

## **In-confidence**

Office of the Minister of Climate Change

Cabinet Economic Development Committee

## **Publishing the National Adaptation Plan**

### **Proposal**

- 1 This paper notes my intention as Minister of Climate Change to publish the attached document no later than 3 August 2022, in accordance with statutory requirements under the Climate Change Response Act 2002 (CCRA). The attached document contains:
  - 1.1 Aotearoa New Zealand's long-term adaptation strategy (the Strategy)
  - 1.2 the first national adaptation plan (the Plan)
- 2 I am also seeking agreement to governance arrangements to drive implementation of the Plan.
- 3 Subject to any final changes, the attached Strategy and Plan will be published and presented to the House of Representatives by the statutory deadline of 3 August 2022.

### **Relation to government priorities**

- 4 Enabling a just transition to a climate resilient future is a Government priority. This was emphasised by the Cabinet Business Committee when noting the intention to "put the climate at the centre of government decision-making" and agreeing that "climate change requires decisive action by all levels of government, the private sector and communities" [CBC-20-MIN-0097].
- 5 The Plan will also deliver on the Labour and Green Parties' agreement to achieve the purpose and goals of the CCRA.

### **Executive Summary**

- 6 New Zealand has significant existing exposure to natural hazards. Climate change is exacerbating the risk of many of these hazards, including flooding and drought, and generating new risks such as sea-level rise.
- 7 Approximately one in seven people across New Zealand live in areas that are prone to flooding. This amounts to over \$100 billion worth of residential

buildings<sup>1</sup>. The annual cost of repairing land transport networks damaged by weather-related events has more than quadrupled over the past decade.<sup>2</sup>

- 8 The 2019 amendments to the CCRA brought climate adaptation into the purpose of the Act for the first time and set out a framework for climate change adaptation. They established a requirement for a Risk Assessment and national adaptation plans to be produced on recurring six-year cycles.
- 9 A Risk Assessment assesses the risks and opportunities faced by the effects of climate change. The first Risk Assessment was published in August 2020 and identified 43 priority risks New Zealand will face from climate change (Appendix 2). The national adaptation plan must respond to these most significant risks. It does so through a mix of current and proposed actions.
- 10 As the Minister of Climate Change, I have a statutory obligation to publish the Plan no later than 3 August 2022. Together, the national adaptation plan and the emissions reduction plan, published in May 2022, will drive the changes needed to achieve a climate-resilient and low emissions New Zealand.
- 11 The Plan also outlines the Government's long-term adaptation strategy. The broader strategy aims to a) reduce vulnerability to the impacts of climate change, b) enhance adaptive capacity and consider climate change in decisions at all levels, and c) strengthen resilience to climate change.
- 12 In April 2022, Cabinet agreed to publicly consult on the draft Plan. Consultation ran from 27 April to 3 June. Key themes from consultation included:
  - 12.1 a request for greater urgency on climate adaptation action
  - 12.2 the dependency on access to meaningful climate hazard and risk information to enable New Zealanders to build resilience
  - 12.3 interest in measures to stop increasing exposure in risky places during the transition to new resource management system
  - 12.4 seeking more action to unlock investment in climate resilience
  - 12.5 strong interest from submitters, particularly local government, business and Māori, in being involved in designing and implementing actions.
- 13 In response to feedback from public consultation, the Plan provides greater detail on how the actions drive the whole system to deliver climate adaptation in the short, medium and long term. It prioritises the following areas for the next six years:
  - 13.1 enabling New Zealanders to make better risk-based decisions

<sup>1</sup> Paulik, R., Craig, H., & Collins, D. (2019). New Zealand Fluvial and Pluvial Flood Exposure. Deep South National Science Challenge Report prepared by NIWA.

<sup>2</sup> Boston J, Lawrence J. 2018. Funding climate change adaptation: The case for a new policy framework. Policy Quarterly 14(2): 40–49. Retrieved from <https://doi.org/10.26686/pq.v14i2.5093> (9 July 2020).

- 13.2 driving climate-resilient development in the right locations
- 13.3 adaptation options, including managed retreat
- 13.4 embedding climate resilience across Government strategies and policies.
- 14 The action to *reform the resource management system* will play an essential role in ensuring future development occurs in the right places. There are also some near term changes that will help to drive development in the right places during the transition to the reformed system.
- 15 A formal oversight and coordination function for the Plan is necessary to provide accountability for implementation across government, improve coordination within central government and ensure cross-agency support for adaptation action.
- 16 I seek agreement that relevant Ministers and public service chief executives be responsible for overseeing progress of the specific actions that fall under their respective Ministerial portfolios, where those actions have the necessary Cabinet approval and budget funding.
- 17 Cabinet has agreed to formalise the Climate Change Chief Executives Board as an Interdepartmental Executive Board (IEB) under the Public Service Act 2020 [CAB-22-MIN-0055.01].
- 18 I propose expanding the functions of the IEB to:
  - 18.1 report to the Prime Minister annually on the overall implementation of the Plan
  - 18.2 report to the Prime Minister every two years on the sufficiency of actions in addressing the risks within the scope of the Plan.
- 19 As a result, I am recommending the remit of the IEB to be expanded to include:
  - 19.1 the Department of Internal Affairs
  - 19.2 the National Emergency Management Agency.

## Background

*We are experiencing the exacerbating impacts of climate change and need to act now*

- 20 New Zealand has significant existing exposure to natural hazards. Climate change is exacerbating the risk of many of these hazards, including flooding and drought, and generating new risks such as sea-level rise.
- 21 Approximately one in seven people across New Zealand live in areas that are prone to flooding. This amounts to over \$100 billion worth of residential

buildings<sup>3</sup>. The annual cost of repairing land transport networks damaged by weather-related events has more than quadrupled over the past decade.<sup>4</sup>

- 22 The exacerbating impacts of climate change are already upon us. In July 2021, severe flooding in Buller caused damage to 826 properties. Less than six months later, a week-long state of emergency was declared in Tairāwhiti after parts of the region received 450mm of rain over 48 hours. Many people had to be evacuated amidst serious damage to roads and properties. These events are a stark reminder of our changing climate reality.
- 23 We are also aware of future risks. For example, South Dunedin is a densely populated area, vulnerable to flood events due to low-lying topography and proximity to the water-table. Nearly 2,700 of South Dunedin homes lie less than 50cm above the spring high-tide mark<sup>5</sup>. The IAG estimated the economic damage of South Dunedin's last major flood event in 2015 at \$64m.
- 24 Flooding is just one impact we face from climate change. Increased wildfire risk, and longer-term drought and sea-level rise will increasingly affect all communities and all sectors.
- 25 The Government is taking action to reduce emissions domestically. The first emissions reduction plan, published in May this year, set out the actions we will take to meet our emissions budgets and put us firmly on the trajectory to meet our 2050 emissions reduction targets.
- 26 Despite this, we know a certain amount of climate change is inevitable due to historic and current global emissions. New Zealand's communities, assets, infrastructure and taonga are increasingly exposed to the risks and impacts of natural hazards and climate change.

