MEMO

TO	Greater Wellington Regional Councillors
COPIED TO	Executive Leadership Team; Environment Group Leadership Team; Climate Resilience Working Group; Jake Roos, Manager Climate Change; Zofia Miliszewska, Head of Strategy and Performance
FROM	Climate Change Team, Strategy Group Knowledge and Insights, Environment Group
DATE	6 July 2026
SUBJECT	Climate change scenarios used by Greater Wellington Regional Council and alignment with central government guidance

FOR YOUR INFORMATION

Purpose

This memo responds to questions from Chair Daran Ponter and Councillors Quentin Duthie and Nigel Elder regarding:

1. The climate change scenarios Greater Wellington Regional Council uses for modelling, planning and decision-making;
2. How those scenarios relate to current central government guidance; and
3. Whether Greater Wellington Regional Council is undertaking projects or making investment decisions based on high-emissions scenarios and, if so, what those projects are.

Key Messages

- The recent letter[1] from Minister of Climate Change Hon. Simon Watts emphasises that high-end climate scenarios such as Shared Socioeconomic Pathway SSP5-8.5 and Representative Concentration Pathway RCP8.5 should not automatically be adopted as the primary assumption for council decisions, but rather be treated as less-likely, high-impact scenarios. Councils are expected to use a range of credible scenarios and clearly explain their choices.
- Greater Wellington Regional Council uses a range of climate scenarios across different planning, risk assessment, adaptation and infrastructure functions rather than relying on a single emissions scenario. The scenarios used combine national guidance, national climate and sea-level datasets, local measurements, local modelling and hazard information.

[1] Letter-from-Minister-Watts-regarding-climate-change-assumptions-in-council-planning-v2.pdf

- The higher-end scenario is not a prediction or default setting. In most cases, higher-emissions scenarios are used to understand risk exposure, undertake stress testing, and assess long-term adaptation needs. Greater Wellington Regional Council uses higher-end scenarios where a decision is long-lived or where underestimating future risk could have significant consequences.
- Central government guidance has historically recommended that councils consider both mid-range and high-end climate scenarios, particularly for long-lived infrastructure and hazard assessments (see p. 5 *'How does this align with central government guidance?'*). Greater Wellington Regional Council's current practices are consistent with central government guidance, and further work is underway to improve consistency across the organisation.

Background

On 30 June 2026, the Minister of Climate Change Hon Simon Watts issued a letter to the Mayors, Chairs and Chief Executives of all local government entities across New Zealand regarding the use of climate change assumptions in council planning, infrastructure investment, asset management and regulatory decision-making. The letter notes the Government's expectation that councils continue planning for climate risks while ensuring decisions remain proportionate, evidence-based and affordable. The Minister highlights that SSP5-8.5 and RCP8.5 are increasingly regarded internationally as less likely but high impact scenarios. The Government's expectation is that these scenarios are used for stress testing and contingency planning rather than automatically being treated as the most likely future.

Scientific discussion around RCP8.5 and SSP5-8.5 has evolved in recent years. The fact that these scenarios are increasingly regarded as less likely than when they were first introduced reflects, in part, the success of global mitigation efforts, technological advances, declining renewable energy costs, and government policy actions. However, high-emissions scenarios continue to be used internationally for risk assessment and stress testing purposes, particularly where decisions involve long-lived infrastructure, land-use changes, or potentially severe consequences if future risks are underestimated. Accordingly, a reduction in the likelihood of SSP5-8.5 does not mean the scenario is no longer useful; rather, it reinforces the importance of considering a range of scenarios and being clear about whether a scenario is being used as a primary planning assumption or as a high-impact stress test.

RCPs were formally adopted for use in the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5) published in 2013-2014, with SSPs introduced in the AR6 in 2021. The SSPs build on the RCP emissions focussed scenarios by incorporating population change, economic activity and urbanisation[2] to describe a range of plausible trends in the evolution of society.

What climate scenarios does Greater Wellington Regional Council use?

Greater Wellington Regional Council uses different climate scenarios depending on the purpose of the assessment, plan or project. These assessments, plans and projects are described below and summarised in Table 1. Where the emissions scenarios mentioned in the Minister's letter are used (i.e. SSP5-8.5 and RCP8.5), they have been highlighted in **bold**.

[2] Chapter 1: Framing, Context and Methods | Climate Change 2021: The Physical Science Basis

The use of a high-emissions scenario does not necessarily mean a project has been "gold plated" or over-designed. In many cases, these scenarios are used to understand long-term risk and identify future adaptation pathways rather than determine immediate construction standards.

