilient in the face of the range of plausible futures. They are used for

- **Risk Assessment:** Scenarios allow us to understand the potential impacts of climate change on different aspects of society, such as agriculture, water resources, or public health, under various future pathways.
- **Decision Making:** By testing adaptation strategies against multiple scenarios, weaknesses in the plans can be identified and addressed. Scenarios can also be used to identify actions that are likely to be beneficial across a range of possible futures.
- **Prioritising Actions:** Scenarios can help prioritise adaptation efforts by highlighting potential hazards and their impacts.
- **Flexible Planning:** Understanding various scenarios encourages the development of flexible adaptation plans that can be adjusted as the future unfolds.

- **Resource Allocation:** By understanding potential future needs under different scenarios, resources for adaptation can be allocated more effectively.
- **Building Resilience:** By preparing for a range of possible futures, communities and systems can become more resilient to climate change, regardless of which specific scenario unfolds.

Scenarios are used when uncertainty is too great to predict with any confidence what the future might look like. Two recent surveys of international climate change experts found that more than 77% of respondents expect climate change to exceed 2.5^{o}C, aligning with the upper-end estimates of SSP2-4.5, and around half expect more than 3^{o}C of warming, aligning with SSP3-7.0 and the low side of SSP5-8.5 [8, 9]. However, recent research argues that uncertainties in planetary tipping points remain significant [10]. Therefore, it is important to be prepared for the range of potential scenarios and take adaptive and flexible approaches.

As recommended by the National Adaptation Plan, this Risk Assessment applies the SSP2-4.5 (middle of the road) and SSP5-8.5 (fossil fuel development) scenarios. For coastal hazards we have applied the most recent medium confidence scenarios and their associated SLR and RSLR projections out to 2150.

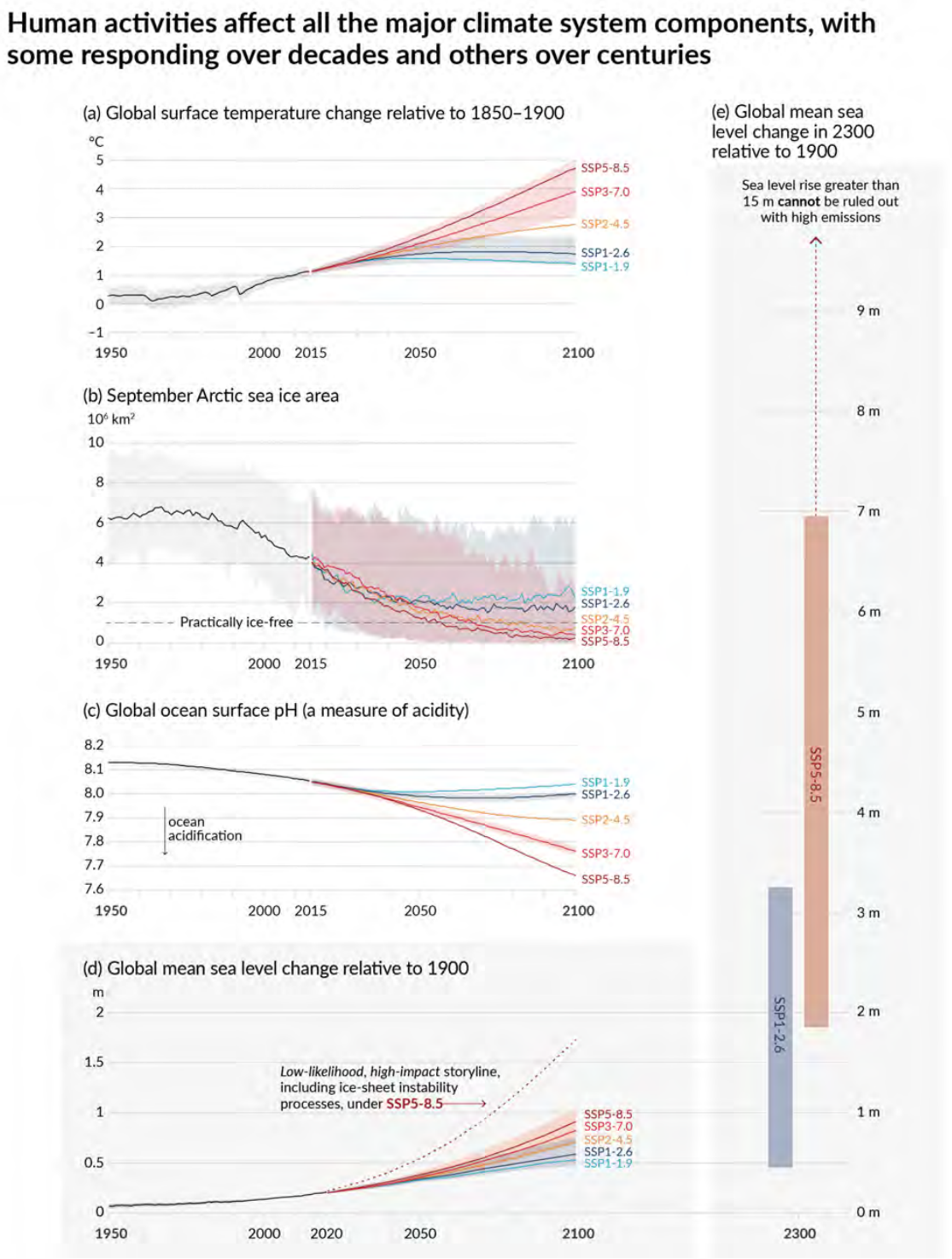


Figure 2.3: Selected indicators of global climate change under the five SSPs scenarios. Source: IPCC, AR6, 2021, WG I, Figure SPM.8 [11].