### **An effective adaptation response requires proactive and planned action**

- 27 The CCRA sets out a framework for ongoing risk assessment and national adaptation plans to respond to our changing climate reality
- 28 The 2019 amendments to the CCRA were a turning point for climate adaptation in New Zealand. We've taken proactive steps to prepare for the inevitable impacts of climate change.
- 29 These amendments brought climate adaptation into the purpose of the Act for the first time and set out a framework for national climate change adaptation policy. They established a requirement for a Risk Assessment and national adaptation plans to be produced on recurring six-year cycles.

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<sup>3</sup> Paulik, R., Craig, H., & Collins, D. (2019). New Zealand Fluvial and Pluvial Flood Exposure. Deep South National Science Challenge Report prepared by NIWA.

<sup>4</sup> Boston J, Lawrence J. 2018. Funding climate change adaptation: The case for a new policy framework. Policy Quarterly 14(2): 40–49. Retrieved from <https://doi.org/10.26686/pq.v14i2.5093> (9 July 2020).

<sup>5</sup> PCE, 2015. Preparing New Zealand for rising seas: Certainty and Uncertainty. Wellington: Parliamentary Commissioner for the Environment

- 30 A Risk Assessment assesses the risks and opportunities faced by the effects of climate change. The first Risk Assessment was published in August 2020 and identified 43 priority risks New Zealand will face from climate change (Appendix 2). The ten most significant risks, based on urgency, are risks to:
- 30.1 coastal ecosystems due to ongoing sea-level rise and extreme weather events
  - 30.2 indigenous ecosystems and species from the enhanced spread, survival and establishment of invasive species
  - 30.3 social cohesion and community wellbeing from displacement of individuals, families and communities
  - 30.4 exacerbating existing inequities and creating new and additional inequities due to differential distribution of climate change impacts
  - 30.5 governments from economic costs associated with lost productivity, disaster relief expenditure and unfunded contingent liabilities
  - 30.6 the financial system from instability
  - 30.7 potable water supplies (availability and quality)
  - 30.8 buildings
  - 30.9 maladaptation across all domains due to practices, processes and tools that do not account for uncertainty and change over long timeframes.
  - 30.10 that climate change impacts across all domains will be exacerbated because current institutional arrangements are not fit for adaptation.
- 31 The national adaptation plan must respond to these most significant risks. As a six-year plan, it does so through a mix of current and proposed actions.
- 32 Proposed actions do not currently have defined policy solutions or dedicated funding. The Plan clearly identifies whether actions are current (critical or supporting) or if they are proposed. Ongoing commitment from Ministers will be needed to develop and test any proposed actions that fall under their portfolios.
- 33 The majority of actions contained in the Plan are owned by central government and statutory entities. However, some will be delivered by other actors. These include:
- 33.1 Transpower's action to *develop and implement a Transpower Adaptation Plan*
  - 33.2 NIWA's action to *provide access to the latest climate projections data*
- 34 The inclusion of these actions recognise that the Plan is the first of many and highlight the broader adaptation efforts already underway. Although not central

government owned, these actions have defined ministerial accountability (refer BRF-1552).

35 The CCRA requires that the Plan set out:

- 35.1 the Government's objectives for adapting to the effects of climate change
- 35.2 the Government's strategies, policies, and proposals for meeting those objectives
- 35.3 the time frames for implementing the strategies, policies, and proposals
- 35.4 how the matters in paragraphs (a) to (c) address the most significant risks identified in the most recent national climate change risk assessment
- 35.5 the measures and indicators that will enable regular monitoring of and reporting on the implementation of the strategies, policies, and proposals.

*Cabinet and Ministers have provided direction to guide the development of the national adaptation plan*

- 36 In March 2021, Cabinet agreed in-principle to the strategic direction for the first Plan [CAB-21-MIN-0084], subject to further refinements following engagement and consultation.
- 37 In October 2021, the Climate Response Ministers Group (CRMG) agreed the scope of the first Plan should include all 43 risks identified in the Risk Assessment and directed officials to include an additional risk to telecommunications and digital infrastructure.
- 38 In March 2022, Cabinet agreed changes to the strategic direction for the Plan, and the consultation document *Adapt and thrive: Building a climate-resilient Aotearoa New Zealand* was approved for public consultation.
- 39 In March 2022, Cabinet also agreed to reference the concepts of the Rauora framework in the Plan, including an explanation of how those concepts align with the Plan. I intend to retain this reference in the Plan for publication.

## **Analysis**

***This first National Adaptation Plan is the first step in our planned pathway to climate resilience***

- 40 This first Plan also outlines the Government's long-term adaptation strategy. The adaptation strategy is set out in the first chapter of the document and consists of a vision, purpose and goals.



- 41 The goals of the adaptation strategy, and examples of actions in the Plan that give effect to those goals, are set out below:

41.1 reducing vulnerability to the impacts of climate change

41.1.1 Actions to *reform the resource management system, reduce and manage the impacts of climate hazards on homes and buildings and pass legislation to support managed retreat* will help to reduce vulnerability by limiting inappropriate development in high-risk areas and reducing current exposure

41.2 enhance adaptive capacity and consider climate change in decisions at all levels<sup>6</sup>

41.2.1 Actions to unlock investment and provide information and *guidance* will enhance adaptive capacity and support a range of audiences to understand and manage their climate risk

41.3 strengthening resilience to climate change

41.3.1 Actions to improve the ability of the emergency management system to respond to more frequent and severe climate events will strengthen our resilience to climate change. Additionally, *develop guidance for assessing risk and impact on physical assets and the services they provide* will support critical asset owners to maintain levels of service during climate events.

- 42 Monitoring and reporting will be important for ensuring the actions in the first Plan are effective in making progress towards these goals. The Climate Change Commission have a statutory obligation to report on the Plan's implementation and effectiveness every two years. I seek your agreement to cross-Ministerial co-ordination and accountability later in this paper.

***New Zealanders have had an opportunity to provide feedback on the draft plan. Public consultation is a statutory requirement set out in the CCRA.***

- 43 Consultation on the draft Plan ran from 27 April to 3 June 2022. Officials hosted a series of workshops and webinars, supported by targeted summary material. Targeted sessions were held with local government, Pacific communities, businesses and academics.

