



FEEDBACK ON THE 'DRAFT NATIONAL ADAPTATION PLAN' PART 1

7 JUNE 2022

Prepared for and on behalf of Te Kokiringa Taumata | New Zealand Planning Institute by David Curtis, CEO, Te Kokiringa Taumata | New Zealand Planning Institute.

P: +64 9 520 6277 ext. 3 | M: +64 21 625 244 | www.planning.org.nz

Planning is essential to achieving a better New Zealand

Te Kokiringa Taumata | New Zealand Planning Institute (NZPI) is the voice of planning in New Zealand. It is the professional organisation representing this country's planners, resource managers, urban designers, and environmental practitioners.

Planners have a critical role in shaping New Zealand's future by helping to develop solutions to key issues, such as population growth, infrastructure needs, pressure on natural resources and environments, demographic change, and transport





FEEDBACK

1. Te Kokiringa Taumata | New Zealand Planning Institute (NZPI) welcomes the opportunity to present this feedback on the 'Adapt and Thrive: Building a climate resilient New Zealand, Draft National Adaptation Plan' Document.
2. The National Adaption Plan (NAP) is a complex document which tries to cover a great deal of ground. Overall, the NAP seems to be overly complicated and littered with a variety of goals, objectives and principles which may not in the long run be compatible. We are concerned that the number of questions MfE is seeking feedback on perhaps suggests that this is a document seeking answers because it is such a contentious area where politics will determine pathways more than sound well-researched advice.
3. Our feedback is primarily focused on the Objectives and Principles rather than directly responding to the questions.
4. We note up front our concern regarding moving away from the Issues, Objectives and Policies approach used for over 30 years under the RMA, as these are defined and understood as terms. We recommend it is better to stay with Objectives and Policies, unless the NBEA and SPA are changing those references. Otherwise this change in terms risks introducing unnecessary conflict and uncertainty i.e. the term Principle is a very strong term and seems to suggest these are foundation stones in the process, implying they are more important than Objectives, but that is not really how they are used in this document.
5. As a policy document the NAP suggests directions but is rather thin on clear implementation strategies on how any outcomes will be achieved, including very little sign of a monitoring and evaluation strategy which will be essential – having such a strategy is key element of a good robust planning process.
6. Aotearoa is already experiencing the impacts of our climate having warmed by 1.1o Celsius over the last 100 years. The IPCC in April 2022 reported that the climate was on track exceed 1.5oC during the 21st century.

Global GHG emissions in 2030 associated with the implementation of nationally determined contributions (NDCs) announced prior to COP2624 would make it likely that warming will exceed 1.5°C during the 21st century.²⁵ Likely limiting warming to below 2°C would then rely on a rapid acceleration of mitigation efforts after 2030. Policies implemented by the end of 202026are projected to result in higher global GHG emissions than those implied by NDCs.¹

7. The NZ Searise Te Tai Pari O Aotearoa programme reported in May 2022 that previous climate change predictions required significant updating as climate change and warming temperatures are causing sea-levels to rise, on average, by 3.5 mm per year. Local sea-level rise around the coast of Aotearoa is also affected by up and down movements of our land. Global sea-level rise of 25-30 cm by 2060 already appears unavoidable regardless of our future emissions pathway. In our most populated regions, such as Auckland and Wellington,