2.3 Evidence-base for Adaptation Planning - The Resilience Explorer

Adaptation planning is inherently a localised process that requires robust, area-specific risk evidence. Spatial information is critical in prioritising adaptation efforts across different areas and identifying the specific hazards that each plan must address. While this report provides a moment-in-time qualitative and quantitative assessment of climate risks across the Buller District, it cannot capture the full granularity required for localised decision-making. To address this need for detailed, location-based risk data, sitting alongside this report is the Buller Resilience Explorer (REx), an interactive, web-based platform that complements this report by enabling users to explore and visualise climate risks at fine geographic scales.

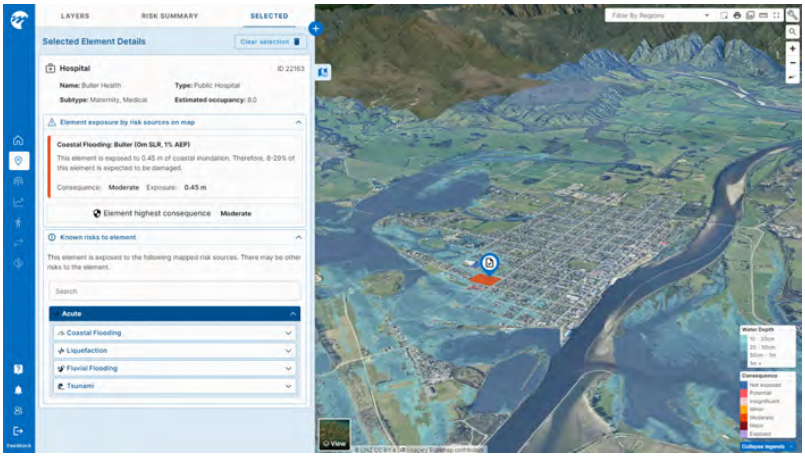
The Buller Resilience Explorer provides an updatable and interactive quantitative evidence-base for risk information that allows council staff and, in time, members of the public to drill down into specific locations, assets, and hazards, to support locally-led scenario planning and the identification of modelled adaptation signals, triggers, and thresholds. REx is designed to be a "living" platform that evolves as new data and modelling become available. Users are encouraged to provide feedback to support its ongoing refinement and to ensure it continues to meet the needs of planners and decision-makers in Buller.

2.3.1 Key Features and Applications of the Resilience Explorer

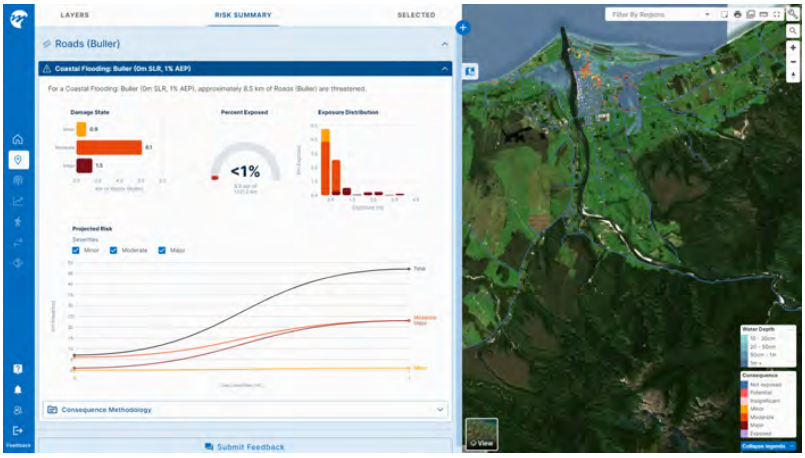
The Buller Resilience Explorer (REx) is a web-based tool designed to complement this report and support ongoing adaptation planning and stakeholder engagement. It offers several key features and applications for ongoing use through the ongoing adaptation programme:

- **Interactive Visualisation:** Users can explore interactive maps displaying exposure of assets and infrastructure to various climate hazards, examine risks at suburb and asset-specific scales, and visualise how risks may evolve under different climate scenarios and timeframes.
- **Customisable Analysis:** The platform allows for customisable queries to generate location-specific risk information and produce tailored reports for particular areas of interest.
- **Contextual Information:** REx integrates socioeconomic and demographic data, enabling users to overlay hazard information with vulnerability indicators to identify at-risk communities and inform equitable adaptation strategies.
- **Dynamic Updates:** The platform is designed to be regularly updated as new hazard modelling and asset data become available, ensuring adaptation planning is completed with the most current risk information.
- **Adaptation Planning Support:** REx aids in identifying priority areas for adaptation interventions, informs location-specific adaptation options appraisal, and can help evaluate potential impacts of proposed measures.
- **Stakeholder Engagement:** The tool facilitates engagement with affected communities by providing accessible, visual representations of climate risks and adaptation options.