- 44 Officials also partnered with Ihirangi (the operational arm of the National Iwi Chair's Forum Pou Take Āhuarangi climate group) to run a series of webinars with iwi and Māori on the Plan.

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<sup>6</sup> The IPCC define adaptive capacity as the ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities or to respond to consequences.

- 45 There were 294 submissions made on the draft Plan. Submitters included individuals, local government, NGOs/registered charities, business, iwi/Māori, Pacific communities, industry bodies and researchers/scientists.
- 46 Key themes from consultation included:
- 46.1 a request for greater urgency on climate adaptation action
  - 46.2 the dependency on access to meaningful climate hazard and risk information to enable New Zealanders to build resilience
  - 46.3 interest in measures to stop development in risky places during the transition to new resource management system
  - 46.4 seeking more action to unlock investment in climate resilience
  - 46.5 strong interest in being involved in designing and implementing actions, especially from local government, business, and Māori, especially actions relating to managed retreat.
- 47 Local government have a critical role to play in managing climate risk and planning for the future. In addition to the themes above, we have heard from local government that they have struggled to consistently give effect to their current legal obligations.
- 48 Some communities, groups and sectors will be disproportionately impacted by a changing climate: Māori, Pacific communities, people with disabilities, low-income earners, older people, rural communities and youth.
- 49 190 submitters (64 percent) identified as belonging to or representing a group disproportionately impacted by climate change. Key themes from these groups included:

**Table 2: key themes from disproportionately impacted submitters**

<b>Māori</b>	Submitters highlighted the importance of kaitiakitanga, and the increased vulnerability of Māori communities to the impacts of climate change. They noted challenges to participate in multiple and complex engagement processes. Submitters sought equitable resourcing and involvement in the implementation of the Plan. There was strong support for the Rauora Framework.
<b>Pacific communities</b>	Submitters focused on ensuring a holistic approach to identifying and avoiding unintended negative consequences resulting from adaptation, particularly for vulnerable communities likely to be disproportionately impacted by change.
<b>Children/rangatahi</b>	submitters focused on intergenerational education on climate change and its impacts, and opportunities to be involved in planning, and implementation of adaptation
<b>People with disabilities</b>	highlighted the lack of a detailed evidence base on implications for disabled people of climate change. Noted the importance of accessibility to safe homes and transportation, and their heightened vulnerability in emergency situations.



<b>Older or retired people</b>	noted that increasing building standards can help reduce the risks older people face from climate change. There were calls for government insurance schemes to target low-income groups, including older people, and for central government to assist in relocating communities.
<b>Rural communities</b>	sought strong central government funding and leadership to support them.

***The Plan focuses action and reflects submitters' calls for a greater sense of urgency***

- 50 In June 2022, Climate Response Ministers considered themes emerging from submissions and provided direction that the Plan needed a more integrated roadmap of actions to drive adaptation through the whole system.
- 51 The Plan has been updated to focus on four main priorities:
- 51.1 enabling New Zealanders to make better risk-informed decisions
  - 51.2 driving climate-resilient development in the right locations
  - 51.3 adaption options, including managed retreat
  - 51.4 embedding climate resilience across Government strategies and policies.

***Enabling better risk-informed decisions***

- 52 Feedback from public consultation (particularly local government) highlighted the need for accessible climate hazard and risk information to enable New Zealanders to build resilience. No two communities will experience climate change in the same way. Impacts will be felt differently by different people and in different regions.
- 53 Actions in this priority area will provide access to data, information, tools, and guidance to support communities and organisations to adapt. They will also support us to achieve our longer-term goal to enhance adaptive capacity.
- 54 The Plan contains 36 actions that will enable better risk-based decisions. In particular, the rolling programme of guidance will deliver non-statutory guidance to enable decision makers to assess and manage climate-related risks.
- 55 Central government's role in providing centralised, standard guidance, information and data to enable better decision-making is strengthened. The risk and resilience and climate adaptation information portals aim to address current challenges of using, translating, and accessing climate and hazard risk data by making it easier to find and understand. This is critical for current and long-term natural hazard risk management and climate adaptation.

- 56 9(2)(f)(iv) [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

*Driving climate-resilient development in the right locations*

- 57 Public consultation also identified the need to manage future risk by limiting development in risky places.
- 58 I have updated key sections of the draft Plan since the draft was released for consultation. In particular, the Plan now includes a more detailed explanation about how the reformed resource management system will clarify roles and responsibilities for central and local government and drive better outcomes for climate adaptation.
- 59 The action to *reform the resource management system* will play an essential role in ensuring future development occurs in the right places.
- 60 The National Planning Framework will set clear direction for local authorities to guide them in how to achieve the climate resilience outcomes in the Natural and Built Environments Act. Though providing frameworks and methodologies for determining risk levels, a barrier to planning response to the current and future effects of climate change will be reduced.
- 61 This will flow through to Regional Spatial Strategies which will identify areas that are inappropriate for development, and into Natural and Built Environment Plans which will include policies and rules for resource and land use in a region.
- 62 Local government already has a comprehensive legal framework of responsibilities in relation to managing risk from natural hazards.
- 63 To help build understanding of these existing local government statutory duties and functions in relation to climate change adaptation; The Plan sets out the most significant of these, including responsibilities for:
- 63.1 the avoidance or mitigation of natural hazards through land-use planning
  - 63.2 emergency management
  - 63.3 asset management and the construction and maintenance of flood protection schemes
  - 63.4 building controls and standards.
- 64 To help councils with these responsibilities, the Plan includes some near term actions that will help to drive development in the right places during the transition to the reformed system. The first step in ensuring development is located in the right place is assessing the climate related risks.
- 65 The action to *Improve natural hazard information on Land Information Memoranda (LIM)* will help people make well-informed decisions about natural hazard risk when buying a property and will give councils greater certainty about information to include on land information memoranda. The action to *Provide access to the latest climate projections data* will give New Zealanders the regional and local climate projections data they need to assess future climate risk and make adaptation decisions.

