

## **IrrigationNZ submission on the draft National Adaptation Plan, Ministry for the Environment, 2022.**

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Please find below the IrrigationNZ submission to the Ministry for the Environment (MfE) on the draft National Adaptation Plan: Adapt and thrive: Building a climate-resilient New Zealand, Ministry for the Environment, 2022.

We would appreciate the opportunity to discuss the responses in our submission or to provide additional information.

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## About IrrigationNZ

Irrigation New Zealand (IrrigationNZ) represents over 3,800 members nationally, including irrigation schemes, individual irrigators, and the irrigation service sector across all regions of New Zealand.

Our irrigator members include a wide range of farmers and growers – sheep and beef, dairy and cropping farmers, horticulturalists, winegrowers, as well as sports and recreational facilities and councils. We also represent over 120 irrigation service industry members – manufacturers, distributors, irrigation design and install companies, and irrigation decision support services for both freshwater and effluent irrigation.

We are a voluntary-membership, not-for-profit organisation whose mission is to create an environment for the responsible use of water for food and fibre production for local and international consumers and to sustain the wellbeing of communities.

As an organisation we actively take a technical leadership role in promoting best practice irrigation and carry out a range of training and education activities associated with freshwater management. Over the last five years, we have trained over 3,000 irrigators on various aspects of irrigation best practices to improve water use efficiency (lowering consumption) and better manage environmental effects (improved soil moisture and surface water management).



IrrigationNZ members share many of the same goals as other New Zealanders:

- Reduce their environmental footprints and see improvements in the health of the natural environment,
- Contribute to the wellbeing of their communities, and
- Provide for a resilient future for New Zealand in the face of climate change.

## IrrigationNZ General Statements

IrrigationNZ acknowledges the substantial challenge facing all New Zealanders in the face of climate change and the impacts this will have on the environment, economy, infrastructure and community wellbeing. This will affect the activities of urban and rural communities, our primary industries, and regulators alike.

The focus of IrrigationNZ in reviewing this draft plan is how it relates to and could be adopted by irrigated food and fibre producers in New Zealand. Having a National Adaptation Plan is a good strategic intent and, if well developed, will assist people in making decisions for their futures with some improved certainty.

From our reading of the consultation material provided the draft NAP presented does not yet provide confidence that a coordinated and rational approach will be taken to key legislative decisions that will in particular affect water availability and security for the primary industries.

As it stands the document is cluttered with largely lists of a plethora of policy initiatives from a multitude of government agencies. The plan lacks a clear central direction and rather than build on earlier reports provides confused interpretations of priorities set out more clearly in the National Climate Change Risk Assessment (NCCRA), MfE, 2020.

The NCCRA documented priorities haven't been addressed individually according to their ranking. Rather, the NAP gives the appearance of simply collating a list of government programmes, many triggered by completely different objectives and policy drivers, and then seemingly tried to cram these initiatives into the climate change risk priority table. There are clear gaps and misinterpretations of what will be effective.

The NAP belatedly points out in Appendix 2 that this first NAP version specifically addresses the first 10 risks within 5 categories of NCCAR 2020 climate risk priorities of which there are 43 overall. This plan indicates the 3<sup>rd</sup> highest risk and below in each category does not make the cut, in IrrigationNZ's opinion this is a significant omission driven by an arbitrary cut off of risks at rank of 1 and 2.

As a case in point, IrrigationNZ has been actively engaged in development of the Water Availability and Security report October 2021 as part of the MPI Technical Advisory Group. IrrigationNZ applauds that the NPA acknowledges its support of this MPI led program, in that, *by 2024, the Ministry for Primary Industries (MPI) will form a permanent team and commence addressing issues of water availability and security within our primary sectors and rural communities. This work will include partnering with Māori, communities and other impacted sectors to deliver multi-purpose, multi-benefit solutions.*

The WAS process is a highly relevant and important action on behalf of the New Zealand government to explicitly protect the New Zealand primary sector's access to reliable water supplies. The WAS recommendations include strategic planning for future government investment in water capture, storage and distribution infrastructure to underpin sustainable food production under changing climatic extremes.