(a) Resilience Explorer Home Page



(b) Asset Specific Report *(Westport Hospital)*



(c) Mapped and Statistical Summary of Element Risk *(Coastal Flooding and Westport roading infrastructure)*

Figure 2.4: Screenshots of the Buller Resilience Explorer showcasing its key features.

DISTRICT OVERVIEW

3.1 Experiences with Natural Hazards in Buller

Understanding a community's lived experiences with natural hazards is crucial when assessing and communicating climate change risks. People think about risk through the lens of their cultural and personal experiences [12]. This perspective also influences the acceptance of risk-reducing actions and behaviour changes. Therefore, Buller's experience with natural hazards provides context for this risk assessment and future adaptation planning.

In July 2021, Buller experienced what was described as the largest river flow ever recorded in New Zealand. The Buller River reached a peak flow of 7640 cubic meters per second leading to widespread inundation in Westport. Over 2000 people were evacuated, with 826 properties affected and 71 deemed unsafe due to severe damage.

Just seven months later, in February 2022, the district was hit by another significant flood event. This time, the impacts extended beyond Westport, with communities in Northern Buller also severely affected. The event caused extensive infrastructure damage and triggered multiple landslides that isolated communities by blocking roads. Coastal settlements from Granity through to Mokihinui experienced impacts of water inundation and landslips, while State Highway 67 through to Little Wanganui and Karamea was closed due to instability on the Karamea Bluff.

These recent experiences have been traumatic for residents. As evidenced by news reports, residents now face heightened anxiety with each severe weather warning [13, 14]. For many, the trauma of past floods is still fresh, and the process of recovery ongoing. One resident's statement about being "apprehensive" and another's frustration at facing another potential flood so soon after returning home illustrate the emotional toll these events have taken. Residents have reported experiencing a lower quality of life with higher levels of stress and isolation, impacting their ability to cope and return to normal [15].

The community's response to these events also demonstrates a growing awareness of flood risk and a willingness to take preventative action. For example, recent articles note residents' efforts to protect their belongings with insurance coverage because of their experiences with the Buller floods. This shows how past events have shaped individual behaviours.

However, these experiences have also led to a sense of vulnerability and, for some, a feeling of powerlessness. The repeated nature of these events has raised questions about long-term resilience and the effectiveness of current flood protection measures.

Understanding this context is crucial for several reasons:

1. Risk Perception: The community's recent experiences will significantly influence how they perceive future risk information and adaptation strategies.
2. Trust and Communication: Past events, and the response to them, will affect the community's trust in authorities and their receptiveness to future communications about climate risks.
3. Adaptation Planning: The community's lived experiences provide valuable insights into vulnerabilities and potential adaptation measures that may be more readily accepted.
4. Psychological Impacts: The ongoing stress and anxiety related to flood risk need to be considered in any adaptation planning, as mental health and wellbeing are crucial components of community resilience.

As we move forward with this risk assessment and subsequent adaptation planning, it is essential to keep these experiences in mind. They form the backdrop against which all future risk communication and adaptation efforts will be interpreted and judged by the Buller community.

However, it is also critical to consider the potential pitfalls of disaster-driven responses to natural hazards. While immediate responses to climate-related disasters are crucial, it's important to ensure that these actions align with long-term adaptation strategies. Disaster events often trigger management responses based on immediate demands from those affected. While these responses may provide short-term relief, they can risk being inefficient or even maladaptive in the long term [16].

For instance, the recently announced "quick win" projects, including the construction of flood walls and earthen bunds, illustrate short-term relief that could be inefficient in the long term [17]. Such initiatives can provide vital protection for communities in the short term, yet prove to be more costly in the long term as the construction of flood walls can lead to a false sense of security, encouraging further development in flood-prone areas. Moreover, these structures can alter flood dynamics, potentially increasing flood risk in other areas or exacerbating erosion downstream. Therefore, it's essential to evaluate these projects within the context of long-term climate change projections, other natural hazards and environmental change, and overall adaptation strategies to ensure they don't fall into the trap of disaster-driven response.

For instance, To maximise the effectiveness of both immediate and long-term responses, consider:

- Integrating short-term interventions with long-term adaptation plans
- Assessing potential unintended consequences of interventions
- Ensuring flexibility in design to accommodate future climate scenarios
- Engaging with diverse stakeholders to capture a range of perspectives and needs
- Regularly reviewing and adjusting strategies based on new climate data and adaptation research

As the Buller District proceeds with building resilience to natural events, it will be critical to balance the community's immediate needs and experiences with long-term, effective solutions. This approach should consider not only engineered defences but also natural flood management, land-use planning, and broader community resilience initiatives.

3.2 Future Climate and Natural Hazard Projections in Buller

The Buller District faces a range of natural hazards that are likely to be exacerbated by climate change. Understanding these hazards is crucial for effective climate change risk assessment and adaptation planning. Projections have been compiled from:

- Victoria University and NZSeaRise - Improved sea-level rise projections for New Zealand [18]
- NIWA - Zone 4 Regional Climate Projections [19]
- Ministry for the Environment - Climate Change Projections for New Zealand [20]

These climate-exacerbated hazards are not independent. For example, wildfires can lead to landslides and increased flooding. These "cascading hazards" mean that increased prevalence of one hazard can increase the risk from others. Understanding these hazards and their potential interactions is fundamental to developing effective adaptation strategies and building district and regional resilience to climate change.