- 66 Amendments to the Resource Management Act 1991 (RMA), commencing on 30 November 2022, will provide that councils must “have regard to” the Plan when making or changing regional policy statements or regional or district plans<sup>7</sup>.
- 67 Given this, I propose to reference best-practice climate change scenarios for local government plan making and hazard/risk assessments in the national adaptation plan.
- 68 When making or changing policy statements or plans under the RMA, including to give effect to the provisions of the NZCPS, councils should use the recommended climate change scenarios outlined below.
- 69 As a minimum:
- 69.1 to screen for hazards and risks in coastal areas, use Shared Socioeconomic Pathway scenario for fossil fuel intensive development (SSP5-8.5 H) where available, or Representative Concentration Pathway RCP8.5<sup>8</sup>, to 2130
  - 69.2 for detailed hazard and risk assessments in coastal and non-coastal areas, use both the middle of the road scenario (SSP2-4.5) and the fossil fuel intensive development scenario (SSP5-8.5 H) where available, or RCP4.5 and RCP8.5, to 2130 for areas at high risk of being affected, adding the relevant rate of vertical land movement locally.
  - 69.3 for all other climate hazards and risks, use the most recent downscaled climate projections for New Zealand.
- 70 In addition, councils should:
- stress test plans, policies and strategies using a range of scenarios recommended in the interim guidance on the use of new NZSeaRise sea-level rise projections [placeholder for link] and Risk Assessment Framework as relevant to the circumstance.
- 71 Coastal hazard and risk screening assessments need to use upper-range sea-level rise projections (SSP5-8.5) to ascertain which coastal areas are potentially affected. Using this high emissions scenario ensure screen for high climate change impacts due to ongoing fossil fuelled development.
- 72 For detailed hazard and risk assessments to prioritise areas likely to be affected, the middle of the road scenario (SSP2-4.5) should be used alongside the findings from the SSP5-8.5 screening assessments, for at least 100 years.

<sup>7</sup> There is regulatory provision for this in sections 61, 66 and 74 Resource Management Amendment Act 2020.

<sup>8</sup> Representative Concentration Pathways should be used only where climate data is otherwise not reported under Shared Socioeconomic Pathways, for example downscaled regional climate projections reported in [Climate-change-projections-2nd-edition-final.pdf \(environment.govt.nz\)](#).

The middle of the road scenario is used as this scenario aligns with current global emissions reduction pledges under the Paris Agreement.

- 73 Stress-testing then evaluates the robustness, flexibility, and economic costs/benefits of the plan, strategy or adaptation option against adaptation thresholds. The additional level of detail in the stress testing is good adaptive management practice and aims to avoid under or over adaptation.
- 74 Including these scenarios in the Plan gives them some statutory weight. From 30 November 2022 (when relevant statutory provisions come into force) councils will have to have regard to the Plan when undertaking their planning functions under the RMA.
- 75 This is intended to respond to the call from local government for a stronger mandate for assessing and managing climate risk and help ensure continued action during the transition to a new resource management system. It will also support efforts to limit future development in risky places, in alignment with what we heard through public consultation.
- 76 The inclusion of these scenarios in the Plan has been informed by technical expertise and are the equivalent of those already contained in existing non-statutory guidance<sup>9</sup>, and updated for the latest science published by the IPCC in August 2021.
- 77 The scenarios have been subject to thorough discussion in New Zealand. Particularly through the development of the non-statutory guidance in 2017 and interim guidance updates which have been rigorously peer reviewed within the New Zealand scientific community. I consider this to be a robust basis to include these in the Plan now ahead of the development of the National Planning Framework.
- 78 This interim measure provides clarity for councils, particularly about how to apply the latest international projections from the Intergovernmental Panel on Climate Change (IPCC), recognising the limitations some councils will have with their capability and capacity to undertake assessments with multiple scenarios.
- 79 Interim guidance on the use of new sea-level rise projections is being published in late July and clarifies how councils should be applying the latest sea-level rise scenarios from the Intergovernmental Panel on Climate Change (IPCC) and NZSeaRise to their practice.
- 80 The technical detail of these Shared Socioeconomic Pathways (SSPs) can be found in Appendix 3 of this paper.

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<sup>9</sup> The National Climate Change Risk Assessment Framework released in 2019 provides a process and recommended climate change scenarios for undertaking high level climate change risk assessments. The Coastal Hazards and Climate Change Guidance for Local Government released in 2017 provides a process and recommended climate change scenarios for more detailed coastal risk assessments for use in adaptation and statutory planning processes

*Further measures may be needed to restrict development in high risk locations during the transition to a reformed resource management system*

- 81 The number of buildings that could be built during the transition is difficult to predict. The reforms are likely to take from 3 – 10 years to take full effect, depending on how the transition and implementation programme is rolled out. The number of building consents granted to the year ending March 2022 was 50,585. This figure was 24% higher than the year end March 2021. However, the number of buildings built in areas prone to hazard risk is likely to be a small percentage of the total number of consents as there are planning rules in place that require councils to consider the likely current and future effects of climate change and natural hazards. For example the NPSUD and the NZCPS.

- 82 9(2)(f)(iv)

*Adaptation options, including managed retreat*

- 83 Public consultation highlighted the importance of community planning for the impacts of climate change considering the full range of adaptation options, including but not limited to managed retreat even in areas of high risk.
- 84 This focus area reinforces the importance of a broad approach to community planning. The priority action *Pass Legislation to support managed retreat* will address complex technical, legal, and financial issues associated with managed retreat, to reduce or eliminate exposure to intolerable risk.
- 85 The Plan highlights how community planning processes are intended to work through the resource management system, to enable consideration of managed retreat as a potential policy response to existing intolerable risk.
- 86 Overall, there are 15 actions within the Plan that will enable a wider range of adaptive planning measures. Many of these are highly interdependent. For example, the action, *Complete case-study to explore co-investment for flood resilience*, focuses on the funding and financing challenges faced by small local authorities in managing increasing flood risk.
- 87 The Future for Local Government Review Panel is also considering broader funding and financing questions for local government and will publish their draft report shortly after the Plan is finalised.
- 88 The draft Plan also sought views on a range of emerging issues for flood insurance. The Plan contains the develop options for home flood insurance issues action which sets the direction of travel for the Government work programme on flood insurance.
- 89 In addition, there is a new action in the Plan to *publish the programme of work on how Aotearoa meets the costs of climate change and invests in resilience*.



This replaces the proposed action *Explore additional interventions to mobilise investment*. This action will coordinate the large range of work across government which are reshaping how we share the costs of climate change. It will also provide greater clarity and transparency to stakeholders and encourage system-wide thinking across central Government about what kind of funding and financing interventions may be needed.

- 90 The addition of this action supports government to meet the Commission's advice to implement funding and financing mechanisms to enable local government to take action aligned with emissions reduction plans, and the implementation of climate adaptation plans<sup>10</sup>.
- 91 Publishing this in the Plan now signals the Government's commitment to work in partnership with local government, iwi/Māori and the private sector to develop solutions.

*Embedding climate resilience in all government strategies and policies*

- 92 This priority remains consistent with the draft Plan. It reflects that all areas will be affected by the impacts of climate change, and that the whole of Government needs to consider these in strategy and policy making.
- 93 This section of the Plan outlines the Government's objectives and policies in the domain areas of Natural Environment, Homes, Buildings and Places, Infrastructure, Communities and the Economy and Finance.

