

Appendix D: Climate Change Guidance

This section provides a summary of current (2023) guidance on climate change available in Aotearoa-New Zealand.

- *The MfE have summarised climate change projections for Aotearoa New Zealand and this summary is available via <https://environment.govt.nz/assets/publications/Aotearoa-New-Zealand-climate-change-projections-guidance-Feb-23.pdf> and are based on the August 2021 Intergovernmental Panel on Climate Change (IPCC) 6th Assessment Report (AR6). (https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM_final.pdf). "Unlike AR5 which used Representative Concentration Pathways (RCPs), the AR6 relied on Shared Socioeconomic Pathways (SSPs) to produce projections of future climate change."*
- Summaries of how each region is affected by climate change in relation to key parameters are available via the Ministry for the Environment website <https://environment.govt.nz/facts-and-science/climate-change/impacts-of-climate-change-per-region/>. Regional Council website links to documentation produced for specific regional studies using the IPCC AR5 projections are also accessible through this site. However, work is underway to produce IPCC AR6 based regional downscaling projections which is due to be published in 2024 with assessments to follow shortly thereafter. Until then "MfE (2018): Climate Change Projections for New Zealand can continue to be used with reasonable confidence".
- *The MfE released a Coastal Hazards and Climate Change guidance document. <https://environment.govt.nz/assets/publications/Coastal-hazards-and-climate-change-guidance-2024-ME-1805.pdf>. "The guidance follows a 10-step decision cycle. The steps allow for both short- and long-term planning, adaptive pathways and decision-making for coastal areas that are, or will be, affected by coastal hazards and climate change".*
 - This MfE (2024) guidance "incorporates the *NZ SeaRise* research programme's updated Aotearoa sea-level rise projections that were released on 2 May 2022. These projections combine the 2021 Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report (AR6) sea-level data (downscaled to Aotearoa), with localised rates of vertical land movement (VLM) around the coast (Fox-Kemper et al, 2021; Kopp et al, 2023; Naish et al, in review)". *NZSeaRise*, has a corresponding *online tool (Takiwa - <https://www.searise.nz/maps-2>)* that specifies the sea level rise with or without VLM at any location on the coast of NZ. At the time of publication of this guidance, the NZ SeaRise method was still under peer review by an international scientific journal and had not yet been accepted for publication (Naish et al, in review).
- The previous MfE (2018) guidance <https://environment.govt.nz/publications/climate-change-projections-for-new-zealand/> which is still used by many local authorities for consistency presents four Representative Concentration Pathway (RCP) scenarios that simulate varying alternative population, emission and economic growth sub-scenarios.
 - The HIRDS v4 (<https://hirds.niwa.co.nz/>) provides Depth-Duration-Frequency or Intensity –Duration-Frequency estimates at specific locations throughout NZ for different RCP scenarios and horizons. Details of how these are calculated is summarised

in NIWA (2018) -

https://niwa.co.nz/sites/niwa.co.nz/files/2018022CH_HIRDSv4_Final.pdf

Consideration should be given to the level of risk tolerable for a particular asset or development. The design horizon and climate change scenario are selected and appropriate boundary conditions for specific scenarios can be developed for hydrologic and hydraulic modelling.