This information provides a high-level overview of how various hazards may evolve under different climate scenarios. As recommended by the First National Adaptation Plan and the updated Coastal Hazards and Climate Change Guidance (2024), this assessment uses the SSP2-4.5 and the SSP5-8.5 scenarios. These projections involve considerable uncertainty, particularly for longer-term and higher-emission scenarios. The hazards are outlined below to provide context of risk for the different value domains and in the local assessment sections. Local variations within the district may also be significant. Ongoing monitoring and updated modelling is necessary for refining these projections over time. For example, when referring to Greater Westport, the risk assessment is discussing the adaptation area without the planned flood protections, as this modelling is still being developed.

3.2.1 Coastal Change

Sea level rise is a key driver of coastal hazards. In the Buller District, projections indicate a rise of 0.15-0.35m by 2040 and potentially over 1m by 2100 under high emissions scenarios (SSP5-8.5). Figure 3.1 illustrates the projected sea level change for the district, including changes in vertical land movement.

Coastal Flooding Coastal flooding occurs when sea levels rise above normal high tide levels due to weather events, flowing onto low-lying land. These events range from minor nuisances to widespread, costly inundation. With sea level rise, the frequency, duration, and extent of coastal flooding are expected to increase, potentially overwhelming existing coastal infrastructure.

Coastal Erosion Coastal erosion occurs when waves erode land, causing shoreline retreat. While a natural process, it can be accelerated by human activities including climate change. Rising sea levels are likely to intensify erosion as high-energy waves reach further inland.

Table 3.1: Projected Coastal Conditions for Buller District. Source: Victoria University and NZSeaRise, and NIWA [18, 19].

Hazard	2040 (SSP2-4.5)	2090 (SSP5-8.5)
Sea Level Rise	0.25m rise	0.6-1.1m rise
Coastal Erosion	• Highly variable erosion, depends on geology, tidal range, geomorphology and exposure • Areas with small tidal range more sensitive to erosion than large tidal range	

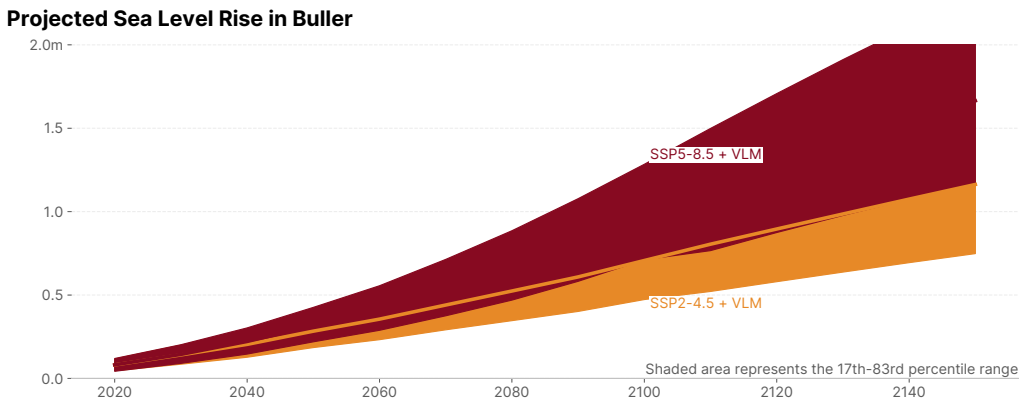


Figure 3.1: How sea level rise is expected to change, relative to vertical land movement, under SSP5-8.5 and SSP2-4.5.

Low-lying areas in Buller have already experienced an increased incidence of coastal change. The towns of Buller Bay have reported property damage, isolation with road closure, and damage to local infrastructure. The example of Granity Primary School shows how coastal erosion has slowly carved out the beachfront and crept around the school . Extreme weather events have caused significant damage to outer infrastructure, such as the school pool, or storm surges that have breached the existing sea walls and flooded the school and nearby properties. The projected coastal changes in the Buller District indicate risks to the coastal settlements due to rising sea levels, with increased flooding and erosion intensity.

3.2.2 Hydrological Change

Climate change is expected to alter precipitation patterns in the Buller District, affecting various hydrological processes. Figures 3.2 and 3.3 show the projected changes in rainfall and number of rainy days across the district.

River Flooding River (fluvial) flooding occurs when rivers overflow their banks, typically during heavy rainfall events. Climate change is expected to increase the frequency and intensity of extreme rainfall events, potentially overwhelming existing flood protection measures.

Surface Flooding Also known as pluvial flooding, this occurs when extreme rainfall overwhelms drainage systems. The intensity of extreme rainfall events is projected to increase with climate change, potentially exceeding the capacity of existing stormwater infrastructure more frequently.

Groundwater Changes Sea level rise can lead to rising groundwater levels in coastal areas and saltwater intrusion into coastal aquifers. Conversely, increased drought conditions can lead to falling groundwater levels inland.

Drought Despite projected increases in annual rainfall, the district may face increased seasonal drought risk due to higher temperatures and changes in rainfall distribution.