Organisational Climate-related Risk Assessment (2025)[3]

The Organisational Climate-related Risk Assessment (OCRA) identifies and prioritises the current and future climate-related risks that Greater Wellington Regional Council is facing. The assessment focuses on the impacts of climate change on the organisation's activities and services as well as the assets and infrastructure needed to deliver those activities and services. The OCRA uses a range of scenarios, including:

- SSP2-4.5 ("Middle of the Road") at mid-century and end-century.
- SSP3-7.0 ("Regional Rivalry") at mid-century and end-century.

Climate projections for the Wellington Region (2025)[4]

Downscaled regional projections are based on the latest IPCC climate scenarios, providing locally relevant estimates of how temperature, rainfall, drought, wind, fire weather and other climate variables may change across the Wellington Region under a range of emissions futures. The most recent regional climate projections consider:

- SSP1-2.6
- SSP2-4.5
- SSP3-7.0

It is worth noting that a comparison of the AR5 (2017) and AR6 (2025) warming projections for the Wellington Region suggests that RCP8.5 would result in 2.7C of warming by late century, whereas SSP3-7.0 results in 3.1C warming by late century.

Wellington Regional Climate Change Impact Assessment (2024)[5]

The Wellington Regional Climate Change Impact Assessment (WRCCIA) is a deliverable of the Wellington Regional Leadership Committee's Regional Adaptation Project and identifies potential risks and impacts associated with climate change across the Wellington Region. The assessment used:

- RCP4.5 as a lower-mid range scenario.
- **RCP8.5** as a high-end scenario for physical climate risks.
- RCP2.6, RCP4.5 and **RCP8.5** for transition risk analysis.

Flood Risk Management

Greater Wellington's Flood Risk Management Climate Change Policy requires flood risk assessment and responses to use the latest national guidance for incorporating climate change.

[3] https://www.gw.govt.nz/assets/Documents/Documents/2025/09/Climate-Committee-16-September-2025-Order-Paper.pdf
[4] NIWA Client report
[5] https://www.gw.govt.nz/assets/Documents/2025/08/WRCCIA-Final-Report-Public_minor-amendments_7Oct-web.pdf

Current flood modelling incorporates:

- RCP6.0 to **RCP8.5** at a 100-year planning horizon.
- Sea-level rise assumptions based on **SSP5-8.5** to 2130, combined with local vertical land movement.

Regional flood hazard mapping[6] includes a 1% annual exceedance probability flood event under an **RCP8.5** climate change scenario. This is intended to represent severe hazard exposure rather than a prediction of the most likely future.

Te Wai Takamori o Te Awa Kairangi (RiverLink) reflects the long-term Hutt River flood protection standard agreed with the community and Councils through the 2001 Hutt River Floodplain Management Plan. This included provision for the expected effects of climate change on future flood flows. At that time, climate change allowances in engineering design were still developing, but the Plan recognised that climate change could increase flood flows and make large flood events more frequent over time.

The planning assessment indicated that a flood estimated in 2001 to have a return period of around 440 years could become significantly more frequent over the next century, potentially equivalent to:

- a 30- to 100-year return period event under a high-emissions climate change scenario; or
- a 50- to 300-year return period event under a stringently controlled emissions scenario.

The long-term flood protection standard therefore included provision for climate change so that long-lived flood protection assets would remain effective as flood risk increased, rather than requiring major upgrades soon after construction.[7]

Table 1: Climate change scenarios used by Greater Wellington Regional Council

Project/ Plan	Climate change scenarios	Purpose	Detail
Organisational Climate-related Risk Assessment[8]	SSP2-4.5 SSP3-7.0	Strategic risk assessment	Identifies and prioritises the current and future climate-related risks facing Greater Wellington Regional Council
Climate projections for the Wellington Region[9]	SSP1-2.6 SSP2-4.5 SSP3-7.0	Climate projections	Downscaled regional projections based on IPCC AR6
Wellington Regional Climate Change Impact Assessment[10]	RCP2.5 RCP4.5 **RCP8.5**	Strategic risk assessment	Used for understanding exposure and consequences for the Wellington Region

[6] Greater Wellington Regional Flood Exposure Model Viewer
[7] WGN_DOCS-#1511516-v2-Hutt_River_Corridor_Report
[8] Climate-Committee-16-September-2025-Order-Paper.pdf
[9] NIWA Client report
[10] Microsoft Word - WRCCIA Final Report - Public_minor amendments_7Oct.docx