*New actions have been added to plan to respond to submitter feedback and strengthen the response to risks identified through the Risk Assessment*

- 94 These include:
  - 94.1 Action 6.2: *Engage with councils to implement the New Zealand Coastal Policy Statement* (Department of Conversation). This will strengthen the Plans response to address risks to coastal ecosystems.
  - 94.2 Action 8.8: *Support knowledge sharing and the implementation of adaptation actions across the sector* (Te Waihangā). This responds to the key theme from submissions and information received in response to requests for information under 5ZW of the CCRA on the need for specific knowledge sharing in sectors
  - 94.3 Action 8.7: *Embed nature-based solutions as part of the response to reducing transport emissions and improving climate adaptation and biodiversity outcomes* (Te Manatū Waka Ministry of Transport). This responds to the key theme from submissions for stronger commitment to the development of nature-based solutions.

<sup>10</sup> Recommendation 8.2 of Ināia tonu nei - Advice to the New Zealand Government on its first three emissions budgets and direction for its emissions reduction plan 2022 – 2025 <https://ccc-production-media.s3.ap-southeast-2.amazonaws.com/public/Inaia-tonu-nei-a-low-emissions-future-for-Aotearoa/Recommendations-from-Inaia-tonu-nei-Advice-Report.pdf>



- 94.4 Action 5.10: *Develop and implement a Transpower Adaptation Plan* (Transpower). This highlights another sector adaptation plan underway and additional action to embed resilience across sectors.
  - 94.5 Action 3.18: *Review electricity and gas networks' management of climate risk and resilience* (Commerce Commission). This highlights additional action to embed resilience across sectors.
  - 94.6 Action 8.4: *Provide for regulated network revenues to reflect the prudent and efficient costs of resilience* (Commerce Commission). This highlights additional action to embed resilience across sectors.
  - 94.7 Action 9.10: *Implement an income insurance scheme to support adaptive capacity of communities and the economy* (MBIE). This action was not considered developed enough for earlier iterations of the Plan.
  - 94.8 Action 3.14: *Deliver an Integrated Farm Planning Programme* (MPI). This action was not considered developed enough for earlier iterations of the Plan.
  - 94.9 Action 9.13: *Review of Active Labour Market Programmes (MBIE/MSD). This action will assist people into employment and reduce the impact of a changing climate on workers and communities. This action has been added in response to the request from the Minister for Social Development and Employment for greater recognition of the efforts to modernise employment in New Zealand.*
- 95 Submitters considered that adaptation offers economic opportunities to communities and regions as well as businesses and sectors. Many of these opportunities support a move to more self-sufficient communities.
  - 96 Text has been added to chapter one of the Plan to bring greater attention to how the strategies, policies, and proposals take advantage of the economic opportunities associated with climate change.

***Continued engagement during implementation will be fundamental in ensuring actions deliver for all New Zealanders***

- 97 There are a number of actions in the Plan that will support those likely to be disproportionately impacted by climate change. Most submitters agreed that actions, particularly in the Communities chapter, comprised a good start to ensuring existing inequalities are not exacerbated.
- 98 Submitters commented on the importance of engagement at the local level to ensure actions were tailored to the diverse needs of these groups. A new section in the Plan provides information on how New Zealanders can participate in the delivery of the actions. It sets out how the Plan will be implemented, monitored, and evaluated and adjusted to reflect out changing climate reality.
- 99 This approach to implementation broadly aligns with the emissions reduction plan's equitable transition strategy. It will encourage active public participation in the plan, including in partnership with Māori. The action to *Establish a platform for Māori climate action* will also support direct involvement in

implementation. The platform will deliver mechanisms for Māori to actively participate in tangata Māori climate actions.

- 100 Changes have been made to the Plan to provide further detail on the action to establish a platform for Māori climate action. This includes reference to the phased approach to establishing the platform, and to better contextualise and integrate the Rauora Indigenous Framework. This action has been elevated as a critical action in the Plan.

### ***Confirming cross-Ministerial co-ordination and accountability***

- 101 A formal oversight and coordination function for the Plan is necessary to provide accountability for implementation across government, improve coordination within central government and ensure cross-agency support for adaptation action.

- 102 All actions in the Plan have been assigned a Ministerial portfolio. I seek agreement that relevant Ministers and public service chief executives be responsible for overseeing progress of the specific actions that fall under their respective Ministerial portfolios.

102.1 The above only applies where actions have the necessary Cabinet approvals and budget funding, or where Ministers have agreed in-principle to actions, subject to further stakeholder engagement, funding decisions, or policy analysis.

- 103 Cabinet has agreed to formalise the Climate Change Chief Executives Board as an Interdepartmental Executive Board (IEB) under the Public Service Act 2020 [CAB-22-MIN-0055.01].

- 104 Cabinet agreed [CAB-22-MIN-0055.01] that the remit of the IEB (that is, the agencies whose chief executives can be members if appointed by the Public Service Commissioner) include the Ministry for the Environment; the Ministry of Business, Innovation and Employment; the Department of Conservation; the Ministry of Social Development; the Ministry of Housing and Urban Development; the Treasury; the Ministry of Foreign Affairs and Trade; Te Manatū Waka Ministry of Transport and the Ministry of Primary Industries.

- 105 I propose the IEB be responsible for overseeing overall implementation of the Plan, periodically assessing its sufficiency, and advising where course corrections are needed. This would include reporting on proposed actions which have already or should come into the active work programme, and any new actions to be incorporated in the Plan for future proposed work programmes. Specifically, I propose expanding the functions of the IEB to:

105.1 report to the Prime Minister annually on the overall implementation of the Plan

105.2 report to the Prime Minister every two years on the sufficiency of actions in addressing the risks within the scope of the Plan.

