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New Plymouth District Council
Preliminary Community Climate Change Risk Assessment

New Plymouth District

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Preliminary Community Climate Change Risk Assessment

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GLOSSARY

Adaptation	The process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects (IPCC, 2024).
Adaptive Capacity	The ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences (IPCC, 2024).
Assets	"Things of value", which may be exposed or vulnerable to a hazard or risk. Physical, environmental, cultural, or financial element that has a tangible, intrinsic or spiritual value (Ministry for the Environment, 2020).
Climate	Climate in a narrow sense is usually defined as the average weather, or more rigorously as the statistical description in terms of the mean and variability of relevant quantities over a period of time. Climate in a wider sense is the state, including a statistical description, of the climate system (IPCC, 2024).
Climate Change	A change in state of the climate that can be identified by changes or trends in the mean and/or variability of its properties, and that persists for an extended period, typically decades or centuries. Climate change includes natural internal climate processes or external climate forcings such as variations in solar cycles, volcanic eruptions and persistent anthropogenic changes in the composition of the atmosphere or in land use (IPCC, 2024).
Climate projection	A climate projection is the simulated response of the climate system to a scenario of future emission or concentration of greenhouse gases and aerosols, generally derived using climate models. Climate projections vary from climate predictions by their dependence on the emission/concentration/radiative forcing scenario used (IPCC, 2024).
Community	A community may be a geographic location (community of place), a community of similar interest (community of practice), or a community of affiliation or identity (such as industry) (Ministry for the Environment, 2020).
Consequence	The outcome of an event that may result from a hazard. It can be expressed quantitatively (e.g., units of damage or loss), semi- quantitatively by category (e.g., low, medium, high impact), or qualitatively (e.g., a description of the impacts) (Ministry for the Environment, 2020, adapted from the Ministry of Civil Defence and Emergency Management, 2019).
Driver	An aspect that changes a given system. Drivers can be short term but are mainly long term in their effects. Changes in both the climate system and socio-economic processes, including adaptation and mitigation, are drivers of hazards, exposure and vulnerability. So, drivers can be climatic or non-climatic (Ministry for the Environment, 2020).
Elements at Risk	The people, values, taonga, species, sectors, assets etc that are potentially vulnerable to climate change impacts (Ministry for the Environment, 2020).

Emissions	The production and discharge of substances that are potentially radiatively active (absorb and emit radiant energy) in the atmosphere. For example, greenhouse gases and aerosols (Ministry for the Environment, 2020).
Exposure	The number, density or value or people, property, services, or other things we value (taonga) that are present in an area subject to one or more hazards (i.e., within a hazard zone), and that may experience potential loss or harm (Ministry for the Environment, 2020).
Extreme weather event	An event that is rare at a particular place and time of year. Definitions of rare vary, but an extreme weather event would normally be as rare as, or rarer than, the 10th or 90th percentile of a probability density function estimated from observations. By definition, the characteristics of extreme weather may vary from place to place in an absolute sense. When a pattern of extreme weather persists for some time, such as a season, it may be classed as an extreme climate event, especially if it yields an average or total that is itself extreme (for example, drought or heavy rainfall over a season) (IPCC, 2024).
Frequency	The number or rate of occurrences of hazards, usually over a particular period of time (Ministry for the Environment, 2020).
Greenhouse gas	Greenhouse gases are those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of thermal infrared radiation emitted by the Earth's surface, the atmosphere and the clouds. This property causes the greenhouse effect. Primary greenhouse gases: water vapour (H2O), carbon dioxide (CO2), nitrous oxide (N2O), methane (CH4) and ozone (O3) (Ministry for the Environment, 2020).
Hazard	The potential occurrence of a natural or human-induced physical event, trend, or physical impact that may cause loss of life, injury, or other health impacts, as well as damage or loss to property, infrastructure, livelihoods, service provision, ecosystems and environmental resources (IPCC, 2024).
Heatwave	A period of abnormally and uncomfortably hot weather (IPCC, 2024).
Impacts	The effects on natural and human systems of extreme weather and climate events and of climate change. Impacts generally refers to effects on lives, livelihoods, health, ecosystems, societies, cultures, services, and infrastructure due to the interaction of climate changes or hazardous climate events occurring within a specific time period, and the vulnerability of an exposed society or system. Impacts are also referred to as consequences or outcomes (IPCC, 2024).
Intergovernmental Panel on Climate Change	A scientific and intergovernmental body under the auspices of the United Nations.
Likelihood	The chance of a specific outcome occurring, where this might be estimated probabilistically (IPCC, 2024).
Mitigation	A human intervention to reduce the sources or enhance the sinks of greenhouse gases (IPCC, 2024).
Representative Concentration Pathway (RCP)	A suite of future scenarios of additional radiative heat forcing at the Earth's surface by 2100 (in Watts per square metre), which is the net change in the balance between incoming solar radiation and outgoing energy radiated back up in the atmosphere.

	Each RCP can be expressed as a greenhouse gas concentration (not emissions) trajectory adopted by IPCC for its Fifth Assessment Report (AR5) in 2014 (IPCC, 2024).
Residual risk	The risk that remains and may continue to arise in unmanaged form, after risk management measures and adaptation policies have been implemented to adapt to climate change and more frequent hazards, and for which emergency response and additional adaptive capacities must be maintained or limits to adaptation addressed (Ministry for the Environment, 2020).
Resilience	The capacity of social, economic, and environmental systems to cope with a hazardous event, trend or disturbance by responding or reorganising in ways that maintain their essential function, identity, and structure, while also maintaining the capacity for adaptation, learning, and transformation (IPCC, 2024).
Risk	The potential for consequences where something of value is at stake and where the outcome is uncertain, recognising diversity of values. The term risk is used to refer to the potential, when the outcome is uncertain, for adverse consequences on lives, livelihoods, health, ecosystems and species, economic, social and cultural assets, services and infrastructure (IPCC, 2024).
Risk assessment	The overall qualitative and/or quantitative process of risk identification, risk analysis and risk evaluation, with multiple entry points for communication and engagement and monitoring and reviews (AS/NZS ISO 31000:2009, Risk Management Standard).
Shared Socio-economic Pathway (SSP)	Shared Socio-economic Pathways (SSPs) have been developed to complement the Representative Concentration Pathways (RCPs). By design, the RCP emission and concentration pathways were stripped of their association with a certain socio-economic development. Different levels of emissions and climate change along the dimension of the RCPs can hence be explored against the backdrop of different socio-economic development pathways (SSPs) on the other dimension in a matrix. This integrative SSP-RCP framework is now widely used in the climate impact and policy analysis literature, where climate projections obtained under the RCP scenarios are analysed against the backdrop of various SSPs. As several emissions updates were due, a new set of emissions scenarios was developed in conjunction with the SSPs. Hence, the abbreviation SSP is now used for two things: On the one hand SSP1, SSP2, …, SSP5 are used to denote the five socio-economic scenario families. On the other hand, the abbreviations SSP1-1.9, SSP1-2.6, …, SSP5-8.5 are used to denote the newly developed emissions scenarios that are the result of an SSP implementation within an integrated assessment model. Those SSP scenarios are bare of climate policy assumption, but in combination with so-called shared policy assumptions (SPAs), various approximate radiative forcing levels of 1.9, 2.6, …, or 8.5 W m^{-2} are reached by the end of the century, respectively.
Stressor	Persistent climatic occurrence or rate of change or trend in climate variables such as mean, extremes or the range which occurs over a period of time, with important effects on the system exposed, increasing vulnerability to climate change (Ministry for the Environment, 2020).
Te ao Māori wellbeing	Te ao Māori wellbeing reflects the deep connection between Māori identity and te taiao (the natural world). Climate change threatens this wellbeing by impacting te whenua (land), te wai (water), taonga (treasured) species, and traditional practices such as planting, resource gathering, and manaakitanga (the practice of hospitality).

How Māori wellbeing is connected to te taiao is encompassed in four different concepts:

- Tahaa tinana (physical wellbeing) – rongoā, mahinga kai (medicinal plants, food gathering)
- Taha Wairua (spiritual wellbeing) – karakia, waiata (prayer, song)
- Taha hinengaro (mental wellbeing) – mātauranga, tikanga (knowledge, customary protocols)
- Taha whānau (social wellbeing) - manaakitanga, whanaungatanga (the practice of hospitality, socialisation). (Ministry for the Environment, 2020).

Uncertainty A state of incomplete knowledge that can result from a lack of information or from disagreement about what is known or even knowable. It may have many types of sources, from imprecision in the data to ambiguously defined concepts or terminology, or uncertain projections of human behaviour (IPCC, 2024).

Value domain The NCCRA framework outlines five value domains for assessing risks and opportunities of climate change. These value domains represent groups of values, assets and systems that may be at risk from exposure to climate-related hazards or could be beneficially affected. The value domains are interconnected and apply at the individual, community and national level. The five value domains are: Built Environment, Natural Environment, Human, Governance and Economy (Ministry for the Environment, 2020).

Vulnerability The propensity or predisposition to be adversely affected.

Vulnerability encompasses a variety of concepts and elements, including sensitivity or susceptibility to harm and lack of capacity to cope and adapt (IPCC, 2024).

Wellbeing Wellbeing is achieved when people are able to lead fulfilling lives with purpose, balance and meaning (The Treasury 2019a). The Treasury Living Standards Framework notes that intergenerational wellbeing relies on growth, distribution and sustainability of four interdependent capitals: natural, social, human and financial/physical.

ABBREVIATIONS

PCCCRA	Preliminary Community Climate Change Risk Assessment
GHG	Greenhouse Gas
IPCC	Intergovernmental Panel on Climate Change
NCCRA	National Climate Change Risk Assessment
NIWA	National Institute of Water and Atmospheric Research
NPDC	New Plymouth District Council
SSP	Share Socio-economic Pathway

EXECUTIVE SUMMARY

This New Plymouth District Council (NPDC) Preliminary Community Climate Change Risk Assessment (PCCCRA) provides an initial assessment of the risks posed by climate change to the District's communities, assets, and natural systems.

This assessment was commissioned by NPDC and prepared by WSP. The PCCCRA has used the best available information and approaches to understand the risk climate change poses to the District's communities, asset and natural systems. It has taken existing data and information that is already available to Council to form a partial understanding of the risk that climate change poses to the District. It is the beginning of Council's first steps towards a robust, evidence-based platform for future adaptation planning and decision-making.

This work aligns with central government priorities to improve climate risk understanding, build national resilience, and support informed, adaptive decision-making to reduce future costs and liabilities. The Risk Assessment is an important step to put Council in a better position to plan for climate change adaptation and make cost-effective planning decisions. Financial and strategic benefits of planning early include reducing high emergency response costs, protecting infrastructure investments, reducing economic disruption, enabling predictable budgeting, building community trust and reducing litigation risk.

The PCCCRA is intended to contribute to a broad range of Council strategic functions, including adaptation planning, asset management, spatial planning, and community engagement. It complements and extends NPDC's existing work, including the 2021 Built Environment Physical Risks Assessment and Emissions Reduction Plan. This PCCCRA was undertaken at the same time as NPDC was beginning its District-wide Adaptation Plan and has helped inform the planned development of an NPDC Climate and Environment Strategy.

Climate change events are imposing additional burden on Council and ratepayers across the motu, highlighted through events such as the Auckland floods, Cyclone Gabrielle, and most recently, consecutive flooding in the Tasman District. New Plymouth has experienced impacts from Cyclones Gita and Gabrielle, and a 1-in-125-year rainfall event in July 2025, highlighting the increasing frequency and severity of climate-related hazards. The District faces a range of climate stressors, including rising temperatures, changing precipitation patterns, sea-level rise, and more frequent extreme weather events. These changes pose significant risks to the wellbeing of communities, the natural environment, cultural heritage, infrastructure, and the local economy.

This PCCCRA is not intended to be a comprehensive or complete Climate Change Risk Assessment and should not be used as such. Natural hazard and climate change information for the District is incomplete and key pieces of information and data were not available for this assessment. Separate efforts are currently underway to fill these information gaps. There are also some areas with more climate-related data than others (e.g., Waitara due to stormwater flooding modelling recently conducted by Council). This data imbalance influences the results. Existing and available information and data detailing how natural hazards and climate change impact the District's communities, assets, and natural systems is incomplete.

The key deliverables of this project are this summary report, a GIS viewer of existing hazard data and communities, assets, and natural systems at risk, and an excel Risk Register.

Purpose and Scope

This preliminary assessment identifies some of the ways that climate change might affect the New Plymouth District. The assessment evaluates several direct risks to community wellbeing, infrastructure, the natural environment, and economy with the aim of:

- Highlighting how the District's climate is expected to change;

- Assessing the direct impacts and risks from climate change hazards to community assets and wellbeing; and
- Identifying some of the communities most at risk to climate change impacts in the District.