¹ <https://www.ipcc.ch/report/ar6/wg3/resources/spm-headline-statements/>



this unavoidable rise is happening faster than first predicted. ²

8. In August 2020 the National Climate Change Risk Assessment identified the climate related risks that required a priority response. The NAP is the first comprehensive initiative to basically draw together in a single place the various current Government work/projects that support climate resilience to address the climate risks identified in the August 2020 report. These projects have either commenced or have a financial commitment. To give further insight into the future initiatives that central government believes are required the NAP outlines a proposed work programme of projects for the next six years.
9. These projects continue to be of limited scope as the current short-term horizon of the NAP (i.e. generally about 6 years) ignores that for infrastructure, including lifeline utilities, we need to take a longer view especially when thinking about investment planning. Te Waihanganga Rautaki Hanganga o Aotearoa - NZ Infrastructure Strategy 2022 to 2052 provides a 30 year horizon which enables consideration and planning for technology advancements, climate impacts, population change, and infrastructure decision-making over the coming years and decades to be considered.
10. While it is good to see the utilisation of the various current projects to support the creation of this initial NAP, additional focus and work is required to create a full bundle of projects/initiatives required to deliver on climate adaptation beyond the next 2 to 6 years for inclusion in the second NAP due to be produced in by 2026. Work is required now to identify the gaps via working with key stakeholders including Iwi, communities and private sector.
11. We note that there seems to be a strong belief throughout the NAP that providing good quality information to communities, institutions and individuals will ensure that they make informed and logical decisions with regard to climate change impacts. Given that we have 20+ years of IPCC reports on climate change and its consequences, which have frequently been ignored, particularly in New Zealand, further 'good information' seems likely to be ignored by decision makers at all levels of government.
12. In terms of triggering actions to address climate change it seems very optimistic to imagine communities and individuals will be simply convinced by good information, if only because of the huge investment New Zealanders make in property. It has certainly not worked for any other natural hazards as many practitioners can testify to and recent research has confirmed. Work by Chung & Yui (2021) which looked at the impact on property prices of a major flood event revealed that 'people will only typically pay less for a property if a flooding event has occurred recently' (Chung, 11/5/2022). In short any effect on prices is short lived. The authors seem to suggest that there will be a similar response to climate change impacts on coastal property prices. This means that one of the expected levers to try to discourage further investment in coastal property might not work as expected, even where all parties have accurate information about climate change impacts. This makes the role and actions of insurers and those granting (or withholding) mortgages on such properties all the more important in trying to change how we view coastal property which will need to be addressed via managed retreat processes. If money continues to be 'invested' in coastal properties this

² [Sea-level is rising faster than we thought — NZ SeaRise Programme](#)



will significantly increase the cost of compensating coastal property owners when managed retreat processes are put in place

13. Additionally, the current planning system is not strong enough to deal with the issues considered by the NAP (for example via District Plan processes). The examples at Kapiti and Christchurch where Councils tried to address the matter of retreat and down zoning and got major push back, and in Kapiti's case withdrew the process, can't continue. Protracted processes and Court cases shouldn't be the way forward. For this reason we propose that a national approach/model that can avoid the court process is needed. We note our concern that the Government is already talking about the role of the Courts in the NAP objectives. We propose it would deliver better outcomes to have some form of independent panel process which can look at issues on a practical rather than legalistic basis which could provide a pragmatic approach, rather than one where affected parties just end up in court.
14. However, work in this area cannot be held over until the new RM legislation is put in place given the timeframes involved and the issues that are already apparent in terms of climate change induced coastal issues. There needs to be clear leadership from central government i.e. a NPS on sea level rise/coastal erosion.
15. The recognition of partnering and recognising the indigenous worldview via the Rauora framework is positive. The Rauora framework offers a holistic approach to climate change, where enduring and unbroken relations between Papatūānuku (earth mother) and Ranginui (sky father) and beyond inform the relationships among us all. The NAP seems to have missed the opportunity to weave the Rauora framework throughout the NAP – to be inclusive. Future NAP's, maybe the second version, should have a key outcome to deliver an integrated worldview, instead of current two climate change worldviews, for Aotearoa New Zealand if that is appropriate.
16. There needs to be an early and clear indication of who or what institution will be responsible for leading the response to this issue – MfE, EPA, a new organisation or who exactly? We strongly believe that this is not work that can just be tacked onto some existing groups work schedule given the legislative change, which is looming, and the increasing speed of climate change induced coastal damage.
17. Leadership in this area means developing different alternatives to deal with these issues, including the complex questions posed in the NAP. Communities in particular need to have material to work with rather than being expected to produce answers to complex technical issues or broadly based issues of the type traversed in the NAP.
18. Leadership needs to include central Government providing centralised modelling of natural hazards and climate change to ensure all organisations have equitable and consistent access to the best and most up to date modelling data. Data is a critical core component of making good decisions. Our current RMA planning system often makes poor decisions due to the lack of current modelling data on climate and natural hazards. Government procurement and funding is the most efficient and cost effective way to ensure critical infrastructure, local government and central organisations have good data to empower decision making to support our communities.