However, the NPA seems to misdirect the emphasis of the WAS program by suggesting that the strategy only addresses NCCRA risks of *N1 and N7 (natural ecosystems), N8 (oceanic ecosystems), E5 (fisheries), N10 (ocean acidification)* seemingly mostly to be the wrong ones, and significantly misses both *E2 Risks to the financial system from instability due to extreme weather events and ongoing, gradual changes* and *E3 Risks to land-based primary sector productivity and output due to changes in mean rainfall and temperature, seasonality, weather extremes and changes in the distribution of invasive species.*

While this may be a typographical error by the authors, if not, it is concerning that the objectives of the WAS program are framed predominantly in terms of natural ecosystem protection. IrrigationNZ supports freshwater management as an important component of New Zealand's environmental future. It is equally important that the underpinning of sustainable communities and access to reliable food production is also seen as a key metric in the NPA. We recommend that MfE defers to the newly established WAS unit in MPI to review and improve the NAP in relation to the correlation of the NCCRA risk priorities and to better support the MPI WAS program.

IrrigationNZ attended the public NAP information webinar on 24th May hosted by MfE that presented chapter by chapter explanation, mostly by other government agencies such as MBIE, MPI and Te Waihangā New Zealand Infrastructure Commission. In answer to question posted by IrrigationNZ, Te Waihangā verbal presentation provided considerable clarity and insight to the NAP intentions, that are less clear in the actual NAP document. Te Waihangā provided specific reference to the importance of fresh water infrastructure to support multiple uses including irrigation to underwrite risks within the primary sector food supply chain. The ability of our communities to adapt to climate change is directly related to reliable food production and supply and are important metrics in a stable future economy. IrrigationNZ recommends in matters related to infrastructure development and management MfE defers to the pragmatic approaches presented by the experts within Te Waihangā.

## Responses to numbered questions on the Draft National Adaptation Plan

[Note IrrigationNZ has only addressed specific questions and therefore numbering is not intended to be sequential.]

1. Climate change is already impacting New Zealanders. Some examples include extreme weather events such as storms, heatwaves and heavy rainfall which affects lives, livelihoods, health and wellbeing, ecosystems and species, economic, social and cultural assets, services (including ecosystem services) and infrastructure.

How is climate change impacting you? This could be within your community and/or hapū and iwi, and/or your business/organisation, and/or your region.

Drought and flood events in food producing regions have devastating effects on the ability of the primary sector to meet its role of reliable food production for our communities.

The establishment of well planned infrastructure to allow capture and storage of peak flow events provides both a mitigation of potential flood flows onto productive land and meets irrigation demands during periods of drought.

Climate change, particularly seasonal growing degree days, is already leading to change in what can be grown where, and can be both a negative but also positive outcome of climate change. New varieties of food crops and earlier harvest due to warming zones is now viable in some districts. The offset is that in areas of decreasing water availability there is an increased need for reliable irrigation water supply through storage and distribution infrastructure. This need careful planning in relation to changing hydrological models taking into account both spatial and temporal factors.

Generally, extreme weather events pose minimal risk to well-designed and well-planned infrastructure. Engineering process can allow for peak flow events within infrastructure capacity where rainfall models are updated with reliable climatic data and weather modelling. There are however increasingly severe extreme flood plain events that can damage infrastructure such as irrigation pump stations, intake galleries and storage reservoirs already positioned in the flood plain or on river margins. These events can also, through deposit of sediments, make fertile and highly productive soils less resilient. Therefore assisted and managed retreat may also apply to flood plains and river control and not just coastal sea level rise retreat.

The highlighted risks within the built environment chapter in the NCCRA is inadequate as it doesn't mention water infrastructure other than for potable supply. While provision of safe and reliable drinking water is a concern, the supply of water for food production must not be underplayed in the NAP priorities. Te Waihanga has a broader view of asset protection than the NAP documents. This needs to be addressed.

The NAP lists an action as *EF1 Continue delivering the Sustainable Land Management and Climate Change (SLMACC) and the Greenhouse Gas Inventory research programmes MPI. A suite of outputs from funded science projects, in the form of data, information, reports, decision support tools and official inventory to help the sectors adapt to climate change, measure emissions and mitigate land-use impacts on freshwater.* The focus of this program is concerning in relation to the NAP in that while emissions management is important, equal emphasis needs to be placed on future ability to produce food whether from plant based or animal based systems. Climate change adaption responses cannot be just be mitigation of emissions if this also leads to reduction in food production capacity; the demand for food from global and local population growth is just too great to ignore. A restriction in local production of food will simply place higher emphasis on imported foods produced under less controlled environmental conditions to meet the requirements of New Zealand communities.