The CCCRA is intended as a living document that will continue to improve as the District's data and information improves, regarding climate change hazards and their relationship with communities, assets, and natural systems. This continuous improvement of risk information and understanding will steadily increase the robustness and decision usefulness of the risk assessment; to inform decision-making, the prioritisation of adaptation efforts and investment, and the further improvement of the risk assessment and its evidence base. Improved risk information will allow Council to make cost-effective decisions vis-à-vis planning and management of climate change impacts and effective communication of risks to the community will allow individuals to make better decisions around how to manage risks.

Increasing the resolution of this assessment to focus on specific communities is possible and there is sufficient information to do this. Before undertaking this as a next step we would suggest pre-work is done with mana whenua and that community to understand what's important, what matters and what's at risk of climate change hazards. The next step would be to then identify and agree the key insights sought and questions the assessment would be expected to answer. This enables the assessment to be tailored to the needs of partners and stakeholders and ensures the findings are useful and fit-for-purpose. Particularly as similar limitations will apply as the underlying data sets will be largely the same as those used for this District-wide assessment.

Methodology

This assessment focuses on direct climate-related risks and does not include natural hazards not directly influenced by climate change, such as earthquakes or volcanic activity. It draws on publicly available data, existing council information, and national climate projections, and uses the Shared Socio-economic Pathways (SSP2-4.5 and SSP3-7.0) across three timeframes: present day, mid-century (2041–2060), and end-century (2080–2099). The methodology aligns with the Ministry for the Environment's guidance and the National Climate Change Risk Assessment (NCCRA) framework, adapted to reflect the local context.

A qualitative risk framework was utilised that evaluates the interaction between climate hazards, exposure, and vulnerability.

The assessment evaluated risks across four domains: Human (wellbeing, health, social capital), Natural Environment (ecosystems and biodiversity), Economy (primary industries, tourism, port), and Built Environment (housing, schools, health facilities, infrastructure).

12 community assessment areas, grouped using Stats NZ Statistical Area 1 and 2 boundaries were developed to group risks in a 'Community Assessment Area', to provide a geographic lens for risk identification.

The assessment acknowledges several limitations. These include the absence of mana whenua input, limited data coverage (particularly in rural and northern areas), and the exclusion of indirect and cascading risks. The assessment also does not factor in the criticality of assets, which will be essential for future prioritisation.

Findings

A total of 129 direct risks were assessed across 12 community assessment areas. The assessment identified Waitara, New Plymouth West, and Northern Taranaki Hill Country as having the highest number of high and extreme risks, largely due to their exposure to flooding, coastal erosion, and sea-level rise. However, significant data limitations—particularly the absence of stormwater modelling in some areas—mean that risk levels in communities such as Urenui and Inglewood may be underrepresented.

- Some Coastal communities face significant threats from sea-level rise, coastal erosion, and flooding.

- Rural areas, largely in Northern Taranaki Hill Country, are increasingly vulnerable to drought, heatwaves, and extreme rainfall.
- Socially-deprived communities and those with limited adaptive capacity are disproportionately at risk.
- Critical infrastructure across the District– such as telecommunications, energy, and transport networks – are exposed to multiple hazards.
- Cultural heritage, including Māori sites of significance, faces high exposure to coastal hazards, with limited adaptive capacity.
- Wellbeing and health are at significant risk, particularly in socially deprived and geographically isolated communities.
- Natural ecosystems are vulnerable to temperature increases, drought, and erosion, threatening biodiversity and ecosystem services.
- Primary industries, in rural areas of the District, such as agriculture and forestry are at risk from drought, heavy rainfall, and soil erosion, with implications for livelihoods.
- Community infrastructure, including housing and public amenities, is exposed to flooding and erosion, particularly in coastal and low-lying areas.

Table 1: Communities most at risk in the New Plymouth district

COMMUNITY AREA	TOTAL NUMBER OF RISKS	NUMBER OF EXTREME RISKS	NUMBER OF HIGH RISKS
Waitara	23	7	14
District-wide	21	1	14
New Plymouth West	17	3	11
Northern Taranaki Hill Country	14	0	11
New Plymouth Central	12	3	7
New Plymouth East	9	2	5
Bell Block	7	0	7
Ōakura	6	2	4
Kaitake	5	0	5
Tikorangi	5	0	4
Lepperton	4	0	2
Urenui	4	1	3
Inglewood	1	0	1
Rural Inglewood	1	0	0

According to this preliminary assessment, Waitara is the most at risk to the impacts of climate change of all 12 communities in the District. Waitara has the highest number of identified risks, largely due to its exposure to river and coastal flooding. However, similar communities like Onaero and Urenui appear less at risk due to gaps in stormwater modelling, which also affects areas like Inglewood. Risk levels in New Plymouth city areas

are elevated, partly due to better data availability and the presence of more at-risk elements such as hospitals, places of worship, and key tourism sites. As such, the results of this PCCCRA may present a skewed picture of actual risk across the District and this should be considered carefully when using these findings to make decisions.

Recommendations and Next Steps

To build on this preliminary risk assessment, it is recommended:

- Partnering with iwi and hapū govern this assessment, it's approaches and founding in te ao Māori and place-based knowledge.
- Expanding the assessment to include indirect risks, criticality of assets, and community readiness.
- Assessing indirect and cascading risks, including impacts on service delivery and community resilience. These include social, economic, or ecological impacts (e.g., water services failing from a flood event and causing increased health and sanitation risk and impact to communities).
- Integrating risk and hazard data into digital and GIS platforms, systems and viewers, managed between partner agencies in the region. To support consistent spatial, strategic and investment planning and decision-making, and improve data and insights accessibility for staff and the public.
- Disseminating findings to NPDC's leadership and staff to embed climate risk into planning processes.
- Prioritising risks based on criticality and urgency, to guide targeted adaptation actions.
- Second pass assessments to be conducted to support the local adaptation planning at the community level.
- Using the PCCCRA as a living document, updated regularly as new data becomes available and as part of a broader adaptation planning framework.

This PCCCRA provides a replicable and scalable foundation for NPDC to identify, prioritise, and respond to climate risks across the district. It is a critical step toward building climate resilience and ensuring that future planning and investment decisions are informed, equitable, and future-focused.

1 PROJECT BACKGROUND

1.1 INTRODUCTION TO CLIMATE CHANGE

Climate change can be identified by changes or trends in the mean and/or variability of its properties, and that persists for an extended period, typically decades or centuries (IPCC, 2024). Impacts are already able to be distinguished from other possible causes. Changes include increases in temperature, variations in precipitation, sea level rise, and changing wind patterns. These changes will lead to more frequent and intense events such as flooding, extreme storms, and droughts.

Climate change is already having significant social, economic, environmental and cultural impacts on vulnerable and exposed communities in Aotearoa New Zealand. Districts across the motu are facing a diverse range of challenges.

In the New Plymouth District, increased temperatures, changes in precipitation and coastal inundation are already putting pressures on the District's communities and New Plymouth DistrictCouncil (NPDC). Cyclone Gita in 2018 caused an estimated $4.5 million of damage. In 2023, New Plymouth experienced damage from Cyclone Gabrielle, severe dryness in summer of 2024/2025 and, most recently, disruption due to heavy downfalls in July 2025. Rohutu Block has experienced erosion at rates that have exceeded expected rates determined through modelling and has resulted in the urgent demolition of residential dwellings by NPDC. With acute climate-related events generally expected to increase in severity or frequency (or both), being prepared for and responding to these events is a growing challenge for councils.

Central Government is currently developing a national Climate Adaptation Framework and Climate Adaptation Bill that will provide legal requirements and tools for adaptation, including guiding policy, funding and coordination. There are clear indications that responsibilities for local adaptation planning will sit with territorial authorities.

Managing risks from climate change includes of two overarching focus areas: mitigation and adaptation.

- Mitigation focuses on reducing greenhouse gas emissions to limit further climate change.
- Adaptation is the process of adjusting to the actual and expected changes in the environment because of greenhouse gas (GHG) emissions already released into the atmosphere and those that will be released in the future (IPCC, 2024).

NPDC's adaptation – or identification of where adaptation is most likely to be of benefit – will be enabled via this risk assessment. A robust understanding of the risks will put NPDC in a better position to plan for climate change adaptation and make cost-effective decisions and planning. Financial and strategic benefits of acting early, including reducing high emergency response costs, protecting infrastructure investments, reducing economic disruption, enabling predictable budgeting, building community trust and reducing litigation risk.

Whilst important as part of wider climate change discussions, reducing GHG emissions and the risks associated with a shift to a lower carbon future are not covered within this risk assessment.

1.2 PURPOSE AND SCOPE

This preliminary community climate change risk assessment (PCCCRA) covers risk to the communities of the New Plymouth district, with these aims:

- To identify how the climate of the New Plymouth District is going to change in the future.

- To assess the direct risk (immediate and physical impacts of climate change) from climate hazards (for example flooding, drought, sea level rise) on the communities and the assets which a community depend on for livelihood and wellbeing.
- To identify communities that are most at risk from climate change-related hazards.

This assessment is a starting point towards a wider climate risk assessment process, which will ultimately cover material or priority risks from climate change to the district. The report is intended to help NPDC build its foundational understanding of current and future community climate risk, which can support risk prioritisation and decision-making for adaptation planning. This assessment covers the entirety of the New Plymouth District geographically.

This risk assessment is based on a consolidation of relevant and appropriate publicly available, pre-existing information and data from Council and national sources, that allows a high-level view of different risks and to provide a high-level understanding of the communities that are most at risk from climate change hazards.

This assessment covers only risk from climate change-related hazards and does not consider risk to communities from natural hazard risk covering earthquakes, tsunami or volcanic activity. Natural hazards, whilst they may be exacerbated by climate change, are hazards which are naturally occurring events. Some of these events, such as flooding, coastal hazards and landslides have been included due to the increase in activity predicted due to climate change.

1.2.1 USING THE RISK ASSESSMENT

This risk assessment is one of the first steps to developing a body of information that will help inform Council when considering climate risks in the decision-making and further CCRA work.

This PCCCRA consists of both this report, the 'Risk Register' provided in excel format and the geospatial mapping tool. It is intended that this PCCCRA equips staff with an understanding of climate risk, and is used as a guide for decision-making on:

- Helping to identify and respond to climate-related risks including adaptation plannings.
- A tool for engagement with communities on climate change.
- Financial planning including business case development, budgeting and insurance.
- Asset planning including the Long-Term Plan and Annual Plan documents.
- Critical investment decision making.
- Spatial planning processes, including structure plans and centre plans; and
- District Plan review and future plan changes.

To provide a holistic picture of climate-related risks across the New Plymouth district, this risk assessment should continue beyond this report and risk register; this is outlined throughout this report.

1.3 STRATEGIC CONTEXT OF THIS CLIMATE RISK ASSESSMENT

Understanding risk is fundamental to designing cost effective actions and programmes to reduce climate-change related risk to communities. To date, NPDC's understanding of risk is fragmented; there is not a full and detailed picture of risks across the District. NPDC's current knowledge covers:

- NPDC CCRA of Built Environment Physical Risks workbook. This is a high-level climate change risk assessment to the Built Environment assets owned and operated by NPDC, conducted in 2021;

- Stormwater flooding modelling covering Ōakura, New Plymouth, Bell Block and Waitara;
- Mapping of floodplains across New Plymouth and Waitara; and
- First pass coastal erosion assessment for New Plymouth District, 2018.

This PCCCRA should be used by NPDC to give an indication of where adaptation is most likely to be required but does not provide a full and comprehensive picture of risk across the District. Section 1.4 covers the limitations of this assessment and highlights where additional work will be required.

This assessment should be used as the first step in prioritisation for local adaptation planning but should not be considered in isolation. Prioritisation will require a multidisciplinary view of climate risk to ensure that the interconnectedness of community resilience for different elements at risk is considered in prioritising.

1.3.1 EXISTING NPDC STRATEGIES AND DOCUMENTS

This risk assessment helps NPDC to begin implementing adaptation consistent with NPDC's Climate Action Framework, adopted in December 2019. Since then, NPDC have been developing both mitigation and adaptation responses. This work gives effect to the NPDC Vision to be the *Sustainable Lifestyle Capital Te Tino Rohe o te Kātū Noho Toitū* and contributes to the Focus Point outlined in the NPDC Sustainability Policy to "*Undertake climate change risk assessments in line with the National Adaptation Plan direction"*, under the *Mitigate and adapt to climate change* pou.

1.3.1.1 NPDC CCRA - BUILT ENVIRONMENT PHYSICAL RISKS WORKBOOK

In 2021, NPDC undertook a CCRA for assets which NPDC own and operate, titled *NPDC CCRA - Built Environment Physical Risks.*

This assessment utilises the NCCRA template risk register and covers the following teams at NPDC:

- Parks and open spaces
- Property
- Resource Recovery
- Three Waters
- Transport

In order to not double up on assessment, the Built Environment Secondary Elements at Risk identified for this preliminary community CCRA includes only buildings which NPDC are not responsible for but are essential for a functioning community.