- 106 As a result, I am recommending the remit of the IEB to be expanded to include:
- 106.1 the Department of Internal Affairs as the agency responsible for the Local Government Act, with a critical role in supporting community-led action and working with local government as needed to enable climate change adaptation
  - 106.2 the National Emergency Management Agency as the government lead for natural hazard risk reduction and resilience.
- 107 To amend the remit the Parliamentary Counsel Office would need to draft an Order in Council specifying the updated remit. This can occur after the initial establishment of the IEB with its existing remit. I do not expect the Order in Council to be amended immediately but am seeking Cabinet's agreement now to future proof IEB arrangements. I anticipate that officials will work to progress the remit expansion by the end of 2022.
- 108 The membership of the IEB (including the Chair) is designated by the Public Service Commissioner from the remit of the IEB, in consultation with the Prime Minister and Minister for the Public Service, in accordance with the Public Service Act. To ensure an agile mechanism for reviewing or changing IEB membership when needed, in March 2022 Cabinet noted that the Public Service Commissioner may review membership periodically [CAB-22-MIN-0055.01].
- 109 Cabinet agreement to expand the remit to include the Department of Internal Affairs and the National Emergency Management Agency would provide opportunity for the Public Service Commissioner to consider these agencies when reviewing membership after the IEB's initial establishment.
- 110 This proposed approach to oversight, and coordination will deliver on the Plan's action to *establish central government oversight and co-ordination for implementing the national adaptation plan*. It will also encourage coherence and integration across legislation and institutions.
- 111 I recommend CRMG continue to oversee progress of the Plan through implementation and note that collective Ministerial oversight will be essential for the success of the Plan in effectively addressing the risks Aotearoa New Zealand faces.
- 112 This will be particularly important in shaping the Government's response to the biannual report by the Climate Change Commission on the implementation and effectiveness of the Plan.
- 113 Ongoing commitment from Ministers will be needed to develop and test any proposed actions that fall under their portfolios and bring them into the committed work programme in future.

### Financial Implications

- 114 There are no financial implications arising from this paper. The majority of actions in the Plan reflect existing work programmes or planned policy work

(“critical” and “supporting” actions), the costs of which will be met by agencies funding.

- 115 The financial implications of new proposed actions in the Plan will be considered as they are developed as they are progressed through future policy decisions, budget bids or prioritisation by responsible Ministers. The Government will consider extending the scope of the Climate Emergency Response Fund from Budget 2023 to support climate adaptation.
- 116 The wider fiscal and economic implications of climate change impacts over the long term are likely to be significant, though there is uncertainty over their timing and magnitude<sup>11</sup>. Net impacts will depend on a number of factors including future global warming pathways, the potential for economic opportunities in some sectors, and the effectiveness of policies and future choices as highlighted in the Plan, for example on resource management reform, climate-related disclosures, flood insurance, and the Review into the Future of Local Government.

### **Legislative Implications**

- 117 Expanding the IEB’s remit must be done by Order in Council. Otherwise, this paper has no direct legislative implications. Legislation will be required to implement some proposals in the Plan.

### **Te Tiriti o Waitangi Implications**

- 118 I acknowledge the status of iwi and hapū as tangata whenua and that climate change produces disproportionate impacts on Māori communities, businesses and their relationship with the natural environment.
- 119 There is a statutory requirement under the CCRA to take into account the effects of climate change on iwi and Māori. Upholding Te Tiriti o Waitangi partnership; engaging with iwi, hapū and Māori; and providing greater recognition of te ao Māori, including mātauranga Māori, in our climate change policies is critical.
- 120 In March 2022, Cabinet agreed to reference the concepts of the Rauora framework in the Plan, including an explanation of how concepts align. I intend on retaining this reference in the Plan for publication.
- 121 During consultation, Māori submitters sought stronger reflection of commitment to Te Tiriti partnerships in the Plan, particularly through setting a strong foundation for working in partnership with Māori on climate actions and implementation.

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<sup>11</sup> Previous published work on scenarios of long-term fiscal and economic impacts include: *He Tirohanga Mokopuna 2021*, the Treasury’s combined Statement on the Long-term Fiscal Position and Long-term Insights Briefing and *Investment in natural hazards mitigation*, 2020, prepared by the New Zealand Institute of Economic Research.

- 122 Changes have been made to the Plan to provide further detail on the action in the plan to *establish a platform for Māori climate action*, which has progressed since the draft was released for consultation. This includes referencing the phased approach to establishing the platform, and to better contextualise and integrate the Rauora Indigenous Framework.

## Impact Analysis

### *Regulatory Impact Statement*

- 123 Cabinet's impact analysis requirements do not apply at this time. Officials from the Ministry for the Environment will engage with the Treasury's RIA team to confirm the scope of Regulatory Impact Statements to support any future decisions by Cabinet or the Climate Response Ministers' Group on policies that will have regulatory impacts.

### *Climate Implications of Policy Assessment*

- 124 The Climate Implications of Policy Assessment (CIPA) team has been consulted and confirmed the CIPA requirements do not apply to this proposal. Decisions sought by Cabinet at this stage do not have a clear and direct emissions impact that can be practically quantified.
- 125 The Plan is a culmination of current policies and actions as well as proposals for a future programme of work. Current actions have been assessed for their emissions impact where appropriate. Proposals reflect current thinking about what will be needed in future. Further progression will depend on future funding and/or policy decisions. Any significant emissions impacts will be disclosed to Cabinet as final decisions are sought.

## Population Implications

- 126 Climate change will impact New Zealanders differently. The Risk Assessment highlights climate change is likely to exacerbate existing inequities and create additional inequities due to the differential distribution of impacts.
- 127 The CCRA requires that in preparing a national adaptation plan, the Minister must take into account the distribution of the effects of climate change across society, taking particular account of vulnerable groups or sectors.
- 128 Population implications have been considered in the development of proposals in the national adaptation plan. The feedback from public consultation further informed the population impact analysis and finalisation of the Plan.
- 129 The Plan is a culmination of current policies and actions as well as proposals for a future programme of work. Population implications of current policies and actions have been detailed in relevant papers that sought final policy decisions from Cabinet. The population implications of the proposals will be outlined when final policy decisions are sought.

Population group	How the proposal may affect this group
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Māori	Many Māori live in coastal or rural areas, which can bear the brunt of the impacts of climate change. Climate change impacts are having dramatic effects industries that are a major area of investment and employment for Māori. In some locations, cultural sites of significance, such as marae and urupā, are highly likely to be affected. Some communities have moved their cultural assets, while others are planning to do so. Mahinga kai and rongoā may also be disrupted. There are a number of actions in the Plan that have been developed specifically for Māori. In particular, the action to <i>establish a platform for Māori climate action</i> will support Māori to define, measure and implement a national Māori climate strategy and action plan for both adaptation and emissions reduction. It will deliver mechanisms for Māori to actively participate in policy design, tangata Māori climate actions, and support Māori to develop climate strategies and action plans for adaptation and mitigation.
Ethnic Minorities	Ethnic communities are often geographically and economically isolated from jobs, services and institutions. Where minorities are immigrants from non-English-speaking countries, language barriers can greatly increase vulnerability to a disaster. Actions in the Plan that will deliver for Ethnic Minorities include <i>raise awareness of climate hazards and how to prepare and connect communities to wider response and recovery support</i> . These actions will support ethnic communities prepare for extreme weather events, despite language barriers. The action focused on <i>building community resilience through social cohesion</i> will support ethnic minorities to build resilience through improved inclusion and participation in society.
Pacific peoples	Pacific peoples often have more crowded households and less financial resilience, making them more vulnerable to the impacts of climate change. Actions in the plan that will deliver for Pacific communities include <i>Implement the Climate Migration Action Plan</i> and <i>Building community resilience through social cohesion</i> . These actions aim to support Pacific peoples to retain social and cultural identity in the face of climate adversity and improve inclusion and participation in society and build community resilience to lessen instability and isolation caused by climate change. Actions to build property resilience will also support Pacific communities.
Disabled people	Some disabled people will face greater barriers to evacuation during climate-related events. They may also be more vulnerable to impacts like excessive heat, cold or damp, and rely on power for life-supporting equipment. Actions in the Plan that deliver for people living with disabilities include <i>Continue with the reform of the health and disability system</i> and <i>Develop guidance for assessing risk and impacts on physical assets and the services they provide</i> .
Children and youth	Young people today will be more disproportionately affected by all climate change impacts, because risks and impacts are likely to worsen and intensify over time. These impacts have been considered through addressed through the health focused objective (The health sector is prepared and can support vulnerable communities affected by climate change) in the Communities outcome area and through actions to address risks to physical and mental health.
Older New Zealanders	Some older people will be more dependent on the help of others during a climate-related emergency. Older people may also experience more frequent and severe health problems from excessive heat, cold or damp. These impacts have been considered through addressed through the health focused objective (The health sector is prepared and can support