In Appendix 4 of the NAP the *roles and responsibilities for adaptation: Local government: Plan and implement upgrades to assets and infrastructure;* is highlighted. IrrigationNZ recommends caution in suggesting that the NAP focus is only on public infrastructure related to urban communities and within local authorities. Local government stands to gain greatly from freshwater storage established for irrigation that provides resilience of drinking and industrial water supply. The MPI WAS project highlighted a number of instances where future freshwater policies should enable not constrain multi-use water infrastructure. Local government certainly has a role to play but often lacks the capability and capacity to address such large-scale water storage infrastructure projects effectively and efficiently.

The NAP also lists an initiative as *EF1 Deliver the Māori agribusiness extension by MPI Years 1–6 (2022–28)* Terms of reference for the steering group to lead development of the tikanga-based programme are in place by November 2022. Two MABx panels will assess project proposals by June 2023 for the Māori advisors aspect. IrrigationNZ fully supports the inclusion of the Māori Agrisector in future NAP initiatives. In most regions of New Zealand the future security of food supply is intimately linked to both land and freshwater management that will take into account land currently in Māori ownership (or through future Treaty settlements) and mātauranga Māori principles within good resource management practices.

2. The national adaptation plan focuses on three key areas. Please indicate which area is most important for you (tick box).

**focus area one:** reform institutions to be fit for a changing climate. This means updating the legislative settings so that those who are responsible for preparing for and reducing exposure to changing climate risk will be better equipped.

Yes, having clear national direction on water availability and security that translates to sensible land and water regional plans that strike a balance between environmental and community protection and the need for enabling infrastructure development such as irrigation storage and distribution; we refer you to the water storage project in Wairarapa that hit perverse consenting hurdles that prevented a common sense multiple use outcome that was widely supported by the community.

**focus area two:** provide data, information and guidance to enable everyone to assess and reduce their own climate risks. This means that all New Zealanders will have access to information about the climate risks that are relevant to them

Yes, but the NAP needs to provide a balance in the information presented to New Zealanders that reflects the nation's important role in the global food supply chain and for achieving resilient local communities. We refer you to the Our Land 2021 and 2022 reports MfE and StatsNZ, that present poorly informed and unbalanced views on the role of irrigation as being bracketed as leading to environmental degradation. We suggest the New Zealand government look to the Australian CSIRO model for funding and communicating good science where the protocols is to ensure unbiased and open publication of research data from any Crown controlled reach agency.

**focus area three:** embed climate resilience across government strategies and policies. This means that Government agencies will be considering climate risks in their strategies and proposals. other?

Yes, as set out in our general comments above we particularly recommend the NPA take into account recommendations on future water availability and security for the primary sector and build on strategies built within MPI and Te Waihangā on infrastructure development to support community resilience.

3. We all have a role to play in building resilience to climate change, but some New Zealanders may be more affected and less able to respond. There is a risk that climate change could exacerbate existing inequities for different groups in society. **Appendix 3 (Page 123)** sets out the full list of actions in this national adaptation plan.

c) Are there any actions that would help ensure that existing inequities are not exacerbated? Please list them.

There is a misconception that farmers and growers operate businesses that are easily able to fund rapid and substantial changes in their operations to meet wide community environmental expectations. While the New Zealand primary sector wants to achieve the same resilience climate adaptation objectives of other New Zealanders practice change requires consistent policy frameworks, adaptive local interpretation according to geographic and land use type, and support within a financially viable enterprises. We refer you to the case Woodhaven Gardens Horowhenua which is widely acknowledged as a leading edge producer of food but operating within an extensive social and environmentally responsible operating framework. The cost per hectare of changes in their operating model was substantial that potentially impacts food prices. In addition enterprises are exposed to the impact from extreme weather events, such as hail, flood, and drought that leads to crop losses, a vulnerability within the rural community that many other businesses are not exposed to, to the same degree.

d) Are there any actions not included in this draft national adaptation plan that would enable you to assess your risk and help you adapt?