1.3.1.2 NPDC EMISSIONS REDUCTION PLAN

NPDC has developed a district-wide Emissions Reduction Plan, which outlines how NPDC will lower greenhouse gas emissions in the district. The plan identifies a set of actions which NPDC will undertake to lower its own emissions. It also sets out a range of activities to advocate for emissions reduction across the communities which it services.

1.3.1.3 NPDC ADAPTATION PLAN

NPDC have commenced their adaptation journey, through committing to the development of a district-wide Adaptation Plan. The Adaptation Plan will identify the expected impacts of climate change and natural hazards in the District and develop a set of actions to identify how NPDC will assist and direct the community in responding to these impacts, as well as how NPDC will manage its own assets that are at risk.

To date, NPDC have undertaken a climate change risk assessment to their built environment assets and have commenced development of the Adaptation Plan with engagement activities being undertaken by Council across national and local organisations, iwi and hapū, key NPDC staff groups as well as community surveys.

This PCCCRA seeks to contribute to the Adaptation Plan through enabling the prioritisation of at-risk communities for adaptation planning.

1.3.1.4 FUTURE SCENARIOS

In 2024, WSP worked collaboratively with NPDC to develop a set of Future Scenarios for the Taranaki region based on key trends. Insights on key drivers for Taranaki were gathered and refined them in a collaborative workshop. Workshops then explored the impact on NPDC's plans, strategies, and operations. This gives awareness of the future challenges the District faces; from the socio-economic risks identified through the energy and agricultural transitions, to the population and urban/rural growth challenges that these transitions bring. NPDC are using these scenarios for their Climate-Related Disclosure.

1.3.1.5 REGION-WIDE

The Taranaki 2050 Roadmap is a high-level framework to guide the development of a transition plan to a low-emissions economy and outlining the regions vision. It was developed in 2019 through a series of collaborative workshops with stakeholders around the region. It has identified 12 transition pathways to help Taranaki achieve its vision. Climate change, affecting communities and infrastructure, was one of the key significant trends identified in the process, which will shape the region in the future. The Tapuae Roa strategy (launched 2018) is the region's economic development strategy and action plan. It acknowledges climate change risk and supports adaptation by encouraging diversification of industries and promoting innovation and infrastructure upgrades that can withstand future climate conditions.

At the time of this assessment, the Taranaki Regional Council was conducting a gap analysis of natural hazard data to assess gaps in natural hazard data for land use planning under the Resource Management Act (RMA). The project reviewed existing datasets and best practices, highlighting the importance of spatial hazard mapping and the lack of national standards in New Zealand. An interactive workshop helped define user needs, and a gap analysis identified missing datasets that could improve planning. A multi-hazard framework was collaboratively developed with TRC, adopting a staged approach across four assessment levels—national, regional/district, community, and site-specific—each detailing relevant outputs, dataset examples, planning uses, and links to existing TRC data, providing a practical tool to guide future investment in natural hazard data aligned with planning needs.

1.3.2 NATIONAL CLIMATE CHANGE RISK ASSESSMENT

In 2020, the Ministry for the Environment published the first National Climate Change Risk Assessment (NCCRA). The risk assessment gives a picture of how the country may be affected by climate-change related hazards. This risk assessment identified 43 priority risks over five value domains;

- Natural Environment
- Human
- Economy
- Built Environment
- Governance

This community-focussed PCCCRA has sought to align with the first NCCRA where possible with the NCCRA domains utilised as a start point for this PCCCRA and amended to fit the New Plymouth District community focus. More information on this is found in section 2.2.1.

The second National Climate Change Risk Assessment is being delivered by the Climate Change Commission and is currently under development. The second assessment will utilise a different set of domains, across seven interconnected topics:

- Ngā mea hirahira o te ao Māori | Things of importance in te ao Māori
- Sectors relying on the natural environment
- People, health and communities
- Governance
- Economy and financial system
- Natural environment
- Built environment – buildings, urban spaces and infrastructure.

The 2026 National Climate Change Risk Assessment will identify the most significant risks to Aotearoa New Zealand's economy, society, environment, and ecology. It will assess the nature of the risks, their severity, and the need for coordinated actions to respond to them, nation-wide.

1.4 LIMITATIONS AND ASSUMPTIONS

This section outlines the limitations and assumptions of the PCCCRA and provides some guidance on where the risk assessment could be built upon in the future to provide a more robust and comprehensive assessment. Knowledge gaps need to be addressed, more detailed assessments conducted and factored into the risk assessment. This process should be ongoing, with regular monitoring and evaluation of the risks and updating of the assessment.

MANA WHENUA INPUTS

There has been no input from Mana Whenua on this assessment. Including the assessment of Māori sites of significance. These sites were identified using NPDC Data layers on physical assets.

DATA AVAILABILITY

Assessment has been based on publicly available information and no community input on values has been included as part of this assessment. This information was assumed to be the most recent data available.

No data was collected or modelling undertaken as part of this assessment.

Available flood modelling was taken from NPDC. This flood modelling does not cover the catchments north of Waitara and hence does not capture the risk from coastal flooding, river flooding or urban stormwater flooding across the Tikorangi, Urenui or North Taranaki community areas.

PRIORITISATION OF RISKS INCLUDING CRITICALITY ASSESSMENT

This PCCCRA does not factor in the criticality of assets when determining risk ratings. Critical assets are "infrastructure, services and systems that are essential for the functioning of society and economy, and whose failure would have significant consequences for public safety, health or wellbeing" (NAP, 2022).

As this assessment is a preliminary risk assessment, critical and non-critical elements have been assessed as having the same level of risk from certain hazards. But a high or extreme risk rating is not the only factor determining whether an asset should be prioritised for climate-related risk management. In practice, critical assets identified as having 'high' risk may take precedence over non-critical assets identified as 'extreme'.

Prioritisation should also consider urgency. Urgency can be assessed by reviewing what actions are already underway and where further action is needed. Besides the level of risk, action depends on how well that risk is currently understood.

INDIRECT RISK TO COMMUNITY AND INFRASTRUCTURE

This community PCCCRA assessed only direct risk to elements which communities depend on to function. Direct risks are those where there is direct exposed to climate hazards. An indirect climate change risk refers to a secondary or cascading impact of climate change that arises not from the direct physical effects (like floods, heatwaves, or sea-level rise), but from the social, economic, or ecological consequences of those direct effects. These risks are often harder to predict and manage because they involve complex interdependencies between systems. For example;

- Direct risk: A flood damages infrastructure.
- Indirect risk: The damaged infrastructure disrupts supply chains, leading to economic losses or food shortages.

For a full picture of the effect of climate change on the district's communities, future iterations of the CCRA should include assessment of the indirect risks to communities as a result of the impacts identified in this assessment.

The NPDC CCRA - Built Environment Physical Risks could also be expanded to cover indirect risks – e.g., how climate impacts may affect the level of service provided by council assets, and in turn, how this may impact the communities that rely on them.

BUILDING ON THE RISK ASSESSMENT

Other criteria should be considered to aid prioritisation of the risk, such as:

- Population density
- Whether major infrastructure investments are in the pipeline
- Whether there is community "readiness" (buy in and willingness to move forward with adaptation planning, event occurrence e.g., damage due to storms)
- Other planning processes in progress/planned (e.g., spatial planning)
- Other data availability (stormwater modelling).

As per national guidance (NAP, 2022) and international best practice, local-level political buy in and community readiness is critical, due to the natural of local adaptation planning, which will not be successful without community partnership and ownership as climate change is a localised issue.

2 APPROACH, FRAMEWORK AND METHOD

2.1 CLIMATE RISK FRAMEWORK

Risk is often defined as the potential for adverse consequences of an action or event, and the likelihood of it occurring. Industry standard ISO 31000[1] uses both magnitude and likelihood of consequences to rate risks. However, climate change creates the gradual onset of impacts when an ongoing trend (e.g. sea level rise) reaches a tipping point, and therefore estimating likelihood of occurrence of an event as a major component of risk becomes less useful.

The changing risk environment requires more emphasis on consequences, where climate change is already impacting the environment and communities, there is no question of if it will occur, rather what level the consequences will be (MfE, 2020).

For the purposes of this PCCCRA, when describing climate change risk, we refer to the IPCC risk relationship framework, where risk sits at an intersection of physical hazards, exposure of humans and natural systems to those hazards, and their vulnerability (in terms of sensitivity to change and the ability to cope or adapt) (Figure 1). Rating risks within this framework relies on assessing and rating the magnitude of the consequences from the interaction of hazards, exposure and vulnerability.

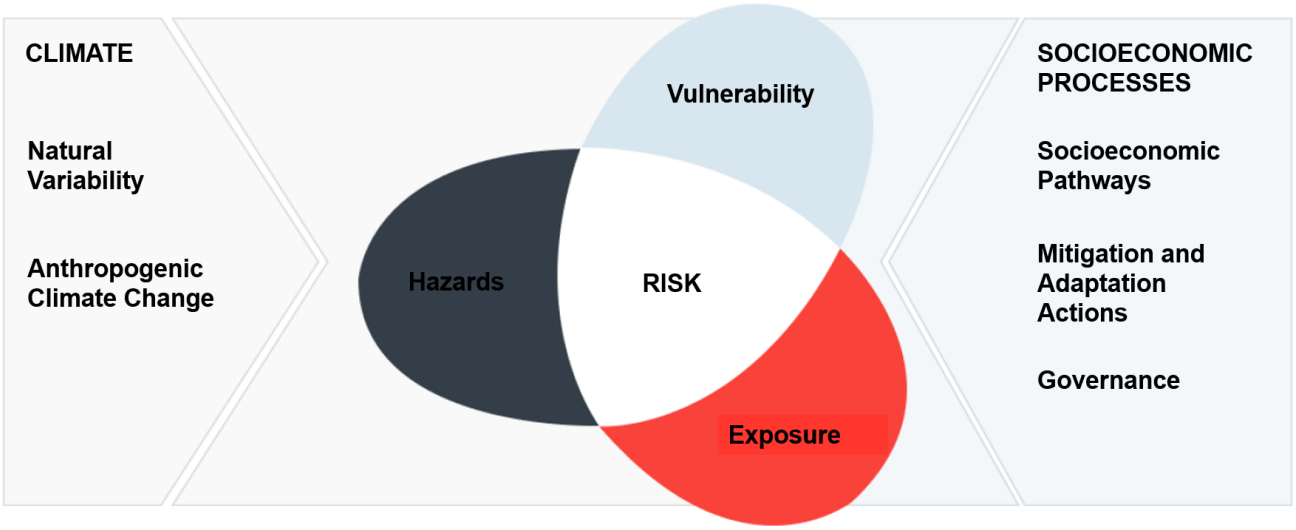

Figure 1: Climate Change Risk Framework

The risks associated with climate change are a function of:

- Climate variables and associated hazards (changes in seasonal climate variables such as temperature, rain, wind and sea-level, and associated hazards such as flooding, erosion, and extreme storm events).
- Exposure (the degree to which things we value (such as people, assets, taonga) are exposed to the climate hazard). For example, an asset such a public pool or a population located by the sea might be highly exposed to flood risk from sea level risk, coastal erosion and storm surges from storms.

[1] ISO 3100:2018 Risk management - Guidelines

- Vulnerability (the sensitivity of a particular asset to change and ability to adapt). For example, if a public pool is old and run down, the building is vulnerable to saltwater corrosion or flooding. Or a population of low socioeconomic status may

Exposure and vulnerability are influenced by socio-economic and cultural processes, which can increase or decrease the consequences of exposure.

2.2 METHODOLOGY

This section provides an overview of how the risk assessment was conducted, including how elements at risk were identified and how the risk has been assessed. Key phases for the risk assessment are shown in Figure 2. This methodology is aligned with *Ministry for Environment, Guide to Local Climate Change Risk Assessments, 2021.*

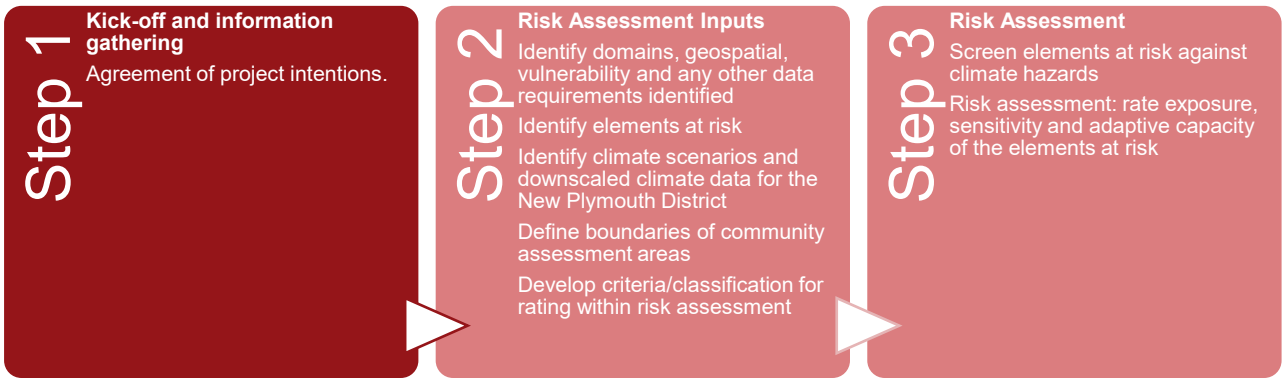

Figure 2: PCCCRA Key phases

This PCCCRA used a qualitative risk assessment method in line with standard practice. Only direct risks have been assessed in the 'Risk Register'; additional indirect risks and interdependencies are identified within this report where relevant.