Table 3.2: Projected Hydrological Conditions for Buller. Source: [19]

Hazard	2040 (SSP2-4.5)	2090 (SSP5-8.5)
Rainfall	1.6% increase in average annual rainfall. Autumn rainfall could decrease 7% and winter rainfall could increase by 8%	Up to 10% increase in average annual rainfall, with a >20% increase in winter
Extreme Rainfall	13.6% increase in 1-hour duration 1% AEP rainfall	Extreme rainfalls increase +13.6% for every 1˚C increase.
Dry Days (< 1mm rainfall)	-2.7 to +2.2 change in dry days annually	5-15 more dry days annually. Decrease of 5% in relative humidity

Hydrological change in Buller is one of the district's most referenced events. The two flood events in July 2021 and February 2022 showcase how changes to hydrological processes can impact the Buller community.

The Buller flood in July 2021 had the highest recorded precipitation levels in Buller, which led to river and surface flooding in Westport. The river breached the existing flood defences and damaged 563 houses. Over 2,000 people were evacuated, and over 300 people were placed into emergency accommodation during this event. The clean-up following the event led to 2,112 tonnes of domestic waste being sent to landfill.

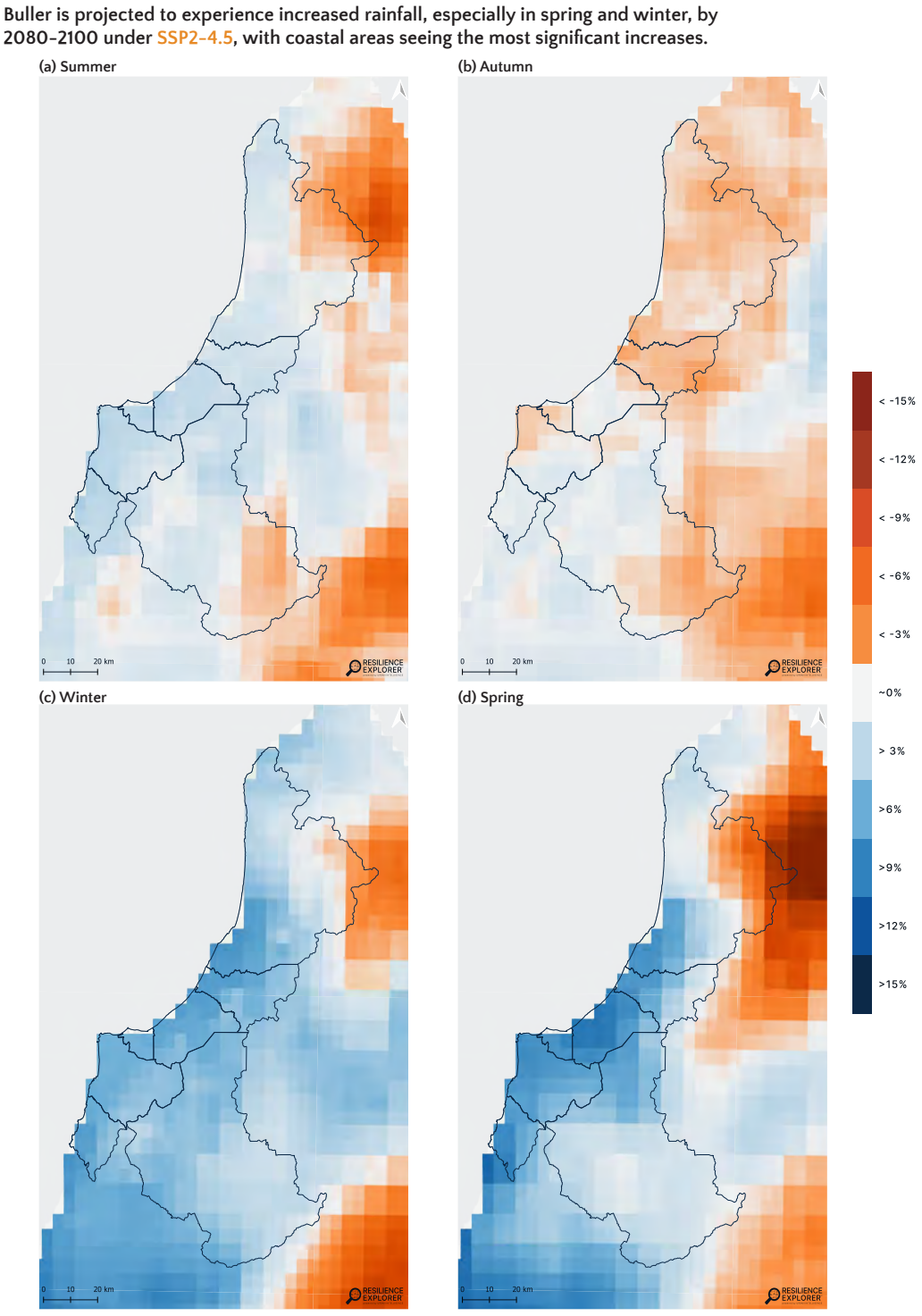


Figure 3.2: Change in average rainfall by 2080-2100 under SSP2-4.5 compared to 1995-2014 (seasonally).

Buller is projected to experience more rainy days in winter, spring, and summer by 2080–2100 under SSP2–4.5 , with fewer rainy days in autumn.