	vulnerable communities affected by climate change). Older New Zealanders will also be supported through actions to increase emergency preparedness, such as <i>raise awareness of climate hazards and how to prepare</i> and <i>connect communities to wider response and recovery support</i> .
Rural communities	Rural communities are often more exposed and isolated than others, making them more at risk to the impacts of extreme climate events and slow onset changes. Access to disaster response and recovery support can be more limited and limited land access routes to rural and remote communities that can be impacted by climate events. Actions in the plan that deliver for rural communities include <i>Implement the Water Availability and Security programme</i> , <i>Connect communities to wider response and recovery support</i> and <i>Identify the impacts of climate change on regional economies</i> .

## Human Rights

- 130 The proposals in this paper do not have any immediate human rights implications and are not in any way inconsistent with the New Zealand Bill of Rights Act 1990 and the Human Rights Act 1993.
- 131 The Plan is a culmination of current policies and actions as well as proposals for a future programme of work. Should these proposals progress further, any Human Rights implications will be disclosed to Cabinet as final decisions are sought.

## Consultation

- 132 The following agencies have been involved with the development of the draft National Adaptation Plan, and consulted on this paper: Department of Conservation; Department of Internal Affairs; Department of the Prime Minister and Cabinet; Toka Tū Ake EQC; Heritage New Zealand Pouhere Taonga; Kāinga Ora - Homes and Communities; Land Information New Zealand; Ministry for Culture and Heritage; Ministry for Primary Industries; Ministry of Business, Innovation and Employment; Ministry of Defence; Ministry of Education; Ministry of Health; Ministry of Social Development; Te Manatū Waka Ministry of Transport; National Emergency Management Agency; Waka Kotahi - NZ Transport Agency; Statistics New Zealand; Standards New Zealand; Te Puni Kōkiri; Te Tūāpapa Kura Kāinga - Ministry of Housing and Urban Development; Te Waihanga - Infrastructure Commission and The Treasury.
- 133 The following additional agencies have also been consulted on this paper: Financial Markets Authority, Fire and Emergency New Zealand, Ministry for Pacific Peoples, Ministry for Women, Ministry of Foreign Affairs and Trade, Ministry of Justice, New Zealand Defence Force, Office for Seniors (OFS), Public Service Commission, Reserve Bank of New Zealand, Te Arawhiti, The Office for Disability Issues (ODI) and Tourism New Zealand.

## Communications

- 134 I intend to publish the Plan and present it to the House of Representatives on [3 August 2022]. This is the same day as the statutory deadline for publication.

## Proactive Release

- 135 I propose to proactively release this Cabinet paper as soon as practicable after publication of the Plan, subject to redactions as appropriate under the Official Information Act 1982.

## Recommendations

*The Minister of Climate Change recommends that the Committee:*

- 1 note the attached National Adaptation Plan (the Plan), which I intend to publicly release in accordance with my statutory obligations under the Climate Change Response Act 2002 as the Minister for Climate Change
- 2 note I intend to publish the Plan and present a copy to the House of Representatives no later than 3 August

*Cabinet and Ministers have provided direction to guide the development of the national adaptation plan*

- 3 note on March 2021, Cabinet agreed in-principle to the strategic direction for the first national adaptation plan [CAB-21-MIN-0084], subject to further refinements following engagement and consultation
- 4 note in March 2022, Cabinet agreed to publicly consult on the national adaptation plan. Consultation ran from 28 April to 3 June [CAB-22-MIN-0118]

*Changes have been made to The Plan to focus action and reflect what was heard through public consultation*

- 5 note the following focus areas for the Plan:
  - 5.1 enabling New Zealanders to make better risk-based decisions
  - 5.2 driving climate-resilient development in the right locations
  - 5.3 adaptation options, including managed retreat
  - 5.4 embedding climate resilience
- 6 note my intention to retain reference to the concepts of the Rauora framework in the Plan
- 7 note the Plan will contain a new section on implementation that provides information on how New Zealanders can participate in delivery of actions

- 8 9(2)(f)(iv)  
[Redacted]  
[Redacted]  
[Redacted]

- 9 agree the Plan will recommend councils should use the following scenarios when making or changing policy statements or plans under the RMA, including to give effect to the provisions of the NZCPS
  - 9.1 Shared Socioeconomic Pathway scenario for fossil fuel intensive development (SSP5-8.5), where available, or Representative Concentration Pathway RCP8.5, to 2130 to screen for hazards and risks in coastal areas
  - 9.2 both the middle of the road scenario (SSP2-4.5) and the fossil fuel intensive development scenario (SSP5-8.5) where available, or RCP4.5 and RCP8.5, to 2130 for detailed hazard and risk assessments in coastal and non-coastal areas. Councils should also add the relevant rate of vertical land movement locally
  - 9.3 Use the most recent downscaled climate projections for New Zealand for all other climate hazards and risks
- 10 Agree that in addition to the above, councils should stress test plans, policies and strategies using a range of scenarios as recommended in the interim guidance on the use of new NZSeaRise sea-level rise projections [placeholder for link] and National Climate Change Risk Assessment Framework, as relevant to the circumstance