2.2.1 DOMAINS AND ELEMENTS AT RISK

To understand climate change risk we first need to identify what is at risk from the change, referred to as 'elements at risk'. **Elements at risk are the people, assets, and/or systems which may be impacted by climate change.** This PCCCRA adopted an approach aligned with the *First National Climate Change Risk Assessment for Aotearoa 2020* (NCCRA), which groups risks across five value domains; built environment, natural environment, human, economic and governance. This PCCCRA covers the first four of these domains; governance risk was not included in the scope of this assessment due to it not being a differentiating factor for identifying at risk communities across the District.

These value domains are defined in the NCCRA as:

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

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

The NCCRA Elements at Risk framework was utilised as a start point for this PCCCRA and amended to fit the New Plymouth District community focus. Sessions were held with NPDC climate team and planning team to test the elements identified and ensure these resonated with the intent of the assessment.

A total of 7 core 'Elements at Risk' and 27 'Secondary Elements and Risk' were then identified for assessment (as outlined in Table 2 below). The final 27 Secondary Elements at Risk were selected as being elements representative of items of value to the New Plymouth district's communities, through gathering of publicly available evidence on aspects such as the regional economy, the NPDC Strategic Framework, community groups that operate and key areas of value to community such as the district's beaches. NPDC have undertaken NPDC CCRA - Built Environment Physical Risks for assets which NPDC own and operate, therefore the Built Environment Secondary Elements at Risk identified for this assessment include only buildings which NPDC are not responsible for but are essential for a functioning community.

Appendix 1 contains the geospatial data sets used to represent the Secondary Element at Risk.

Table 2: Elements at Risk Framework developed for this risk assessment

Domain	Elements at Risk	
	Element at Risk	**Secondary Element at Risk**
Human	**Wellbeing**	Social Capital
		Public Amenity
		Community Health
	Cultural	Māori Sites of Significance
		Physical Heritage
Natural Environment	**Natural Environment**	Terrestrial Ecosystems
		Freshwater Ecosystems
		Coastal Ecosystems
		Biosecurity
		Outdoor Recreation
Economy	**Business**	Forestry
		Agriculture
		Horticulture
		Aquaculture and Fisheries
		Tourism
		The Port
Built Environment	**Community Buildings**	Housing
		Schools
		Places of Worship
		Halls and Public Spaces
	Health Facilities	Hospital
		Medical Centres
		Aged Residential Care
	Infrastructure	Rail Network
		Flood Management
		Energy
		Telecommunications

Only elements at direct risk of climate change were included within the framework.

2.2.2 RISK SCREENING AND RATING

Once the elements at risk were identified, initial risk screening was undertaken to determine the relevant climate change variables and hazards for each element at risk. Risk to the identified elements was then rated through a qualitative assessment of exposure and vulnerability (Figure 3).

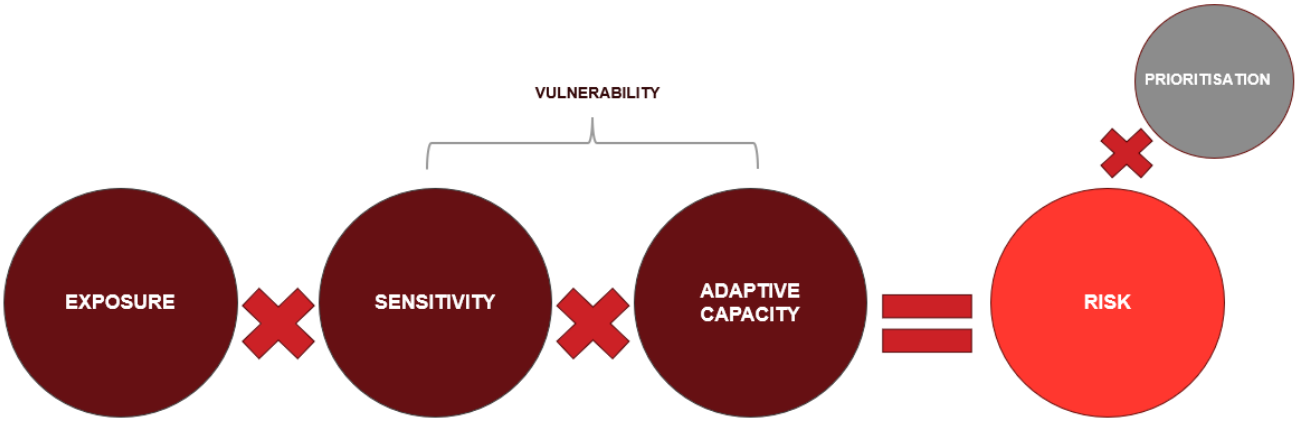

Figure 3: Risk equation based on exposure, sensitivity and adaptive capacity

The rating of risk falls into one of four descriptors (Low, Moderate, High, Extreme) based on risk rating descriptions (Low, Moderate, High, Extreme) based on risk rating descriptions from *Australian Standard 5334:2013 Climate Change Adaptation for Settlements and Infrastructure*, as well as risk rating values from the *MfE Guidance on Local Climate Change Risk Assessments*. This allows for a certain level of prioritisation of risk to occur, where extreme risks would take precedence over those identified as low.

2.2.3 ASSESSMENT CRITERIA

A set of assessment criteria were developed for each domain (human, natural environment, economy, built environment) for sensitivity, adaptive capacity and vulnerability. The assessment criteria are qualitative descriptors, based on the NCCRA assessment framework, in line with standard practice, and current publicly available information. The criteria define the rating scales for sensitivity (low – extreme) and adaptive capacity (very low – high) to ensure a consistent and traceable approach for defining risk was applied. The assessment criteria are provided in Appendix 2.

Assessment criteria also aid in prioritisation, allowing a focus on the most significant risks through identification of those elements with potential highest sensitivity and lowest adaptive capacity. When assessing or prioritising future actions, the assessment criteria can be applied consistent with the approach outlined in this PCCCRA.

2.2.4 REFERENCES

To have a basis for the selected descriptor, research into elements at risk was undertaken using a qualitative approach and using publicly available information. These have been captured in the NPDC Community PCCCRA Register.

2.3 EMISSION SCENARIOS AND CLIMATE PROJECTIONS

Climate projections based on emission scenarios are used to form a picture of how climate variables (temperature, rainfall, wind, sea-level rise) might change in the future, and what hazards these changes may create (drought, flooding, heatwaves, storms). The emission scenarios model changes based on greenhouse gas emissions in the atmosphere, and the most recent set of scenarios, the ‘Shared socio-economic pathway’

(SSP) also include an array of socio-economic drivers. The IPCC has created six global climate models, published in 2021, which have been downscaled by NIWA to provide New Zealand specific projections, across a 5km grid. There are four SSPs available for use in Aotearoa New Zealand, with three of these scenarios available in mapped format currently.

This assessment has utilised two of the available scenarios; SSP2-4.5 and SSP3-7.0, across three timeframes; present day, mid-term (2041-2060) and long-term (2080-2099). These were selected to represent a 'business as usual' scenario (SSP2-4.5) and a 'high-emissions' scenario (SSP3-7.0). These scenarios are compared to a historical baseline period of 1995-2014.

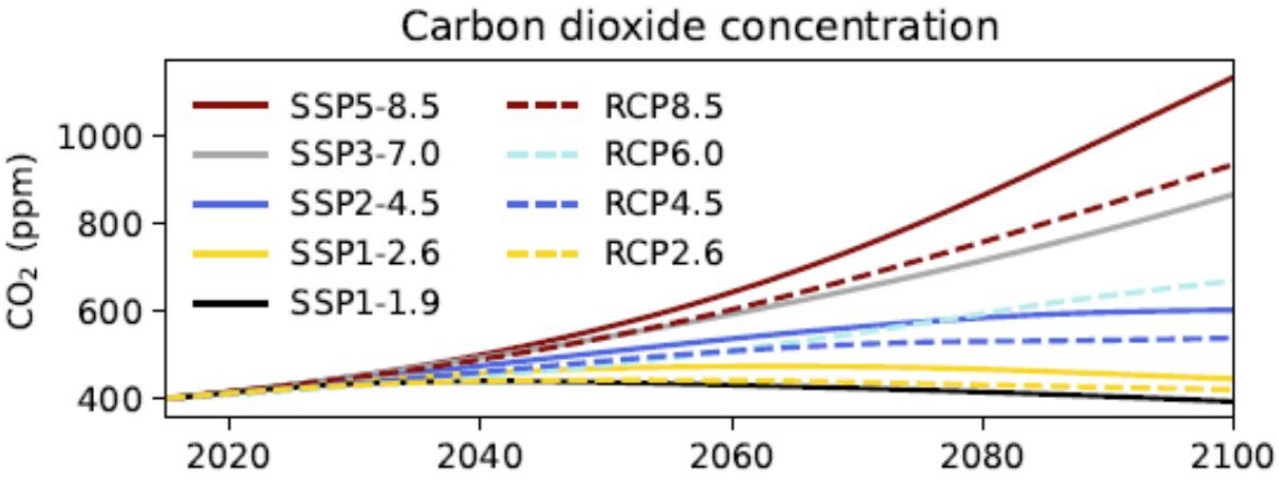

Figure 4: Emission scenarios (source: Aotearoa New Zealand climate change projections and guidance, MFE, 2022, *Climate-Change-Projections-Guidance-FINAL.pdf*)

2.4 NEW PLYMOUTH CLIMATE PROJECTIONS

Climate projections from several sources for New Plymouth District were utilised to inform this risk assessment. A summary of these projections is provided in Table 3 and Table 4. The District is expected to experience warmer temperatures, especially in summer, a decrease in frost days and a decrease in total rainfall. As with other parts of the country, more extreme weather events, flooding and coastal inundation are also expected to increase.

New Plymouth District has coastal communities facing dual coastal hazards from coastal inundation and coastal erosion. Many of these communities are also located along the district's awa, putting them at additional risk from fluvial flooding from increasing heavy rainfall events.

Table 3: Climate projections for the New Plymouth district

SEA LEVEL RISE AND COASTAL HAZARDS	Areas of uplift reduce the effect of global sea-level rise and in the short-term can cause a localised drop in sea level. However, sea level rise is projected in the long-term to be higher than areas of uplift due to global contributions to rising sea levels. Sea level rise combined with localised sedimentary processes will contribute to areas of higher erosion, higher accretion and increased coastal flood events. Increases in sea level rise can influence the severity of coastal flooding events and exacerbate the impact.

 *CHANGING CLIMATE VARIABLES*	Temperatures across the District are projected to increase by 0.7-3.0˚C by the end of the century, with a significant increase in hot days across the district, with up to 50 more hot days a year by the end of the century for the highest emissions scenario. Heavy rainfall is expected to increase; however, the number of rainy days and the total annual rainfall does not change significantly, which indicates a likely increase in storm events.
 *EXTREME WEATHER AND SEASONALITY*	Although annual averages for wind are predicted to decrease, more frequent and intense events are projected seasonably including increased storm events, flood events and periods of drought. Precipitation changes will have seasonal variability and prolonged increased temperatures, and reduced rainfall can lead to drought.