IrrigationNZ will be looking to the NAP to provide for specific support of the MPI WAS strategic planning approach leading to better regional plans that allow development of water capture and storage infrastructure at community scale.

4. Central government cannot bear all the risks and costs of adaptation. What role do you think asset owners, banks and insurers, the private sector, local government and central government should play in:
  - a) improving resilience to the future impacts of climate change?
  - b) sharing the costs of adaptation?

IrrigationNZ agrees there is shared responsibility for planning and environmental objective setting but this must be matched to ability to pay for practice changes and reflect the long term benefits to the wider community as a national outcome. Climate change adaptation needs to be something that is funded equitably between those who benefit.

Within a model of equitable costs some of these may demand heavy investment up front but with benefits not realised for many years so intergenerational timeframes need to be considered. Previous government funding of water infrastructure focused on short term thinking about using simplistic ROI and affordability models that focus on too short time frames.

5. The National Climate Change Risk Assessment recognised that there may be economic opportunities in adapting to a changing climate

a) What opportunities do you think could exist for your community or sector?

The definition of “economic benefit” must be seen as a wider definition and not just financial benefits to the monetary systems. Economic benefits include improved paid and unpaid workforce engagement, better welfare, education and other social measures as well as more traditional GDP/FTE modelling. IrrigationNZ refers you to the Treasury Four Capitals model for defining metrics as well as the more extensive UN Sustainability Goals and their 17 point measurement systems. GDP growth alone is a poor metric for community resilience. Benefits within an economy model are extensive when looking at the use of natural resources to provide the outcomes mentioned. Primary industries deliver many positive outcomes; compared to alternative activities in the economy such as tourism and mining where the focus is more on the finance metric of expert revenue gains.

b) What role could central government play in harnessing those opportunities?

IrrigationNZ believe the government is bets placed to resource change through providing access to long term capital financing, along with supportive policy, funding of improved research and education objectives, access to foreign markets, communication of more balanced messaging around environment and economics, and creating spatial planning solutions that meet diversifying community needs while protecting our highly productive soils.

### **System-wide actions (Pages 25-38)**

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

Yes.

IrrigationNZ agrees with the NCCRA assessment that regulatory frameworks and institutions do not always account for changing risks. There is a lack of statutory and policy alignment, a lack of coordination across government and with sectors, and there are limited tools and guidance on how to make decisions under conditions of uncertainty, such as the uncertainty associated with projections of future climate.

There has been a failure of legislative and policy processes to deliver resilience for the primary sector; “A core function of councils under the Resource Management Act 1991 is to avoid or mitigate natural hazards, and councils must have particular regard to the effects of climate change when making decisions.” These responsibilities extend beyond a current too narrowly focused role of environmental protection and must consider sector/community resilience such as through water capture and storage, thereby providing pathways for this to be enabled, not blocked.

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

Better communication to the community on actual scientific evidence for change and resilience options, not poorly informed and shallow emotive messaging such as the Out Land 2022 report that

presents irrigation as bad for the environment. Irrigation is actually essential for keeping humans fed and when coupled with water stage helps manage climate risk to our freshwater bodies. The government should support more visibility of our research community especially those operating in the primary industries.

8. Do you agree that the new tools, guidance and methodologies set out in this chapter will be useful for you, your community and/or iwi and hapū, business or organisation to assess climate risks and plan for adaptation?

Partially.

The Government needs to look hard at the effectiveness of Regional Councils to deliver on a core functions of meeting community resilience, and ensure they take wider view than just urban infrastructure reforms and environmental protection.

13. In addition to clarifying roles and providing data, information, tools and guidance, how can central government unlock greater investment in resilience?
- a. Would a taxonomy of 'green activities' for New Zealand help to unlock investment for climate resilience?

Unsure

Please explain your answer. The NAP must ensure it doesn't become tacit endorsement of ineffective projects. *By the end of 2024, as system reforms are completed and New Zealanders have better information about how to manage their climate risks, the Government will consider the need for further tools or guidance, funding and investment mechanisms to catalyse investment in resilience.* Better data and information can support decisions on where and when to invest in adaptation actions that offer the best value.