19. The issues considered by the NAP represent some of the biggest risks in resource management facing New Zealand (particularly considering the potential impact these issues could have on existing use rights). Central leadership with significant funding and comprehensive and timely data is needed to manage our response to these issues i.e. extinguishing existing usage rights, which may be necessary in response to these issues, has the potential to be the most litigious issue in resource management and central government is the only body likely to be adequately resourced to deal with/fund this issue. Examples of where central leadership has been previously used (not always effectively) include Christchurch (CERA) and Matatā.
20. Central government should expect to be a significant funder of responses and initiatives, especially related to managed retreat. This reflects the significant cost of such initiatives, the procurement opportunities that come from a national scale approach e.g. creating a digital portal, climate modelling; as well as the need for a centralised banker role to enable infrastructure into remote or vulnerable communities e.g. RBI2, Blackspots via CIP or the 3 Waters infrastructure projects. Relocating whole communities in a short period of time is a cost that cannot be met or funded co-ordinated and organised by a community or local government given that the complexity of identifying potential other funders that should be required to contribute.
21. A resilient financial system underpins economic stability and growth. The NAP can support financial resilience by enabling business/infrastructure sectors to make informed assessments of risk and how to reduce their exposure to climate-driven economic disruptions and manage the financial risk associated with investment in activities such as housing, infrastructure development etc.
22. A centralised approach should ensure the need for, and funding of, initiatives such as infrastructure is aligned with decision-making frameworks that ensure a focus on delivering outcomes that create value for New Zealand rather than solely responding to climate change.
23. Additionally central leadership is required to ensure responses are considered holistically – need to be cognisant of ties to other central government initiatives such as emissions reduction targets, infrastructure strategy, directions set in forthcoming Strategic Planning Act etc.
24. Central government, due to poor decision making in the past and currently, will continue to be fiscally responsible and this should be recognised as it may be most efficient to enable wellbeing for the communities at risk instead of all interested parties pointing their responsibility fingers at other parties. Having centralised funding to rapidly manage and solve climate impacts for communities at risk is critical.
25. As noted above (paragraph 5), monitoring and evaluation will be critical to a successful response to the issues raised in the NAP. It is important at the outset to explore and determine what success looks for the NAP so progress towards these outcomes can be monitored and reported. The critical aspects for monitoring and reporting that need some focus and development before the NAP is adopted and implemented are:



- a) Clarity of the priority areas for gathering data
 - b) Consistency of the measures
 - c) Identification of risks and interdependences i.e. funding, conflicting priorities, lack of capacity and skill or supply chain constraints that could challenge delivery of the NAP
26. The provision for He Pou a Rangi – Climate Change Commission to report on the implementation and effectiveness of the NAP (figure 8) to the Minister of Climate Change is essential.
27. The NAP sets out in Appendix 4 the roles and responsibilities for all sectors. It is therefore logical that monitoring and reporting on the NAP and its initiatives should also extend beyond the government sectors. The roles identified continue the tradition of siloed organisational/sector thinking rather than moving to the collective and partnership mindset required for Aotearoa to be innovative and successful in adapting to Climate Change. Work needs to be undertaken to establish a governance structure that this inclusive of Maori, and the private and public sectors.
28. He Pou a Rangi – Climate Change Commission assessment and recommendations for adjusting or changing actions in the NAP is critical if the NAP is to be effective as we learn more about the climate change effects being faced and the responses required. The NAP needs to be agile in its ability to adapt to the needs of Aotearoa. The monitoring and reporting on the NAP processes require further work to improve their robustness and give certainty of priority to funding and implementing the required actions and plans. This includes how the learnings and information from the projects will be shared across government (central and local) and the private sector. The learning and sharing component of the Plan is lacking but recognised in Figure 5 that sets out the climate change adaption cycle.
29. In summary, we propose that central leadership of the issues considered by the NAP is needed to ensure
- a. A single comprehensive source of data/modelling for all users which enables consistency of response, recognition of economies of scale, recognition that issues being addressed do not conform to local/regional boundaries
 - b. Efficiency of expenditure of resources (removal of duplication of effort at local/regional levels)
 - c. A holistic approach
 - d. A timely approach (implementation focused, providing direction, monitoring and reporting of progress, sharing of learnings etc)
 - e. Resolution of current disparate world views
 - f. An ability to deal with what are likely to be the most contentious/litigious issues in resource management
30. We support the following Objectives from Table 1: Objectives and Principles of the legislation