Table 4: Climate projections for across the New Plymouth district

CLIMATE CHANGE VARIABLE	MID-CENTURY (2040-2090)		END OF CENTURY (2080-2100)		SPATIAL VARIATION ACROSS THE DISTRICT
	SSP2-4.5	SSP3-7.0	SSP2-4.5	SSP3-7.0	
Number of hot days >25 degrees	+0.0 - 11.4 days	+0.1 - 16.4 days	+0.3 - 24.0 days	+1.8 - 49.5 days	The Northern Taranaki Hill Country and the coastline north of New Plymouth are likely to experience a greater increase in hot days than Ōakura and the area around Taranaki Maunga.
Number of very hot days >30 degrees	+0.0 - 0.2 days	+0.0 - 0.2 days	+0.0 - 1.0 days	+0.0 - 5.6 days	The greater increase in number of very hot days will be felt in the Northern Taranaki Hill Country.
Cooling degree days >18 degrees	+14.4 - 104.9 CDD	+20.3 - 141.5 CDD	+30.9 - 204.0 CDD	+74.5 - 362.3 CDD	The number of CDD varies along the coastline from +90.9 CDD in Ōkato to +108.1 CDD in Tongapōrutu to the mid-century SSP2-4.5. This variation is also felt inland where the Northern Taranaki Hill Country increase is greater than the area around Taranaki Maunga.
Heavy rainfall 99th percentile	+2.2-6.9%	+4.5-10.3%	+2.8 – 8.0%	+7.0 – 10.3%	Greater increase in rainfall is projected along the coastline north of New Plymouth township, and inland from Inglewood. Around Inglewood and Ōakura is likely to experience the lowest levels of change.
Drought exposure (PED)	+2.3 – 25.5 mm	+0.7 – 25.1 mm	+1.2 - 43.4 mm	+4.9 – 73.0 mm	The coastline is likely to experience a greater rate of change than inland areas of the district, with the highest change around Tikorangi.
Strong wind 99th percentile	-1.3 – 0.0%	-1.2 – 0.4%	-1.9 – -1.1%	-2.6 – -1.3%	The difference across the District is negligible.
Sea-level Rise	0.13 - 0.18m	0.16 – 0.18m	0.37 - 0.48m	0.48 – 0.52m	Vertical land movement across the District varies from areas of increased land movement, around Port Taranaki, to areas of minimal movement north of Tongapōrutu and around

					Ōakura, to large areas of subsidence between Bell Block and Tongapōrutu. The resulting change in sea level, inclusive of the VLM is largely the same across the district.

2.5 COMMUNITY ASSESSMENT AREAS

As agreed, the risk assessment is presented spatially to determine how risk varies across the district, identifying areas with highest exposure and vulnerability to help NPDC to prioritise. As discussed with NPDC, the PCCCRA is split into areas for Community Assessments. Suburbs throughout the District were grouped into 'Community Assessment Areas' and then elements within each Area. Boundaries were defined using the Statistical Area 2 from Stats NZ[2]. The grouping of Statistical Area 2 into Community Assessment Areas is contained in Community assessment areas do not necessarily give indications of risks and resilience at the specific suburb level. For instance, vulnerability across the New Plymouth West Community Assessment Area may vary as social deprivation varies greatly across the suburbs within this grouping. For the purposes of this assessment, the worst-case scenario has been utilised. Risk analysis information is presented in these Community Assessment Areas to help isolate priorities for NPDC in terms of further detailed risks assessment, adaptation planning for high-risk areas, and identifying knowledge gaps that need to be filled.

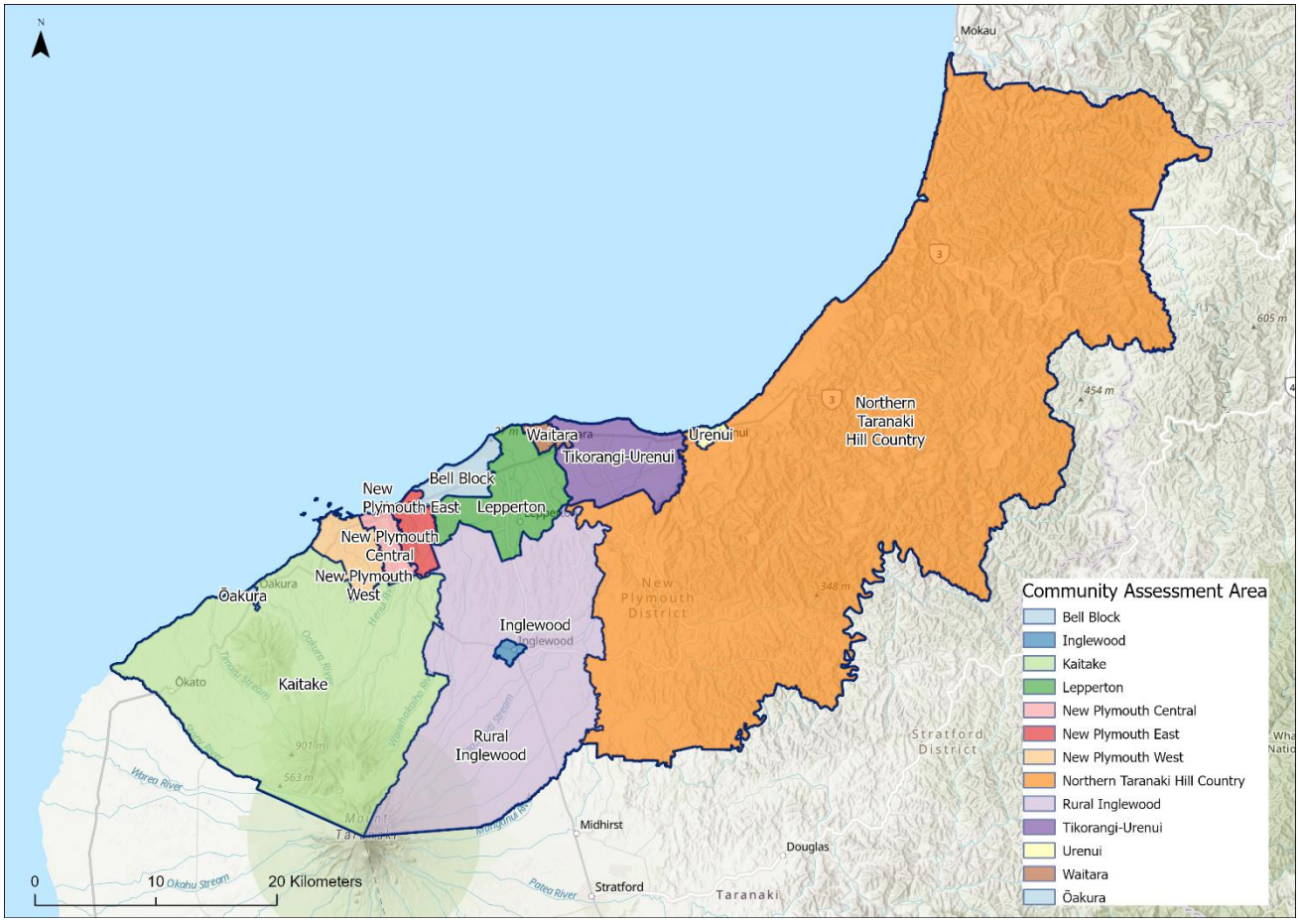

Figure 5: Community assessment areas

[2] Statistical Area 2 2023 (generalised) | Stats NZ Geographic Data Service

3 SUMMARY OF CLIMATE CHANGE RISKS TO THE DISTRICT'S COMMUNITIES

129 individual risks were assessed across the district. A summary of the extreme and high risks to each element and secondary element at risk is provided in the following sections. The risks identified are broad across the District and will likely present themselves at differing timeframes and for differing levels of severity.

Risks to the population centres of New Plymouth and Waitara are largely associated with flooding, sea level rise and coastal processes of inundation and erosion. In the rural parts of the District risks are from extremes of temperatures and heavy rainfall events.

The next sections are extracted from the NPDC Community PCCCRA Register. They provide a snapshot in time, while the PCCCRA Register remains a live document. The high and extreme risks presented are for SSP3-7.0.

3.1 COMMUNITIES

In order to provide an overview of the distribution of the climate change-related risk across the district, a summary has been provided in **Table 5** to give an overall picture.

Waitara is the community which has had the most amount of risks identified, and also has the highest number of high risks. Waitara's location on the coast and along the Waitara awa puts it in a precarious location for climate-related hazards such as river flooding and coastal flooding.

However, there are other communities such as Onaero (which sits within the Tikorangi community assessment area) and Urenui which are located in similar riverine-coastal areas which have not been identified as at risk for these climate hazards – this is due to the lack of stormwater flooding modelling in these location. This is also true of Inglewood, for which only one risk has been identified; a lack of modelling of risk in this community is resulting in a skew in risk results. These are significant data gaps.

The New Plymouth city community assessment areas also have a higher incidence of risk than other areas across the District. This is also as there is more data available for these areas, but also as they have a higher proportion of the elements at risk, such as Places of Worship, the districts two Hospitals, areas identified as tourism and Port Taranaki. The areas within New Plymouth also have a varying degree of social vulnerability; where this occurred the highest level of social vulnerability was taken, which may also have resulted in increased risk identification for these areas. This results in the PCCCRA a skewed indication of risk across the District.

Table 5: Summary of risks across the New Plymouth District

COMMUNITY AREA	TOTAL NUMBER OF RISKS	NUMBER OF EXTREME RISKS	NUMBER OF HIGH RISKS
Waitara	23	7	14
District-wide	21	1	14
New Plymouth West	17	3	11

Northern Taranaki Hill Country	14	0	11
New Plymouth Central	12	3	7
New Plymouth East	9	2	5
Bell Block	7	0	7
Ōakura	6	2	4
Kaitake	5	0	5
Tikorangi	5	0	4
Lepperton	4	0	2
Urenui	4	1	3
Rural Inglewood	1	0	0
Inglewood	1	0	1

Some risks were identified as District-wide, as the climate hazard does not vary significantly across the District (e.g. drought). Indirect risk is likely in these instances, varying by community assessment area.

3.2 WELLBEING

Wellbeing is the overall quality of life that people experience, based on factors such as their socio-economic status, age, health, environment, social connections and cultural connections. Climate change adversely impacts and diminishes community wellbeing through loss of community identity, reduced quality of life, exacerbation of social inequalities and loss of trust within communities and with governance bodies. Small settlements, rural areas and areas of higher social deprivation are more vulnerable to the effects of climate change due to geographic isolation and reduced resources to respond.

Social capital is defined as *the networks of relationships amongst people who live and work in a particular society, enabling that society to function effectively*[3]. Social capital forms both District and community level identity including how a community operates based on a set of shared values, resources available, cohesion and connectivity, contributing to overall community wellbeing.

Community health considers the mental and physical health of the people within a community, considering the demographics. Climate change will alter the physical and mental health of people, through floods, increased temperatures and extreme weather events. The increasing number of climatic challenges will put pressure on people's mental health, as well as threatening physical health across certain demographics.

As part of the assessment for wellbeing, the NZ Social Deprivation Index was utilised. This was used as an indicator of the sensitivity, adaptive capacity and vulnerability of the communities being assessed. It is

[3] Oxford Dictionary Definition

generally assumed that people in more deprived areas are more vulnerable to climate change hazards, have less capacity to adapt or cope with the effects of events, and have few resources to protect themselves[4].

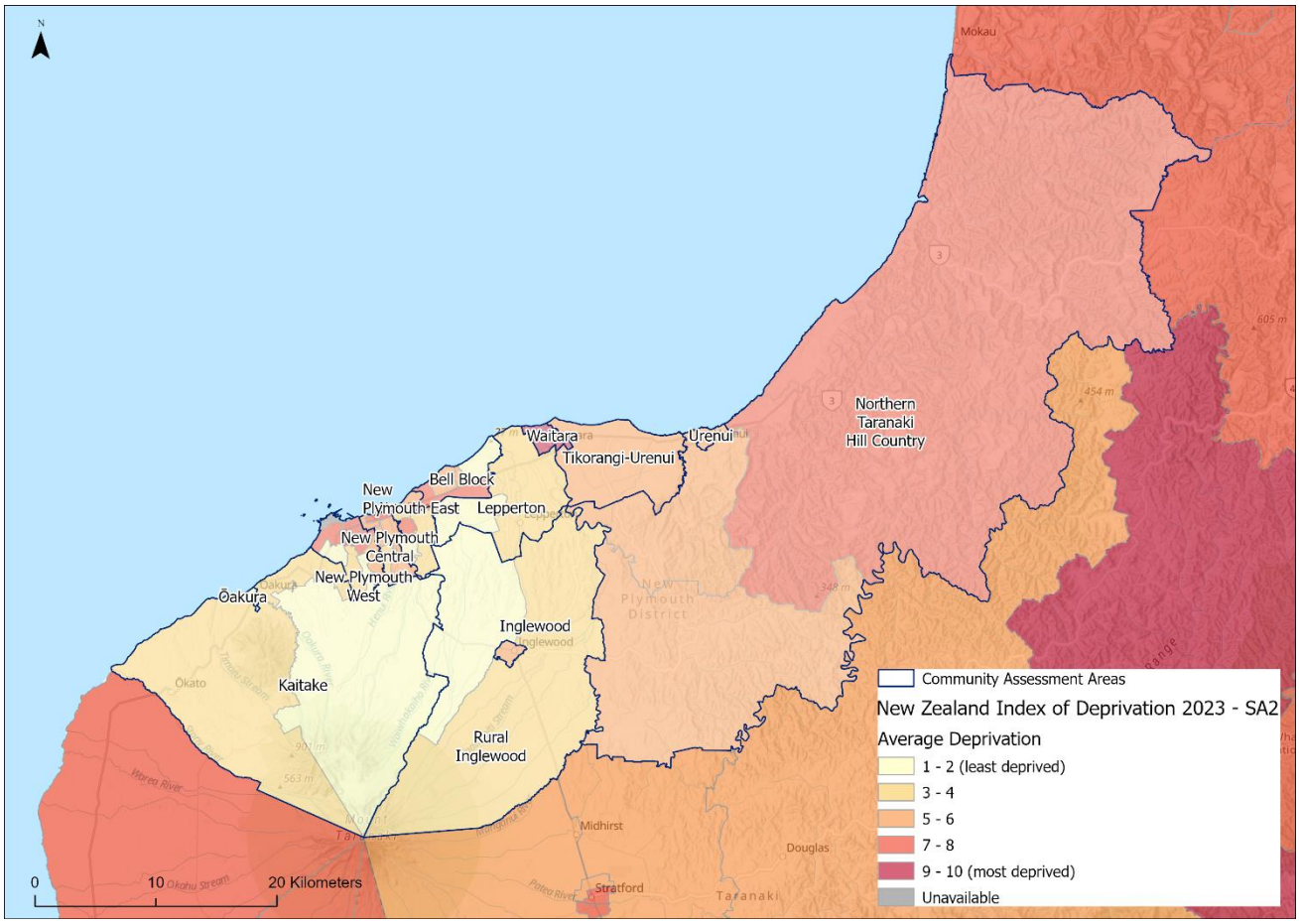

Figure 6: Social deprivation across New Plymouth District

Table 6: Risks to social capital in the New Plymouth District

HAZARD	COMMUNITY AREAS	PRESENT DAY	2060	2100
Stormwater/urban flooding	New Plymouth Central	Moderate	High	Extreme
Sea-level rise and coastal flooding	Ōakura	Moderate	High	Extreme
Sea-level rise and coastal flooding	Urenui	Moderate	High	Extreme
River flooding	Bell Block	Low	High	High
River flooding	New Plymouth East	Low	High	High