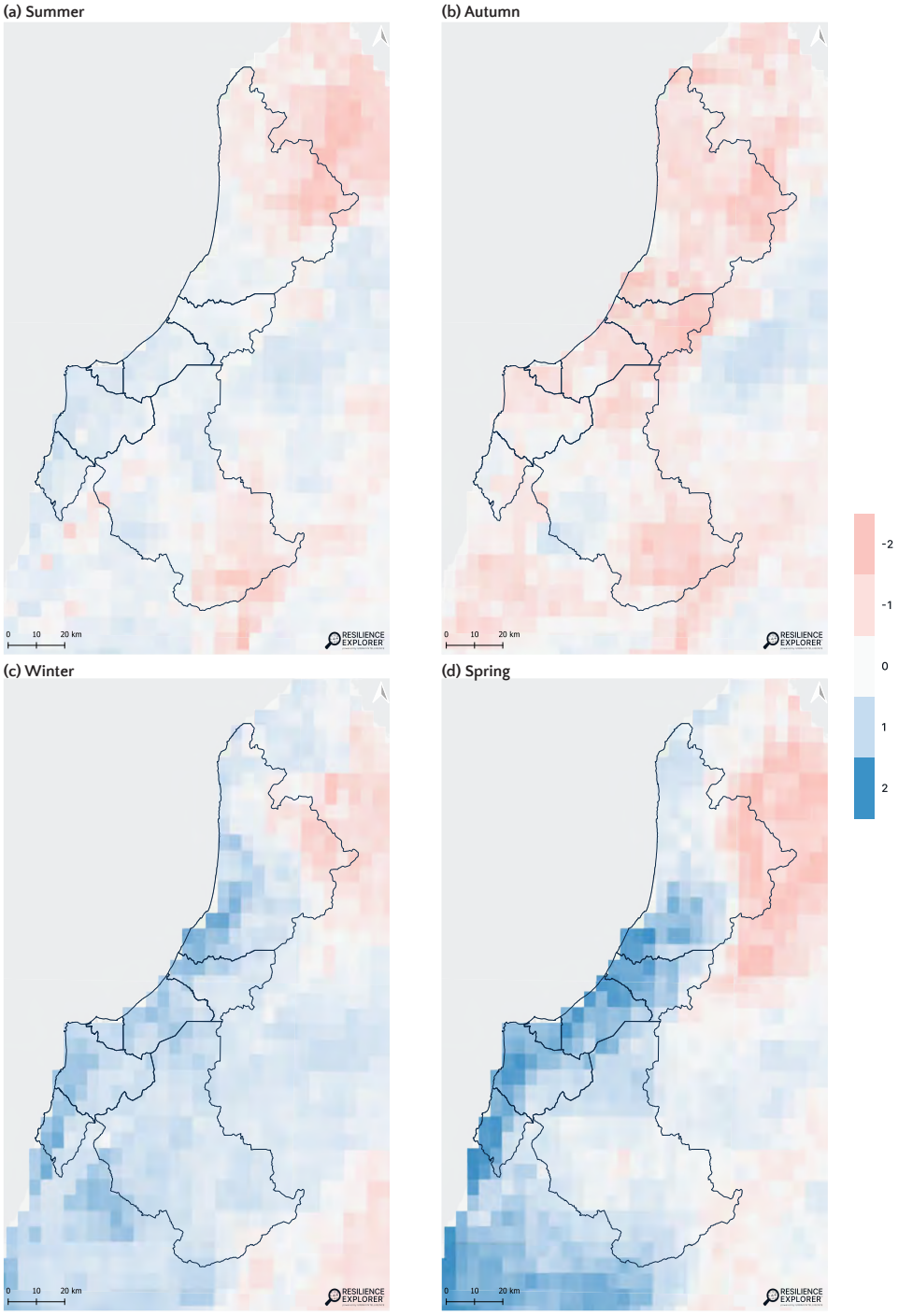


Figure 3.3: Change in the number of days with rain above 1 mm by 2080-2100 under SSP2-4.5 compared to 1995-2014 (seasonally).

The subsequent flood event in February 2022 was a combination of two weather events, but the severe impacts were exacerbated by prior damage from July. The first February event caused widespread local flooding in Westport, with road closures and some inundation of properties. The second February flood caused extensive damage throughout the Buller District, affecting communities from Springs Junction to Punakaiki and communities north of Mokihinui. The Karamea Highway was cut off for five days, and the rural communities along the Mokihinui, Inangahua and Maruia Rivers were at risk due to the rivers breaching their banks.

The increased precipitation also caused major slips due to saturated grounds, which were ongoing after the event. Major infrastructure damage caused severe issues to the Westport and Waimongaroa water supplies, which affected the services to at least 4,500 residents. Around 200 households were evacuated throughout both events, as well as other households that self-evacuated. MPI Rural Welfare Checks reported 10 properties with critical damage, 24 with severe damage, and 25 with moderate damage. In the residential zone, 27 homes were severely impacted. The amount of waste from the clean-up is unknown.

Climate change is expected to increase the intensity and frequency of rainfall events, demonstrating how the Buller District is susceptible to shifts in precipitation patterns and hydrological processes, including groundwater changes.

Shallow and rising groundwater was identified as a potential hazard for the township of Westport. With shallow and rising groundwater there is potential for substantial social and economic damages including road and property flooding, damage to waste and storm water networks, underground infrastructure [21]. As well as being a potential driver of liquefaction, rising groundwater can lead to inland flooding associated with sea level rise, as hydrologically connected areas inland can flood prior to inundation or surface flooding along the coast [21].