- a. To set clear roles, responsibilities and processes for managed retreat from areas of intolerable risk
 - b. To provide clarity on tools and processes for acquiring land and related compensation
 - c. To provide clear criteria for when central government will intervene (or not) in a managed retreat process
31. We conditionally support the following Objectives from Table 1: Objectives and Principles of the legislation
 - a. To provide stronger tools for councils to modify or extinguish existing uses of land
 - We support this in principle, but any change to existing use rights needs to be backed by evidence
 - b. To clarify local government liability for decision-making on managed retreat, and the role of the courts
 - We support the need to clarify local government liability, but, as noted above, we have concerns that the role of the Courts is already being considered in the Objectives.
32. We support the following Principles from Table 1: Objectives and Principles of the legislation
 - a. There is flexibility as to how managed retreat processes play out in different contexts
33. We conditionally support the following principles from Table 1: Objectives and Principles of the legislation
 - a. Managed retreat processes are efficient, fair, open and transparent
 - We propose the inclusion of “timely” to this principle. Processes which drag on are going to create resentment and potentially mental health issues for those directly involved
 - b. Communities are actively engaged in conversations about risk and in determining and implementing options for risk management
 - We propose the addition of “and understand their costs” at the end of this Principle
 - c. Social and cultural connections to community and place are maintained as much as possible
 - We propose that “as far as practical” might be better than “as much as possible”
 - d. Iwi/Māori are represented in governance and management and have direct input and influence in managed retreat processes, and outcomes for Iwi/Māori are supported.
 - We cannot find any reference to any new governance structure so not sure what



the first part of this is about

- e. Protection of the natural environment and the use of nature-based solutions are prioritised
 - Clarity is needed regarding the “protection of the natural environment”. If its to protect the natural environment from say structures which might impact upon it, we would support that, but if its about trying to protect the natural environment from say inundation the question could well be asked as to why the built environment is not in there as well.
34. We support the following Objectives form Table 2: Objectives and principles of funding responsibilities
 - a. To reduce hardship due to the impacts of climate change
 - b. To incentivise better long-term investment decisions concerning climate change risk
 - c. To support the role of banking and insurance in facilitating risk management
35. We conditionally support the following Objectives form Table 2: Objectives and principles of funding responsibilities
 - a. To reduce liabilities, including contingent liabilities to the Crown
 - We question why this would just reference the Crown given the importance of local government in the response to the issues raised in the NAP – surely there is potential for equal if not more liability to councils in particular
36. We support the following Principles form Table 2: Objectives and principles of funding responsibilities
 - a. Ensure fairness and equity for and between communities, including across generations
 - b. Beneficiaries of risk mitigation should contribute to costs
 - c. Minimise cost over time by providing as much advance notice as possible
37. We conditionally support the following Principles form Table 2: Objectives and principles of funding responsibilities
 - a. Solutions support system coherence and the overall adaptation system response
 - While we are supportive of this we note that it seems to be poorly worded
 - b. Risks and responsibilities are appropriately shared across parties including property owners, local government, central government, and banking and insurance industries
 - We are supportive of this but note it seems to be at odds with other principles about limiting financial liabilities



- c. Limit Crown's fiscal exposure
 - Again why just reference the Crown. More importantly however there is no reference in these Principles to Crown funding to do anything yet the heading is funding and financing. If this is the Crowns intended approach they are setting the process up to fail.
- d. Minimise moral hazard
 - Further clarity is needed on what is meant by this Principle
- e. Solutions are designed to be as simple as possible
 - We propose this should say "cost effective as possible" not "simple"

DAVID CURTIS

CEO

Te Kokiringa Taumata | New Zealand Planning Institute

P: +64 9 520 6277 ext. 3 | M: +64 21 625 244 | www.planning.org.nz

SUPPLEMENT TO FEEDBACK – PLANTECHNZ FEEDBACK

DRAFT NATIONAL ADAPTATION PLAN – MAY 2022

About PlanTechNZ

PlanTechNZ is a Special Interest Group of the NZPI. PlanTechNZ comprises NZPI planners who are passionate and curious about the role of emerging technologies in the future of planning practice. It aims to bring planning and resource management practitioners together to make the most of new technologies in the planning profession and achieve better planning practice outcomes for communities and the environment.

PlanTechNZ's purpose is to support the NZPI, NZ planners, and the profession's role in responding to the impact of emerging technology on the profession and advancing PlanTech awareness, understanding, and capabilities in NZ planners for the benefit of New Zealand.

Our main work areas are to:

- Explore the opportunities and challenges that new technologies present to planning in New Zealand;
- Introduce PlanTech concepts and tools to the broader NZPI membership and NZ planning practice;
- Provide insightful input to New Zealand's planning profession and its leadership on issues concerning new and emerging technologies;
- Build relationships within New Zealand relating to the success of PlanTech; and
- Contribute to the international PlanTech community and share knowledge to improve planning practice.