[4] EHINZ

HAZARD	COMMUNITY AREAS	PRESENT DAY	2060	2100
Stormwater/urban flooding	New Plymouth West	Low	Moderate	High
Heavy rainfall	Northern Taranaki Hill Country	Low	Moderate	High
Drought	Northern Taranaki Hill Country	Low	Moderate	High
Landslides and soil erosion	Northern Taranaki Hill Country	Moderate	Moderate	High
River flooding	Waitara	Moderate	High	High
Stormwater/urban flooding	Waitara	Moderate	High	High

Table 7: Risks to community health in the New Plymouth District

HAZARD	COMMUNITY AREAS	PRESENT DAY	2060	2100
Heatwaves	New Plymouth East	Low	High	Extreme
Stormwater/urban flooding	New Plymouth West	Low	High	Extreme
Heatwaves	Waitara	Low	High	Extreme
Sea-level rise and coastal flooding	Waitara	Moderate	High	Extreme
Heatwaves	Bell Block	Low	High	High
Heatwaves	Inglewood	Low	Moderate	High
Heatwaves	New Plymouth Central	Low	High	High
Heatwaves	New Plymouth West	Moderate	High	High
Heatwaves	Northern Taranaki Hill Country	Low	High	High
Heavy rainfall	Northern Taranaki Hill Country	Low	Moderate	High
Landslides and soil erosion	Northern Taranaki Hill Country	Moderate	Moderate	High
Sea-level rise and coastal flooding	Urenui	Moderate	High	High
Stormwater/urban flooding	Waitara	Moderate	High	High

Table 8: Risks to public amenities in the New Plymouth District

HAZARD	COMMUNITY AREAS	PRESENT DAY	2060	2100
Sea-level rise and coastal flooding	New Plymouth Central	Moderate	High	Extreme
Sea-level rise and coastal erosion	New Plymouth Central	Moderate	High	Extreme
River flooding	New Plymouth East	Moderate	High	Extreme
Sea-level rise and coastal flooding	Bell Block	Moderate	High	High
Sea-level rise and coastal erosion	Bell Block	Moderate	High	High
Stormwater/urban flooding	Bell Block	Moderate	High	High
Increased temperatures	District-Wide	Low	High	High
Drought	District-Wide	Low	High	High
Sea-level rise and coastal flooding	Kaitake	Moderate	High	High
Increased temperatures	Kaitake	Low	High	High
Stormwater/urban flooding	New Plymouth Central	Moderate	High	High
Sea-level rise and coastal flooding	New Plymouth East	Moderate	High	High
Stormwater/urban flooding	New Plymouth East	Low	High	High
Sea-level rise and coastal erosion	New Plymouth West	Low	High	High
Stormwater/urban flooding	New Plymouth West	Moderate	High	High
River flooding	New Plymouth West	Moderate	High	High
Sea-level rise and coastal erosion	Northern Taranaki Hill Country	Low	High	High
Sea-level rise and coastal flooding	Ōakura	Moderate	High	High
Sea-level rise and coastal erosion	Tikorangi	Moderate	High	High

Sea-level rise and coastal flooding	Urenui	Moderate	High	High
Sea-level rise and coastal erosion	Waitara	Moderate	High	High
Sea-level rise and coastal flooding	Waitara	Moderate	High	High
	Waitara	Moderate	High	High

3.3 CULTURAL

Under this PCCCRA framework, the cultural domain has encapsulated both Māori and non-Māori physical heritage. This assessment was restricted to physical heritage and does not include Te ao Māori considerations. An explanation of how this could be incorporated into future stages of this assessment is included in section 4.

The New Plymouth District has a rich cultural history, both Māori and European. As a result, there are numerous physical heritage sites located across the district. Communities look to these heritage assets as places of significant sources of history and these locations make up the cultural fabric of a place, enabling communities to gain an understanding of the past and how this shapes the district's identity. Heritage is exposed to climate change hazards and has little to no capacity to adapt in situ, adaptation measures usually related to the physical removal of cultural heritage assets to safe locations.

Table 9: Risks to Māori sites of significance in the New Plymouth District

HAZARD	COMMUNITY AREAS	PRESENT DAY	2060	2100
Sea-level rise and coastal flooding	Ōakura	Moderate	High	Extreme
Stormwater/urban flooding	Waitara	Moderate	High	Extreme

Table 10: Risks to physical heritage in the New Plymouth District

HAZARD	COMMUNITY AREAS	PRESENT DAY	2060	2100
Sea-level rise and coastal flooding	Waitara	Moderate	High	Extreme
Sea-level rise and coastal erosion	Bell Block	Moderate	High	High
Sea-level rise and coastal erosion	Kaitake	Moderate	High	High
Stormwater/urban flooding	New Plymouth Central	Moderate	High	High

Sea-level rise and coastal erosion	New Plymouth West	Moderate	High	High
Sea-level rise and coastal erosion	Tikorangi	Moderate	High	High
Stormwater/urban flooding	Waitara	Moderate	High	High

3.4 NATURAL ENVIRONMENT

Communities of Aotearoa New Zealand have depended on the natural environment for their wellbeing for centuries. The natural environment is under considerable pressures from climate change, as well as other human-induced effects such as habitat fragmentation, agricultural intensification and pollution.

Climate change adversely affects the natural environment through changes in the patterns of rainfall, higher temperatures and wind, and sea level rise, putting pressure on these already stressed ecosystems. Communities in New Plymouth District will use these ecosystems in differing ways, for the ecosystem services they provide, that is the 'provisioning', such as food, timber and freshwater; 'regulating', such as air quality, climate and pest regulation; 'cultural' such as recreation and sense of belonging; and 'supporting', such as soil quality and natural habitat resistance to weeds[5]. The degradation of these ecosystems as a result of climate change will adversely affect these services.

The assessment has considered the direct risk to the ecosystems within the District that communities depend upon for their wellbeing and livelihoods.

Biosecurity has been incorporated into the Sensitivity assessment criteria for Natural Environment and therefore has been assessed within each ecosystem and not independently.

Table 11: Risks to terrestrial ecosystems in the New Plymouth District

HAZARD	COMMUNITY AREAS	PRESENT DAY	2060	2100
Sea-level rise and coastal erosion	Tikorangi-Urenui	Moderate	High	High
Sea-level rise and coastal erosion	New Plymouth West	Low	High	High
Sea-level rise and coastal flooding	New Plymouth West	Low	High	High
Increased temperatures	District-wide	Low	Moderate	High

[5] Ecosystem services in New Zealand, Manaaki Whenua, Ecosystem services in New Zealand » Manaaki Whenua

Table 12: Risks to freshwater ecosystems in the New Plymouth District

HAZARD	COMMUNITY AREAS	PRESENT DAY	2060	2100
River flooding	Tikorangi-Urenui	Low	High	High
River flooding	Lepperton	Low	High	High
Drought	District-wide	Low	Moderate	High

Table 13: Risks to coastal ecosystems in the New Plymouth District

HAZARD	COMMUNITY AREAS	PRESENT DAY	2060	2100
Sea-level rise and coastal flooding	District-wide	Moderate	Moderate	High
Sea-level rise and coastal erosion	District-wide	Moderate	Moderate	High
Increased temperatures	District-wide	Low	Moderate	High

3.5 BUSINESS

The economic impacts of climate change are wide-ranging and far-reaching. The financial impacts of climate risk are now being accounted for at areas level within businesses and the costs are only predicted to increase over time. Within the New Plymouth district, there are economies that livelihoods depend on and some of these industries are more susceptible to climate change. Primary industries such as forestry, agriculture and horticulture are dependent upon regular climates and changes to rainfall patterns, flood risk and increased risks from pests and diseases. As the primary industries make up 25% of the regional economy[6], these risks contribute to the economic livelihoods of households and communities throughout the district.

People also visit the New Plymouth District for its rich natural features and wealth of tourism activities the District offers, from Taranaki Maunga to the coast, which may be exposed to climate change hazards, affecting accessibility to these tourism assets.

Table 14: Risks to forestry in the New Plymouth District

HAZARD	**COMMUNITY AREAS**	**PRESENT DAY**	**2060**	**2100**
Landslides and soil erosion	Northern Taranaki Hill Country	Moderate	Moderate	High

[6] Regional Economic Profile | Taranaki Region | Economy structure

Table 15: Risks to agriculture in the New Plymouth District

HAZARD	COMMUNITY AREAS	PRESENT DAY	2060	2100
Landslides and soil erosion	Northern Taranaki Hill Country	Moderate	Moderate	High
Heavy rainfall	District-wide	Moderate	Moderate	High
Drought	District-wide	Low	Moderate	High
Increased temperatures	District-wide	Low	Moderate	High

Table 16: Risks to horticulture in the New Plymouth District

HAZARD	COMMUNITY AREAS	PRESENT DAY	2060	2100
Stormwater/urban flooding	Lepperton	Moderate	Moderate	High
Drought	District-wide	Low	Moderate	High

Table 17: Risks to tourism in the New Plymouth District

HAZARD	COMMUNITY AREAS	PRESENT DAY	2060	2100
Sea-level rise and coastal erosion	Waitara	Moderate	High	High
Sea-level rise and coastal erosion	New Plymouth Central	Low	High	High
Sea-level rise and coastal flooding	Ōakura	Low	High	High

Table 18: Risks to the port in the New Plymouth District

HAZARD	COMMUNITY AREAS	PRESENT DAY	2060	2100
Sea-level rise and coastal flooding	New Plymouth West	High	High	Extreme

3.6 COMMUNITY BUILDINGS

Access to safe, secure and healthy community and residential buildings impacts upon people's vulnerability in the face of climate change. Community buildings are used as places to bring people together and are a valuable resource, people use buildings for community gatherings, education and religion and these aspects make up the cultural identity of a place. Risks such as flooding, increased storm events, sea level rise and

landslides could temporarily or permanently damage buildings, all of which will impact upon the communities that reside or use these buildings.

For this risk assessment, no data on building type or materials was accessed and risk was considered at a high-level dependent on the use of the building. The building types assessed were those which are not owned by NPDC but are used widely by communities or are an essential function within a community.

Table 19: Risks to housing in the New Plymouth District

HAZARD	COMMUNITY AREAS	PRESENT DAY	2060	2100
Sea-level rise and coastal flooding	Waitara	High	High	Extreme
Stormwater/urban flooding	Waitara	Moderate	High	Extreme
Landslides and soil erosion	Northern Taranaki Hill Country	Moderate	Moderate	High
Sea-level rise and coastal erosion	Waitara	Low	Moderate	High
Sea-level rise and coastal erosion	Urenui	Low	Moderate	High
Sea-level rise and coastal erosion	Ōakura	Low	Moderate	High
Sea-level rise and coastal erosion	Northern Taranaki Hill Country	Low	Moderate	High
Sea-level rise and coastal erosion	Kaitake	Low	Moderate	High
Sea-level rise and coastal erosion	Bell Block	Low	Moderate	High

Table 20: Risks to schools in the New Plymouth District

HAZARD	COMMUNITY AREAS	PRESENT DAY	2060	2100
Sea-level rise and coastal flooding	Waitara	Moderate	High	High
Sea-level rise and coastal flooding	New Plymouth East	Moderate	High	High
Stormwater/urban flooding	New Plymouth West	Moderate	Moderate	High
Stormwater/urban flooding	Ōakura	Low	Moderate	High

Table 21: Risks to places of worship in the New Plymouth District

HAZARD	COMMUNITY AREAS	PRESENT DAY	2060	2100
Stormwater/urban flooding	Waitara	Moderate	High	Extreme

Table 22: Risks to halls and public spaces in the New Plymouth District

HAZARD	COMMUNITY AREAS	PRESENT DAY	2060	2100
Stormwater/urban flooding	Waitara	Moderate	High	High
Stormwater/urban flooding	New Plymouth West	Moderate	Moderate	High
Sea-level rise and coastal flooding	Kaitake	Moderate	Moderate	High

3.7 HEALTH FACILITIES

In the face of increasing climatic events, access to healthcare facilities will be impacted. Flooding and extreme weather events will disrupt healthcare facilities accessibility and function. This assessment has considered the direct impacts to the healthcare facilities in the district, as well as the aged residential care. This was included as the elderly are considered a vulnerable population, at higher risk of climate-related health impacts due to their increased sensitivity to heat-related illnesses, and their limited ability to adapt or respond quickly in extreme events.