*Confirming cross-Ministerial co-ordination and accountability*

- 11 agree relevant Ministers and public service Chief Executives are responsible for overseeing progress of actions that fall under their respective Ministerial portfolios, as outlined in the summary table of actions that will be released alongside the final Plan. This applies only to actions that have the necessary Cabinet approval and budget funding
- 12 note Cabinet has agreed to formalise the Climate Change Chief Executives Board as an Interdepartmental Executive Board (IEB) under the Public Service Act 2020 [CAB-22-MIN-0055.01]
- 13 note the members of the IEB will be jointly responsible to the Prime Minister
- 14 agree that the IEB be responsible for overseeing overall implementation of the Plan, periodically assessing its sufficiency, and advising where course corrections are needed
- 15 agree to expand the functions of the IEB to:
  - 15.1 report to the Prime Minister annually on the implementation of the Plan as a whole and
  - 15.2 report to the Prime Minister every two years on the overall sufficiency of the actions in addressing the risks within the scope of the national adaptation plan

- 16 agree to expand the remit of the IEB to include the Department of Internal Affairs and the National Emergency Management Agency
- 17 invite the Minister for the Public Service to instruct the Parliamentary Counsel Office to prepare an Order in Council to reflect the changes outlined in recommendation 14 and recommendation 15
- 18 note that the Public Service Commissioner will designate the initial membership of the IEB from within the Board's current remit, including Chair following consultation with the Prime Minister and Minister for the Public Service, and may review the membership periodically
- 19 note the Minister for Climate Change considers the Plan satisfies the mandatory content requirements set out in section 5ZS(2) of the Climate Change Response Act 2002 (CCRA) [BRF-1863-refers]
- 20 note that I have taken into account the mandatory matters required by section 5ZS(4) of the CCRA
- 21 note the Plan will be subject to a final professional format and edit prior to publication
- 22 authorise the Minister of Climate Change to make minor editorial changes to the national adaptation plan prior to its release, in line with decisions agreed by Cabinet

Authorised for lodgement

Hon. James Shaw

Minister of Climate Change

## Appendix 2: Ten most significant risks from the National Climate Change Risk Assessment

Natural	Human	Economy	Built	Governance
Risks to coastal ecosystems, including the intertidal zone, estuaries, dunes, coastal lakes and wetlands, due to ongoing sea-level rise and extreme weather events.	Risks to social cohesion and community wellbeing from displacement of individuals, families and communities due to climate change impacts. *	Risks to governments from economic costs associated with lost productivity, disaster relief expenditure and unfunded contingent liabilities due to extreme events and ongoing, gradual changes.	Risks to potable water supplies (availability and quality) due to changes in rainfall, temperature, drought, extreme weather events and ongoing sea-level rise. *	Risks of maladaptation across all domains due to the application of practices, processes and tools that do not account for uncertainty and change over long timeframes.
Risks to indigenous ecosystems and species from the enhanced spread, survival and establishment of invasive species due to climate change.	Risks of exacerbating existing inequities and creating new and additional inequities due to differential distribution of climate change impacts. *	Risks to the financial system from instability due to extreme weather events and ongoing, gradual changes.	Risks to buildings due to extreme weather events, drought, increased fire weather and ongoing sea-level rise. *	Risks that climate change impacts across all domains will be exacerbated because current institutional arrangements are not fit for climate change adaptation.

\* The risk has disproportionate impacts on Māori.

Source: National Climate Change Risk Assessment for Aotearoa New Zealand

### Appendix 3: Climate Scenarios: Shared Socioeconomic Pathways explained

- 1 The Shared Socioeconomic Pathways (SSP) are emission scenarios that originate from a wide range of socioeconomic drivers, such as population growth and economic development. What these scenarios mean globally and for New Zealand varies significantly.
- 2 The narratives for these scenarios are as follows:
  - 2.1 SSP1-2.6 (sustainability) reflects a world with low emissions, where global temperature rise is limited to 2°C. This is the 'Paris Pathway', which is only possible if global COP26 pledges are delivered on.  
  
By 2100, New Zealand air temperatures could increase by 0.47-1.46°C and sea-levels rise by 0.44 metres on average. It should be noted that these averages will vary significantly on a local scale.
  - 2.2 SSP2-4.5 (middle of the road) reflects moderate emissions and 'current global emissions reduction policy settings', with global temperature rise of 2.7°C.  
  
By 2100, New Zealand air temperatures could increase by 1.03-2.26°C and sea levels rise by 0.57 metres on average. While this scenario is aligned with current global policy, we are yet to see if this translates to emissions reductions in practice, so it is no more or less likely than the other scenarios at this stage.
  - 2.3 SSP3-7.0 (regional rivalry) reflects a world with high emissions and global temperature rise of 3°C. Under SSP3-7.0 average median sea level in New Zealand is projected to rise by 0.73 metres by 2100.
  - 2.4 SSP5-8.5 (fossil fuel intensive development) reflects 'no global policy settings' and global temperature rise of more than 4°C. This is considered a worst-case scenario for our future climate but broadly aligns with emissions reduction practice to date.  
  
By 2100, New Zealand air temperatures could increase by 2.20-4.05°C and sea levels rise by 0.83 metres on average.
  - 2.5 SSP5-8.5H+ represents the upper likely range of SSP5-8.5 developed by NZSeaRise for coastal risk assessments. While highly unlikely as a global scenario, it allows for risk assessments to stress-test the potential for runaway polar ice sheet instabilities and consider the very long response time-lags in sea level rise. This is particularly important for sea level rise which is less sensitive to emissions reductions and will be ongoing for centuries.  
  
Under SSP5-8.5H+, average median sea level rise in New Zealand is projected to rise by 1.09 metres by 2100.
- 3 A further scenario SSP1-1.9 was included in the latest release of global projections from the IPCC. This reflects a world with extremely low emissions,



where global temperature rise is limited to 1.5°C. This is an aspirational scenario which is not possible without major and rapid technological innovation and is therefore not recommended by experts for use in planning processes in New Zealand.

- 4 SSPs were developed as part of the Intergovernmental Panel on Climate Change Sixth Assessment Report (2021), replacing the Representative Concentration Pathways (RCPs) used in the Fifth Assessment Report (2013). Scenarios are not predictions, rather they provide information on what could be certain developments to occur. They differ as follows:
  - 4.1 RCPs characterise a range of potential greenhouse gas pathways and the associated radiative forcing reached (eg, RCP2.6 assumes a radiative forcing of 2.6 Watts per metre squared in 2100). The RCPs do not account for socioeconomic developments, focusing only on changes in atmospheric composition.
  - 4.2 SSPs allow for emission scenarios that originate from a wide range of socioeconomic drivers, including population growth, and technological and economic development. The resulting scenarios consider both socioeconomic drivers (eg, SSP1) and greenhouse gas emissions (eg, SSPX-2.6).