A conceptual model for Westport's groundwater was developed in 2023 by Aqualinc.The model indicated shallow groundwater (0 – 300mm below ground level) in the northern most parts of the township, to the east of Orowaiti Lagoon, and in parts of Carters Beach. Groundwater tended to be >2m below ground level south of Brougham Street, increasing in depth with distance south. Aqualinc is currently confirming the steady state and hydrodynamic groundwater models for the wider Westport area.

3.2.3 Geological Hazards

Geological hazards can be influenced by both tectonic activity and climate-related factors. Climate change is expected to exacerbate certain geological risks, particularly those sensitive to changes in rainfall and groundwater conditions, leading to the potential loss of services, damaged infrastructure and isolation of communities.

Landslides Landslides involve the downward movement of rock, soil, and debris on slopes. While already common in New Zealand, landslide risk is expected to increase with more frequent intense rainfall events predicted under climate change scenarios. For example, following the extreme rainfall in February 2022, landslips resulted in road closures to the Karamea Highway, isolating communities in northern Buller. While the road was reopened, the highway is still under repair in 2024, with some sections operating as a single lane.

Liquefaction Primarily associated with earthquakes, liquefaction risk can be influenced by groundwater levels. Climate change may alter these levels through sea level rise and changes in precipitation patterns, potentially affecting liquefaction susceptibility in some areas.

Earthquakes While already common in New Zealand, earthquake risk can trigger cascading hazards such as landslides, liquefaction, tsunamis, and river dams. Climate change may effect how these risks

impact Buller, specifically with regard to where liquefaction, landslides or river dams may occur.

- **The 1929 and 1968 Earthquakes** Historically, the Buller District has experienced two large earthquakes: the 1929 Murchison event and the M7.2 Inangahua earthquake in 1968. The 1968 Inangahua earthquake caused widespread damage throughout the district with landslides, slumping and fissuring of the embankments. The damage to the road and railway network significantly disrupted access to the Buller District, with closures lasting up to ten weeks. Additionally, a rockfall avalanche blocked the Buller River and began forming a lake about 8km long in the Upper Buller Gorge. If repeated, hazards such as this could contribute to significant flood events throughout the Buller District.
- **Alpine Fault Magnitude 8(AF8)** The AF8 is the scenario developed to assess the possible consequences of a magnitude 8.2 rupture on the Alpine Fault. Figure 3.4 illustrates an estimated AF8 scenario. The Alpine Fault has an estimated 75% probability of occurring in the next 50 years. The direct impacts of an AF8 event could include ground ruptures damaging or destroying buildings, pipelines and the roading network, liquefaction in sandy areas, and landslides, especially close to the fault line and through the mountain ranges. Landslides can also create dams across rivers or increase the river's sediment load, both of which would impact future flood risk.

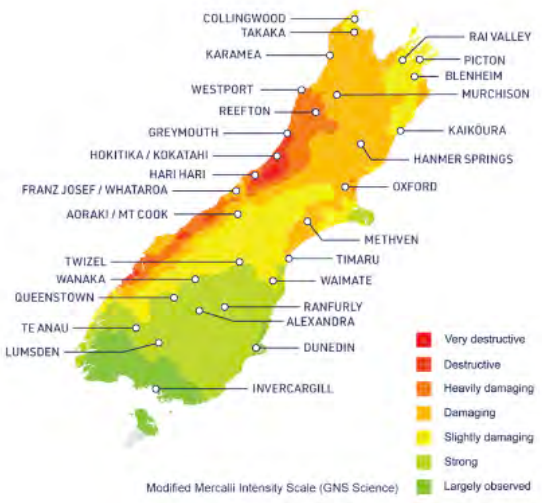


Figure 3.4: Predicted impact of an Alpine Fault Magnitude 8+ earthquake. Source: GNS Science

3.2.4 Climatic Conditions

Climate change is expected to significantly alter temperature patterns and extreme weather events in the Buller District. Figures 3.5 and 3.6 illustrate the projected changes in temperature and windy days across the district. The available data for climatic conditions is at the regional scale, with Buller District being part of Zone 4 - Northern South Island.

Extreme Temperatures Both hot days and cold snaps can pose risks. Projections indicate an increase in hot days and a decrease in frost days for the district.

Wildfire The risk of wildfires is expected to increase with hotter, drier summer conditions and potentially longer fire seasons.

Extreme Wind Events While changes in average wind conditions are expected to be minimal, there may be an increase in extreme wind events.

Marine Temperature Ocean temperatures are projected to increase, which can have significant impacts on marine ecosystems and coastal processes.

Ocean Acidification As atmospheric CO_2 levels rise, more CO_2 is absorbed by the ocean, leading to increased acidity. This will have significant impacts on marine life, particularly organisms with calcium carbonate shells or skeletons.