Greater Wellington Regional flood hazard assessment[11]	RCP6.0 **RCP8.5** **SSP5-8.5**	Strategic exposure assessment	Used for understanding severe flood exposure in the Wellington Region
Flood Risk Management Climate Change Policy	RCP6.0 **RCP8.5**	Guidance for flood risk management planning and asset design	Internal policy used to incorporate climate change into flood resilience work using the latest Ministry for the Environment guidance
Detailed flood hazard mapping	RCP6.0	Hazard mapping	Used for hazard planning, planning controls, infrastructure planning etc.
Te Wai Takamori o Te Awa Kairangi (RiverLink) Note: developed prior to the development of RCP and SSP scenarios	30–100-year event, high emissions scenario 50–300-year event, low emissions scenario	Flood protection	Hutt River flood protection standard for the Hutt River Floodplain Management Plan 2001 with climate change included so that long-lived flood protection assets would remain effective as flood risk increased.

How does this align with central government guidance?

Central government guidance encourages councils to consider both medium and high-emissions scenarios:

- The Ministry for the Environment's 2021 *Guide to Local Climate Change Risk Assessments*[12] recommends the use of RCP4.5 and RCP8.5 for risk assessments.
- The National Adaptation Plan (2022)[13] directs councils undertaking hazard and risk assessments to use both middle-of-the-road and high-emissions scenarios (SSP2-4.5 and SSP5-8.5, or RCP4.5 and RCP8.5 where SSPs are unavailable):
    - SSP5-8.5 or RCP8.5 to 2130 to screen for hazards and risks in coastal areas; and
    - RCP4.5 and RCP8.5 to 2130 for detailed hazard and risk assessments in coastal and non-coastal areas at high risk of being affected.
- The Ministry for the Environment's 2024 *Coastal Hazards and Climate Change Guidance*[14] updates the science from the earlier 2017 version, adopting the newer SSP framework and incorporating updated sea-level rise projections and vertical land movement information. It continues to include high-end emissions scenarios, including SSP5-8.5, for coastal hazard and adaptation planning, recognising the need to assess long-term risks under conditions of deep uncertainty.

[11] Greater Wellington — Regional flood hazard assessment
[12] A guide to local climate change risk assessments | Ministry for the Environment
[13] National adaptation plan | Ministry for the Environment
[14] Coastal hazards and climate change guidance | Ministry for the Environment

- Climate disclosure standards require consideration of both lower-warming and higher-warming futures.

The recent ministerial letter places greater emphasis on clearly identifying which scenario is the primary planning assumption, considering affordability impacts, and using adaptive pathways rather than automatically designing for worst-case assumptions. For each material planning or investment decision, Council records the scenarios considered, the primary assumption selected, the reason for that assumption, and how staged or adaptive pathways can manage uncertainty over time. There is an opportunity to consider the lifecycle cost difference associated with higher-end assumptions, and the rates, debt and affordability implications.

Why planning for future climate risk remains important

Recent severe weather events in the Wellington Region illustrate why councils continue to assess a range of climate futures, including higher-impact scenarios. Communities in Island Bay and Berhampore experienced significant flooding in April 2026, while parts of the Wairarapa have experienced multiple damaging flood events in recent years. These events highlight that extreme weather can cause substantial disruption, property damage and economic costs, even before the full effects of future climate change are realised.

While a "1-in-100-year event" is often interpreted as an event that occurs only once every 100 years, it is more accurately a statistical measure describing an event with a 1% chance of occurring in any given year. As climate conditions change, the frequency and severity of flooding, coastal inundation and other hazards may also change, meaning events that were historically considered rare can occur more often. Climate scenarios help councils test how communities, infrastructure and services may perform under a range of future conditions so that investments remain effective over their expected lifespan.

Summary

Greater Wellington uses a range of scenarios as part of its risk and mitigation planning. Where it has used high-emissions scenarios, this reflects long-standing central government guidance and established climate risk assessment practice. While these scenarios are now increasingly regarded as less likely, they remain useful for stress testing and understanding long-term climate risks. At Greater Wellington, their primary application has been in risk assessment and hazard modelling. Based on current information, there is no evidence that their use has led to disproportionate or "gold-plated" investment decisions. Rather, they have helped ensure that the resilience of long-lived assets and services is considered under a range of possible future climate conditions.