A key message of our group is that new technologies offer new solutions to how we manage and monitor our cities, rural areas and natural environments, including how communities are engaged in these processes. Modern systems for gathering data and information can improve evidence-based decision-making to enable better and promote the well-being of people and communities and well-functioning rural and urban environments. It is important that the public has access to data and its analysis to understand the issues facing their community and participate fully.

This is becoming increasingly critical with climate change impacts requiring greater resilience and adaptability in the environment, communities and infrastructure. For example, with rapid increases in global temperatures, we see increases in sea level rise and more frequent storm events (causing flooding and droughts). Policy and planning will need to adapt quickly, and technology gives us the tools to make that a reality.

PlanTechNZ's feedback

System-wide actions questions

6. Do you agree with the objectives in this chapter?

Yes ~~No~~ Partially Please explain your answer

Strong support for objectives and actions for Focus area two: Provide data, information, tools and

guidance to allow everyone to assess and reduce their climate risks. It is critical that all New Zealanders can access a range of data and information to inform their activities. As detailed in the submission points below on the other questions for this chapter, we consider that more can be done to ensure the success of the actions for Focus Area Two.

7. What else should guide the whole-of-government approach to help New Zealand adapt and build resilience to a changing climate?

Strengthen data, information and digital tools in the resource management system to support this Adaption Plan

Develop data tools and portals as part of the resource management reforms to connect with and align with those for climate change adaptation. An information portal for Adaption will not work unless it has good data flows from essential systems such as the resource management system. Both data and tools should ideally integrate and work well together across government systems.

The Adaption Information Portal will require information currently contained in council systems, including GIS systems. However, these records are variable as each council has prepared modelling and mapping based on its methods and criteria. This makes it hard to access consistent information, for example, along a stretch of coastline within more than one council area. There needs to be greater consistency in how information is categorised and structured to be brought together in a Portal. Many councils are not resourced to collect the data necessary for a Portal to succeed.

Strengthen tools to communicate with communities, and resource local Government to do so

Climate change is not always 'evident', and robust visualisations of how science tells us we will be affected by it will be essential to bring all New Zealanders along with the journey of change. Emerging technology, including virtual reality and projector-based models, can be considered as part of a package of tools that could be used.

The development and adoption of tools such as Wellington's digital twin could be funded in other parts of the country. This is already recognised in the draft plan as an exemplar of its kind. Central government funding could be considered to assist local authorities and other community organisations in developing local tools.

NZSeaRise³ is a portal that sets out a simple way to understand future changes that may occur. The final solutions will be more complex, but at least people can understand the broad concept of sea-level rise, land movement up and down and when decisions are likely to be made.

9. Are there other actions the central Government should consider to:

a. enable you to access and understand the information you need to adapt to climate change?

Yes, No Unsure Please explain your answer.

Create a central government digital ecosystem to ensure the data and tools are available to support the proposed Adaption Information Portal

Strong support for the 'Design and develop an Adaptation Information Portal'. This Portal will need to rely on data from many areas across central and local governments. Many of these areas are poorly digitised at present. To ensure that the proposed Portal will deliver, there needs to be a focus on digitising more of these systems. The Government needs to provide more of these national data hubs and ensure the data is connected across digital systems. In particular, there needs to be a dramatic increase in the data and digital technologies used for resource management. Critical information for the proposed Portal comes from the resource management system, such as land-use patterns and development and natural hazard information.

Government should also consider the multitude of technology coming forward from IoT, which can

³ <https://www.searise.nz/>



collect a range of data remotely. Cloud-based system to store the data (AWS, Microsoft Azure) and AI system to analyse and represent the data. The AI Forum for the Environment Aotearoa NZ⁴ showcases the potential for AI in the environmental space and the opportunities for better decision making and policy. AI can help with the following:

- processing big data and providing near real-time information.
- more accurate predictions and modelling.
- answering specific questions to support decision-making and identify where to put effort.
- detecting and labelling features of interest in data collected from sensors.
- finding new insights from historical data.

It is of critical importance that the development of any data tools (Focus area 2) is closely tied in with any planning tools developed under other arms of the resource management reform agenda. Tools should ideally integrate and work well together.

d. support local planning and risk reduction measures while the resource management and emergency management system reforms progress?

Yes, No—Unsure Please explain your answer.

As per the answer to question 9a, the local Government needs a high level of support and funding to deliver the step-change in resource management practice required to support this Adaptation Plan.