Table 3.3: Projected Climatic Conditions for Buller District (Zone 4) [19]

Hazard	2040 (SSP2-4.5)	2090 (SSP5-8.5)
Temperature	Up to 1.2°C increase in annual average temperature	2.8-3.1°C increase in annual temperature
Hot Days (>25°C)	0-18 more hot days annually	5-35 more hot days annually
Frost Days (<0°C)	10-30 fewer frost days annually	At least 50-75 fewer frost days for Southern Alps
Wildfire	Increased risk with 0-400% increase in days with very high and extreme fire danger	Significantly increased risk with more than 44-48 additional days of very high and extreme fire danger
Wind	Up to 10% increase in extreme wind. Negligible change in number of windy days.	Frequency of extreme winds is likely to increase in winter and decrease in summer.
Marine Temperature	0.8°C increase in sea surface temperatures	At least 2.5°C increase in sea surface temperatures
Ocean Acidification	pH decrease to 7.98	pH decrease to 7.77
Hail	Although storm intensity is expected to increase, there is limited understanding of changes to hail	

The projected changes to the climatic conditions in Buller show an increase in annual temperature with more hot days. The changes to average wind conditions will be minimal; however, there is an increased risk of extreme wind events. Wildfire risk is also expected to increase, which can be exacerbated by the extreme temperatures and wind events. Buller District has two special risk areas that potentially contribute to fire risk during high conditions: Charleston with high levels of mānuka and gorse, and Reefton, due to the forestation.

Projected average temperatures across Buller show widespread increases by 2080–2100 under SSP2–4.5., with inland areas experiencing the greatest increase.

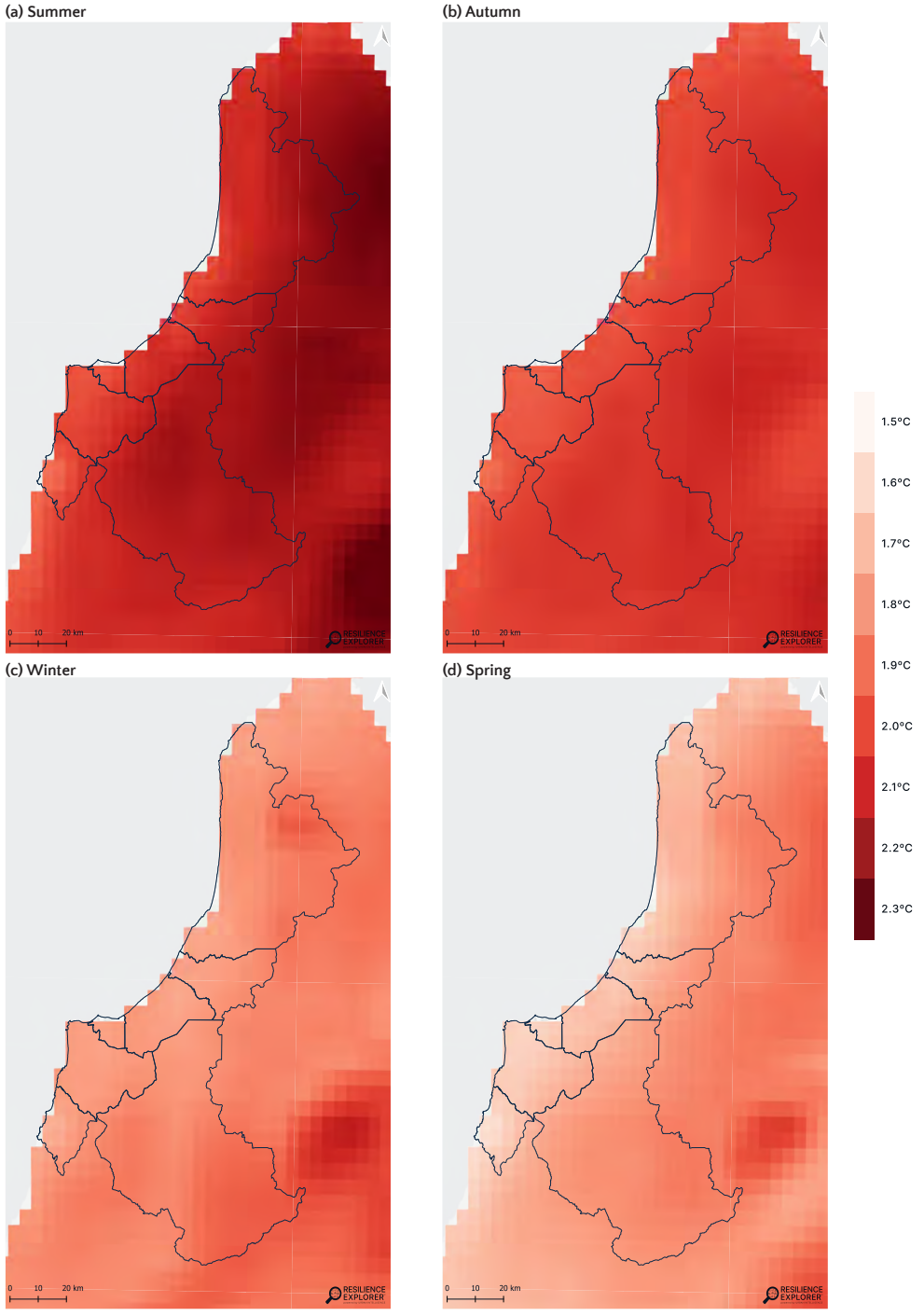


Figure 3.5: Change in average temperature by 2080-2100 under SSP2-4.5 compared to 1995-2014 (seasonally).