There are 2 hospitals in the New Plymouth district, one public and one private. This assessment has not included the indirect effects of climate change hazards impeding access to these facilities to communities across the district, although section 3.2 has considered the effect of the health of these populations.

As shown in **Table 23**, no extreme or high risk was assessed for the Hospitals within New Plymouth West.

Table 23: Risks to hospitals in the New Plymouth District

HAZARD	COMMUNITY AREAS	PRESENT DAY	2060	2100
Stormwater/urban flooding	New Plymouth West	Low	Moderate	High

Table 24: Risks to medical centres in the New Plymouth District

HAZARD	COMMUNITY AREAS	PRESENT DAY	2060	2100
Heatwaves	District-wide	Low	Moderate	Extreme
Stormwater/urban flooding	Waitara	Moderate	High	High

Stormwater/urban flooding	New Plymouth Central	Moderate	High	High

Table 25: Risks to aged residential care in the New Plymouth District

HAZARD	COMMUNITY AREAS	PRESENT DAY	2060	2100
Heatwaves	District-wide	Low	Moderate	High
Stormwater/urban flooding	Waitara	Moderate	High	High

3.8 INFRASTRUCTURE

Our communities rely on critical infrastructure such as water, wastewater, telecommunications, energy and transport networks. These are essential services that play a vital role in community safety, security and cohesion. NPDC are responsible for the operation of many of these assets, including footpaths and cycleways, stormwater, wastewater and water supply, resource recovery and buildings such as libraries and swimming pools. NPDC have undertaken a climate change risk assessment for the built environment assets which NPDC owns. This PCCCRA has sought to assess other infrastructure assets which were not included in this assessment but contribute to the wellbeing of a community and its function. As the assessment utilised publicly available information, it was possible to access to information on coverage. Therefore, could not assess risk to specific community areas s of specific cell towers being taken out.

Table 26: Risks to rail network in the New Plymouth District

HAZARD	COMMUNITY AREAS	PRESENT DAY	2060	2100
Stormwater/urban flooding	Waitara	Moderate	High	High
Sea-level rise and coastal flooding	New Plymouth East	Moderate	High	High
Sea-level rise and coastal erosion	New Plymouth Central	Moderate	High	High
Stormwater/urban flooding	Lepperton	Moderate	Moderate	High

Table 27: Risks to energy generation and distribution in the New Plymouth District

HAZARD	COMMUNITY AREAS	PRESENT DAY	2060	2100
Increased temperatures	District-wide	Low	Moderate	High

Table 28: Risks to telecommunications in the New Plymouth District

HAZARD	COMMUNITY AREAS	PRESENT DAY	2060	2100
Sea-level rise and coastal flooding	New Plymouth West	Moderate	High	Extreme
Stormwater/urban flooding	District-wide	Low	Moderate	High

4 NEXT STEPS AND RECOMMENDATIONS

This PCCCRA Preliminary Climate Change Community Risk Assessment assessed 129 direct risks to the systems and services that underpin wellbeing in the New Plymouth District. The PCCCRA Register is intended to be used as a living document and updated regularly as new information becomes available. We recommended that this preliminary assessment be used as a foundation for further analysis of climate risks to the District's communities. To support ongoing decision-making, several next steps are recommended:

TE AO MĀORI

The PCCCRA is a starting point for engaging with iwi, hapū and local communities on climate change. While it is not currently designed for direct distribution to iwi/ hapū or the wider public, it equips NPDC with information, including:

- most severe climate hazards likely to impact the District,
- how asset impacts may translate into community impacts, and
- a robust methodology that can be further developed.

We acknowledge NPDC's partnership with iwi and hapū through the Ngā Kaitiaki forum and the development of a work programme toward the Adaptation Plan. This mahi will shape the evolution of the PCCCRA and improve its relevance and approach. Future updates to the PCCCRA should:

- review and co-develop the risk framework to capture te ao Māori perspectives, ensuring iwi and hapū are supported to identify what matters most from a place-based, cultural lens.
- incorporate cascading and interconnected risks aligned with a Māori worldview, which recognises the cyclical and interconnected relationship between taiao (environment) and tangata (people).

Partnership provides an authentic approach that upholds Te Tiriti o Waitangi.

GEOSPATIAL

The existing PCCCRA has been spatialised, to some degree, through a Geographic Information System (GIS) platform that utilises natural hazard modelling and the geospatial data for the elements at risk and is a deliverable that accompanies this report. However, the platform could be enhanced by integrating the risk assessment outputs themselves, making it a more comprehensive and user-friendly tool. Incorporating the risks directly would improve usability and better define the spatial dimensions of the assessment, positioning the GIS platform as a visual and accessible source of truth for both the current PCCCRA and future climate risk work. Having a user-friendly platform that is accessible, appropriate and user-friendly for public and staff use is critical to build resilience to climate change and will compliment Council's current efforts to comply with LIMs Natural Hazard requirement.

DISSEMINATION OF THE FINDINGS OF THE PCCCRA TO ELECTED MEMBERS, EXECUTIVE LEADERSHIP TEAM, AND COUNCIL OFFICERS:

This PCCCRA is intended to be utilised as an additional layer to informed decision making at all levels of Council. The dissemination of the findings to Elected Members and Council staff is key to feeding into the conversation for prioritisation, climate action, and understanding upfront the climate risks to Council's critical services and functions.

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APPENDIX 1 – ELEMENTS AT RISK

Table 29: Element at risk, definition and publicly available data set utilised for assessment

Elements at Risk		Definition	Geospatial Data Set utilised for assessment
Wellbeing	Social Capital	Districtand community level identity and connection including the social norms and networks which contribute to the overall wellbeing of the district.	Social Deprivation Index, StatsNZ Employment
	Public Amenity	How people use, interact and view a place or space connected to their physical, social, emotional and cultural wellbeing. This includes how places and landscapes are connected to community identity.	NPDC Infrastructure Parks Reserve DistrictPlan - Open Space Zone DistrictPlan - Sport and Active Recreation Zone NPDC Community Venues NPDC Policy : Bylaws - Freedom Camping (centroid) NPDC Infrastructure : Transport - Walkway Access NPDC Infrastructure : Transport - Bike Skills Tracks NPDC Infrastructure : Parks - Play Equipment Polygon
	Community Health	Physical and mental health, with particular focus on vulnerable groups e.g., elderly, those with existing disabilities, terminal illnesses, etc	Social Deprivation Index, StatsNZ
Cultural	Māori Sites of Significance	Māori heritage sites and cultural practices including taonga, marae, urupa, and sites of significance such as wāhi tapu and pā sites.	DistrictPlan - Iwi Marae, DistrictPlan - Māori Zone, Taranaki Regional Council - Taranaki Iwi sites Heritage NZ Pouhere Taonga
	Physical Heritage	Non-Māori heritage sites and cultural practices including heritage buildings, sites and trees, and archaeological sites.	DistrictPlan - Archaeological Zones DistrictPlan - Heritage Character Areas DistrictPlan - Heritage Buildings Heritage NZ Pouhere Taonga
Natural Environment	Terrestrial Ecosystems	Land ecosystems including the diversity within and between species.	TRC Key Native Ecosystems TRC Significant Natural Areas
	Freshwater Ecosystems	Waterways, wetlands and lakes ecosystems including the diversity within and between species.	MfE, Current wetland extents MfE, Freshwater ecosystems of New Zealand 'Lakes' November 2024 TRC Rivers and Catchments
	Coastal Ecosystems	Includes the estuarine and marine ecosystems.	TRC Estuarine habitats Indicative Rocky Reef Area Intertidal Rocky Reefs Coastal Management Areas
Business	Forestry	Managed and cultivated areas of exotic forest	TRC Land Cover map Exotic Forestry

Elements at Risk		Definition	Geospatial Data Set utilised for assessment
			Infometrics Regional Economic Profile Land Cover SA2
	Agriculture	This includes dairy, sheep, beef, chicken and other livestock production	Infometrics Regional Economic Profile Land Cover SA2
	Horticulture	Crops and productivity of soils for growing	Infometrics Regional Economic Profile Land Cover SA2
	Tourism	Key tourism locations in the Districtsuch as the Bowl of Brooklands, Len Lye Centre, Paritutu Rock and the district's beaches	NPDC Community Attractions
	The Port	Port Taranaki area	DistrictPlan Special Purpose Zone - Port Zone
Community Buildings	Housing	Location, quality and availability of residential buildings including privately owned and social housing services.	NZ Imagery Basemap
	Schools	Primary, Intermediate and High Schools.	NZ Facilities - Schools
	Places of Worship	Buildings or spaces specifically dedicated to religious practices, such as churches.	LINZ Topgraphic Map
	Halls and Public Spaces	Halls and other spaces used by communities to hold events.	NPDC Community Facilities
Health Facilities	Hospital	Public and private hospital facilities	DistrictPlan, Special Purpose Zone – Hospital NZ Facilities - Hospitals
	Medical Centres	Doctors surgeries/ general practitioners, practices, physiotherapy, occupational health services, and all other medical services not provided at the Hospital.	LINZ Topgraphic Map
	Aged Residential Care	Facilities for the support and service of older people, rest homes.	Aged Care Facility, Taranaki DistrictHealth Areas
Infrastructure	Rail Network	The rail network	DistrictPlan Railway Corridor
	Energy	Generation, transmission and distribution, including gas, wind farms, solar, hydro	Open Infrastructure Utilities – NPDC Infrastructure Utilities Taranaki Cable NPDC DistrictPlan – Gas Transmission Corridor
	Telecommunications	Fibre cables and exchange sites for the provision of internet, radio broadcasting sites, antennas and masts.	Telecommunication Towers, NPDC Infrastructure Utilities - Taranaki Cables

APPENDIX 2 – ASSESSMENT CRITERIA

Table 30: Sensitivity assessment criteria

Definition: The degree to which an element at risk is affected, either adversely or beneficially, by climate variability or change (IPCC, 2014). It is how the element will fare when exposed to a hazard, which is a function of its properties or characteristics (MfE, 2021).

Sensitivity Level	Score	Human	Natural Environment	Economy	Built Environment
Extreme	4	Extreme social deprivation associated with very high unemployment and benefit receival rates. Extremely low social capital. Extreme levels of social fragmentation. Limited or no access to public services and spaces (public transport, schools, medical centres, libraries, parks, reserves, and playgrounds, etc). Population demographics include extreme proportion of vulnerable groups including older people, people with a disability, children and young people, people with existing illnesses, and indigenous communities. Multiple activity limitations (impairment of mobility, sight, hearing, cognition, selfcare or communication) and/or several pre-existing health conditions.	Ecosystems and species have minimal tolerance to climatic change due to a narrow environmental range, extremely specific climate requirements, and/or extreme geographic isolation. Species face extinction due to poor dispersal ability, minimal distribution and abundance, and/or minimal genetic diversity. Environmental conditions are highly favourable for invasive species, which thrive and reproduce rapidly. High levels of competition and displacement put native species at a high risk of extinction.	Business relies entirely on ecosystem services, including the provision of raw materials for human consumption, construction and climate regulation. Supply chains are complex, made up of a number of businesses, all individually sensitive to climatic changes and threatening supply chain as a whole. Extreme production losses associated with damage to and mortality of stock (animals and crops) due to climate changes and hazards.	Infrastructure, buildings and facilities are in very poor condition and require immediate repair works. Households are extremely overcrowded and not fit for family needs. Networks are in very poor condition and regularly result in service disruptions due to climatic events e.g., power, internet and phone outages, and long-term result in operational changes.