10. What actions do you think will have the most widespread and long-term benefit for New Zealand? Creating suitable digital technologies to allow the public to see climate change adaption information in a meaningful way, so they can take insights and respond accordingly. The digital tools and supporting data to create these tools do not currently exist at the required level.

Ensuring local Government has the funding and guidance required to improve digital systems and data practices. See answer to Qu 7. digital twins across all of New Zealand's major urban centres and coastal hazard areas will help us model and adapt to the upcoming changes. The data, storage and analysis should remain as open-source as possible; too much of our information is locked away or pooled in a small number of experts and data systems. AI allows the opportunity to bring this information together and cross-reference different data sets to help with diverse and innovative solutions.

12. There are several Government reform programmes underway that can address some barriers to adaptation, including the Resource Management (RM) reform. Are there any additional actions that we could include in the national adaptation plan that would help to address barriers in the short term before we transition to a new resource management system?

As above, build digital technologies and data flow from the resource management system to ensure that this Adaption Plan can succeed. This requires a substantial change in the resource management system. There is a broad range of information relevant to climate change in the resource management system; however, this is not accessible as data. For example, a national land use map for New Zealand and a national GIS system to ensure natural hazard information can be accessed consistently around the country (NZSeaRise as an example). Near real-time and spatially mapped overview of build development as it is approved and/or constructed to ensure we can monitor how well this Adaption Plan influences development to locate away from at-risk areas.

Natural environment questions

14. Do you agree with the actions set out in this chapter?

Yes, No—Unsure Please explain your answer.

Add action to realise the benefits of modern monitoring methods such as the Internet of Things (IoT),

⁴ <https://aiforum.org.nz/wp-content/uploads/2022/05/AI-for-the-Environment-Report-2022.pdf>



Satellite monitoring,

Modern technology allows for a significantly greater ability to monitor the natural environment to identify information relevant to climate change. The central government should support the development of a network of climate change indicator monitoring facilitated through new technologies such as the Internet of Things and drones. There needs to be a national system to store this data and encourage and resource local government and other stakeholders to undertake this monitoring work.

Homes, buildings and places questions

19. Do you agree with the outcome and objectives in this chapter?

Yes ~~No~~ ~~Partially~~ Please explain your answer.

Agree with this, subject to suggestions below.

20. What else should guide the central Government's actions to increase the resilience of our homes, buildings and places?

Ensure people making property decisions can access information to make informed choices

Support for greater transparency of data and information to equip all to make better decisions around locating activities/purchasing properties. For example, the resource management system has detailed information on the environmental effects of developments. However, it is challenging for prospective purchasers or property owners to access this information (in most councils, this requires a manual request to the council to see the property file, with a response taking a few days, and the records provided can be dozens to hundreds of poorly named pdf files which are not readily searchable). Modern citizens require more efficient processes to access the data to make informed decisions for themselves. Council GIS systems are variable around the country, making it difficult for citizens to access information around flood zones and coastal inundation areas easily.

Strengthen tools to communicate with communities, and resource local Government to do so

As per the answer to Question 7.

21. Do you agree with the actions set out in this chapter?

Yes ~~No~~ ~~Partially~~ Please explain your answer.

Yes, subject to comment on Q20, property information can be improved.

Communities questions

33. Do you agree with the actions set out in this chapter?

~~Yes~~ ~~No~~ **Partially** Please explain your answer.

Local Government and communities must be resourced and equipped to deliver the actions under this Plan. This includes providing the data and the digital technologies to use that data. This cannot be done by each individual council alone.

It is also essential to be inclusive and ensure that inequitable access to digital across demographics, various communities and levels of digital literacy is identified and resolved.

Some people in remote communities have less equitable internet access, particularly at the speeds necessary to support access to bandwidth-intensive data tools. Given the importance of being able to plan for managed retreat and understanding future constraints on the use of land, ensuring universal access to information needs to be considered as part of adaptation planning. Community data hubs could be regarded as, and also mobile-based options.

New Zealand is a multi-lingual country due to its diversity, and often online tools, when developed, online tools are often not suitably translated into languages other than English and Te Reo. Generally, any tools are likely to be used by the public (rather than planners and other experts). The proposed Adaptation Information Portal should be designed with broad language support, noting that all New

Zealanders need to be aware of what climate will look like in their community. Geospatial tools do not usually translate well if at all, using browser auto-translate tools.