Sensitivity Level	Score	Human	Natural Environment	Economy	Built Environment
High	3	High social deprivation associated with high unemployment and benefit receival rates. Low social capital. High level of social fragmentation. Some access to public services and spaces (public transport, schools, medical centres, libraries, parks, reserves, and playgrounds, etc). Population demographics include a high proportion of vulnerable groups including older people, people with a disability, children and young people, people with existing illnesses, and indigenous communities. Multiple activity limitations (impairment of mobility, sight, hearing, cognition, selfcare or communication) and/or several pre-existing health conditions.	Ecosystems and species have low tolerance to climatic change due to a limited environmental range, highly specific climate requirements, and/or significant geographic isolation. Species face widespread loss due to limited dispersal ability, restricted distribution and abundance, and/or low genetic diversity. Environmental conditions are favourable for invasive species, allowing them to establish and spread. High levels of competition and displacement put native species at a high risk of widespread decline.	Business relies highly on ecosystem services, including the provision of raw materials for human consumption, construction and climate regulation. Supply chains are made up of several businesses, all individually sensitive to climatic changes and threatening supply chain as a whole. High production losses associated with damage to and mortality of stock (animals and crops) due to climate changes and hazards.	Infrastructure, buildings and facilities are in poor condition and require some repairs. Households are overcrowded / not fit for family needs. Networks are in poor condition and often result in service disruptions due to climatic events e.g., power, internet and phone outages, and long-term may result in operational changes.

Sensitivity Level	Score	Human	Natural Environment	Economy	Built Environment
Moderate	2	Moderate social deprivation associated with moderate unemployment and benefit receival rates. Moderate social capital. Moderate levels of social fragmentation. Reasonable access to public services and spaces (public transport, schools, medical centres, libraries, parks, reserves, and playgrounds, etc). Population demographics include a moderate proportion of vulnerable groups including older people, people with a disability, children and young people, people with existing illnesses, and indigenous communities. Some activity limitations (impairment of mobility, sight, hearing, cognition, selfcare or communication) and/or some pre-existing health conditions. Some activity limitations (impairment of mobility, sight, hearing, cognition, selfcare or communication) and/or some pre-existing health conditions.	Ecosystems and species have moderate tolerance to climatic change due to a somewhat broad environmental range, specific climate requirements, and/or moderate geographic connectivity. Species face localised decline due to moderate dispersal ability, average distribution and abundance, and/or moderate genetic diversity. Environmental conditions are somewhat favourable for invasive species. Moderate levels of competition and displacement put native species at a high risk of localised decline.	Business relies on some ecosystem services, including provision of raw materials for human consumption, construction and climate regulation. Supply chains are short but still individually sensitive to climatic changes and threaten supply chain as a whole. Moderate production losses associated with damage to stock (animals and crops) due to climate changes and hazards.	Infrastructure, buildings and facilities are in moderate condition and do not require any immediate repairs. Households are generally liveable but conditions could be improved in terms of family needs. Networks are in moderate condition and sometimes result in service disruptions due to climatic events e.g., power, internet and phone outages. Operational changes are not currently being considered.

Sensitivity Level	Score	Human	Natural Environment	Economy	Built Environment
Low	1	Low social deprivation associated with low rates of unemployment and benefit receival rates. High social capital. Low levels of social fragmentation. Good access to public services and spaces (public transport, schools, medical centres, libraries, parks, reserves, and playgrounds, etc). Population demographics include a low proportion of vulnerable groups including older people, people with a disability, children and young people, people with existing illnesses, and indigenous communities. Few activity limitations (impairment of mobility, sight, hearing, cognition, selfcare or communication) and/or few pre-existing health conditions.	Ecosystems and species have high tolerance to climatic change due to a broad geographic range, flexible climate requirements, and/or minimal geographic isolation. Species face temporary or minimal decline due to good dispersal ability, wide distribution and abundance, and/or high genetic diversity. Environmental conditions are unfavourable for invasive species. Low levels of levels of competition and displacement risk temporary or short term loss of native species.	Business has low reliance on ecosystem services / need for climate regulation. Supply chain is limited / business is relatively self sufficient and disruptions to supply chain are unlikely to occur due to climate hazards. Low to no production losses associated with damage to stock due to climate changes and hazards.	Infrastructure, buildings and facilities are in good condition and do not require any short-term repairs or maintenance. Household is adequate for all inhabitants and meets family needs. Networks are in good condition and rarely result in service disruptions due to climatic events e.g., power, internet and phone outages. Operations have been factored for climatic conditions long-term.

Table 31: Adaptive capacity assessment criteria

Definition: The ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities or to respond to consequences (IPCC, 2014). Adaptive capacity should be assessed conservatively, where planned adaptation is not guaranteed.

Adaptive Capacity	Score	Human	Natural Environment	Economy	Built Environment
High	4	Existing and implementable management systems including risk management, climate-change in decision-making processes, and adaptation plans. Financial, technological and information resources are readily available, accessible and implementable by the community. Low attachment to place and high opportunities for managed retreat and avoidance of climate hazard.	Ecosystems and species exhibit significant genetic adaptation, high reproductive rates, and substantial behavioural plasticity, allowing them to thrive in a wide range of environmental conditions and recover quickly from disturbances. Invasive species have minimal adaptive advantages compared to native species and/or human intervention is very high (e.g. rigorous biosecurity efforts).	High levels of innovation potential and emerging technologies to respond to climate change. High levels of control and influence over supply chain and distribution networks. High macroeconomic stability (e.g. low unemployment, low price inflation, etc.). High levels of knowledge and skills to identify and respond to climate change.	Several alternative access routes available, including access via different travel modes. Ability to relocate or redesign infrastructure. As well as ability to avoid high-risk areas for further development. Ability to manage demand and introduce resilience measures (e.g. nature-based solutions).

Adaptive Capacity	Score	Human	Natural Environment	Economy	Built Environment
Medium	3	Some existing management systems including risk management and climate-change in decision-making processes. Ability to create and/or implement adaptation plans. Moderate access to financial, technological and information resources by the community. Moderate attachment to place and moderate options for managed retreat and avoidance of climate hazard.	Ecosystems and species show moderate genetic adaptation, average reproductive rates, and some behavioural plasticity, enabling them to cope with changes and recover from disturbances at a moderate pace. Invasive species have low adaptive advantages compared to native species and/or human intervention is high (e.g. extensive biosecurity efforts).	Moderate levels of innovation potential and emerging technologies to respond to climate change. Moderate levels of control and influence over supply chain and distribution networks. Moderate macroeconomic stability (e.g. limited unemployment, limited price inflation, etc.). Moderate levels of knowledge and skills to identify and respond to climate change.	Some alternative access routes available, including access via different travel modes. Some ability to relocate or redesign infrastructure and avoid high-risk areas for further development. Some ability to manage demand and introduce resilience measures (e.g., nature-based solutions).
Low	2	Limited existing management systems and/or adaptation plans in place. Limited capacity to create and implement plans/ management systems in the future. Access to financial, technological and information resources by the community is limited. High attachment to place and limited options for managed retreat or avoidance of climate hazard.	Ecosystems and species have limited genetic adaptation, low reproductive rates, and minimal behavioural plasticity, making them vulnerable to environmental changes and slow to recover from disturbances. Invasive species have moderate adaptive advantages compared to native species and/or human intervention is high (e.g. some biosecurity efforts).	Low levels of innovation potential and emerging technologies to respond to climate change. Low levels of control and influence over supply chain and distribution networks. Low macroeconomic stability (e.g. high unemployment, high price inflation, etc.). Low levels of knowledge and skills to identify and respond to climate change.	Few alternative access routes available, limited to specific travel modes. Limited ability to relocate or redesign infrastructure and avoid high-risk areas for further development. Limited ability to manage demand and introduce resilience measures (e.g., nature-based solutions).

Adaptive Capacity	Score	Human	Natural Environment	Economy	Built Environment
Very Low	1	No existing management systems and/or adaptation plans in place. Minimal to no capacity to create and implement plans/ management systems in the future. Minimal to no access to financial, technological and information resources by the community. Very high attachment to place and no options for managed retreat or avoidance of climate hazard.	Ecosystems and species possess minimal genetic adaptation, very low reproductive rates, and minimal behavioural plasticity, rendering them highly susceptible to environmental changes and unable to recover from disturbances. Invasive species have significant adaptive advantages compared to native species and/or human intervention is minimal or absent.	Very low levels of innovation potential and emerging technologies to respond to climate change. Very low levels of control and influence over supply chain and distribution networks. Very low macroeconomic stability (e.g. very high unemployment, very high price inflation, etc.). Very low levels of knowledge and skills to identify and respond to climate change.	No alternative access routes available, restricted to a single travel mode. Minimal to no ability to relocate or redesign infrastructure and avoid high-risk areas for further development. Minimal to no ability to manage demand and introduce resilience measures (e.g., nature-based solutions).

Table 32: Vulnerability assessment criteria

Definition: The propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements including sensitivity or susceptibility to harm, and lack of capacity to cope or adapt (IPCC, 2024).

Vulnerability	Score	Human	Natural Environment	Economy	Built Environment
Extreme	4	Extremely likely to have adverse effects on human health and wellbeing, very high numbers of displaced households, widespread service disruption, climate-related changes exceed coping range, and loss of social capital.	Permanent degradation of the natural environment and permanent loss of biodiversity. Substantial loss of native species and climate-sensitive environments. Strong geographical shifts of species.	Whole-of-community impacts with large financial losses. Widespread business failure and loss of profitability. Closure of key economic sector(s). Widespread job losses.	Long term service disruption and permanent damage and/or complete loss of infrastructure and its service. Very high numbers of residential dwellings and commercial buildings require assessment for immediate relocation. Very high numbers of individuals cut off from essential services.
High	3	Likely to have adverse effects on human health and wellbeing, high numbers of displaced households, widespread medium term service disruption, climate-related changes challenge coping range, and decline in social capital.	Widespread degradation of the natural environment and medium-term loss of biodiversity. Increasing decline of native species and climate-sensitive environments. Noticeable geographical shifts of species.	High numbers of people affected with large financial losses. Long term business disruption and/or significant impact on profitability. Long term loss of output for key economic sector(s). Medium to long term reduction in employment.	Medium term service disruption and extensive damage to infrastructure and its service, requiring major repair. High numbers of residential dwellings and commercial buildings require assessment; many require immediate relocation. High numbers of individuals cut off from essential services.

Vulnerability	Score	Human	Natural Environment	Economy	Built Environment
Moderate	2	May cause adverse effects on human health and wellbeing, moderate numbers of displaced households, widespread short to medium term service disruption, climate-related changes begin to challenge coping range, and distrust in community.	Localised degradation of the natural environment and sustained localised impacts on biodiversity. Sustained localised impacts on quality and status of native species and climate-sensitive environments. Emergence of geographical shifts of species.	Many individuals with significant financial losses. Medium term business disruption and/or moderate impact on profitability. Medium term loss of output for key economic sector(s). Temporary reduction in employment.	Short term service disruption and damage to infrastructure and its service, requiring minor repair. Moderate number of residential dwellings and commercial buildings require assessment; some require immediate relocation. Moderate numbers of individuals cut off from essential services.
Low	1	Low likelihood of adverse effects on human health and wellbeing, low numbers of displaced households, short term service disruption, climate-related changes remain in coping range, and retained social cooperation.	Temporary degradation of the natural environment and short-term loss of biodiversity. Minor decline in quality and status of native species and climate-sensitive environments. Limited to no geographical shift of species.	Small number of individuals affected with minimal financial losses. Short term business disruption and/or minimal impact on profitability. Short term loss of output for key economic sector(s). Limited disruption to employment.	Minimal service disruption and minor damage to infrastructure and its service, requiring minor restoration work. Low number of residential dwellings and commercial buildings require assessment; none require immediate relocation. Low numbers of individuals cut off from essential services.

APPENDIX 3 – COMMUNITY ASSESSMENT AREA GROUPS

Table 33: Statistical Area 2 and grouping for CCRA

	Area	SA2	Plus	Less
1	Waitara	Waitara West Waitara East	-	-
2	Bell Block	Bell Block West Bell Block Central Bell Block East-Puketapu Waiwhakaiho-Bell Block South	-	-
3	New Plymouth East	Fitzroy (New Plymouth district) Strandon Glen Avon Merrilands Highlands Park (New Plymouth district)	-	-
4	New Plymouth Central	New Plymouth Central Welbourn Lower Vogeltown Upper Vogeltown Kawaroa	-	-
5	New Plymouth West	Frankleigh Park Westown Blagdon-Lynmouth Moturoa Marfell Port Taranaki Spotswood Whalers Gate Hurdon Ferndale	-	-
6	Northern Taranaki hill country	Tarata Mount Messenger	SA1: 7017182 7017186 7017189	-

	Area	SA2	Plus	Less
7	Ōakura	Ōakura	-	-
8	Kaitake	Kaitake Mangorei Omata	-	-
9	Inglewood	Inglewood	-	-
10	Rural Inglewood	Mangaoraka Everett Park	-	-
11	Tikorangi-Urenui	Tikorangi	-	SA1: 7017182 7017186 7017189
12	Lepperton	Lepperton-Brixton Paraite	-	-

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