However, in some cases affordability, access to finance or other market barriers may prevent timely, cost-effective climate change adaptation action.

### **The natural environment (43- 51)**

15. What else should guide central government's actions to address risks to the natural environment from a changing climate?

IrrigationNZ supports the implementation of the National Policy Statement on Freshwater Management 2020. *Adaptation action for freshwater bodies will be achieved through local councils devising suitable plan provisions (e.g., rules) to achieve a range of outcomes, and will need to ensure the ability to use resources (e.g., land use, discharges, etc) is matched to the assimilative capacity of fresh water.* However, IrrigationNZ has previously submitted on the NPS-F and FWFP. We highlighted that regional council must work better with iwi in decision making partnerships but absolutely must avoid decisions being made in isolation of rural communities. The suggestion that objectives will be set only by councils in partnership with iwi is a misinterpretation of the NPS

objectives that also require inclusion of communities within decision making processes. The process is to set out a set of values, objectives, and actions at a catchment scale but under a national framework of risk assessment. The NAP must avoid cutting across this or creating legislative confusion on priorities.

### **Infrastructure, pages 63-70**

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

Partially.

IrrigationNZ believe this is a highly important chapter of the NPA. Its relevance to community, environmental and economic resilience is the ability to meet future water needs across multi user models including drinking, environmental flows and food production (irrigation). This multi use relates to the capture, storage and distribution infrastructure, for irrigation, drinking water, industry, recreational, and energy production (hydro). It will be important that the NAP supports a sound process for agreed water allocations and minimum flow rates that meet the multiple water use objectives. This needs to occur across reasonable investment timeframes and intergenerational benefits, taking into account climate change and the increasing demand and limited supply for water. IrrigationNZ supports the Te Waihangā, 2020 definitions for infrastructure decision making using four capitals in combination.

27. What else should guide central government's actions to prepare infrastructure for a changing climate?

Longer term thinking and more structured asset management processes. Its not just about building new infrastructure, but also optimising and preserving existing assets within sound operational systems and entities.

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

Partially

The NAP process needs to avoid thinking that water assets are just in local government ownership (i.e. 3W thinking). Irrigation schemes that underpin societal resilience are largely now in private ownership but for the benefit of the community. It is wrong to perceive these assets as just supporting farmer only benefits. They benefit all society so need to be supported equitably by policy and legislation.

29. The national adaptation plan has identified several actions to support adaptation in all infrastructure types and all regions of Aotearoa.

a) Do you see potential for further aligning actions across local government, central government and private sector asset owners?

Yes

IrrigationNZ believes the NAP could adopt a resilience standard or code of practice for irrigation water infrastructure that could include level of service considerations similar to local authority model but for rural resource users. We refer you to Tasmanian Irrigation and Murrumbidgee Irrigation Schemes delivery models. IrrigationNZ would be interested in working with MfE to establish this standard.

IrrigationNZ supports the NAP reference to Treasury in its role to publish a range of guidance for central government departments and other entities to guide investment management and state sector performance. The NAP will help integrate consideration of climate risks and future adaptation requirements into this guidance to help ensure that in taking decisions for new assets and across major renewal or upgrade programmes

IrrigationNZ supports the NAP reference to the National Energy Strategy that will signal pathways to achieve the 2050 target for emissions reduction and set out a vision for a net zero economy where energy is accessible and affordable, secure and reliable, and supports the wellbeing of all New Zealanders. The Strategy could also consider broader objectives such as security and reliability of energy supply, alongside decarbonisation and affordability. IrrigationNZ would be interested in working with MfE for consideration of small scale local hydro energy production linked to community scale water storage and distribution (both dam and in race/pipe) generation opportunities.

IrrigationNZ supports the NAP reference to Te Waihangā who will work with the Ministry for the Environment to include climate action measures for infrastructure in relevant parts of the National Planning Framework. This will influence the development of new assets, as well as maintenance, upgrades and major works on existing assets, in the new resource management system. IrrigationNZ can assist both MfE and Te Waihangā in consideration of climate adaptation actions through sound infrastructure decisions for multi-use water capture, storage and distribution infrastructure including for irrigation.

### **Communities (pages 74- 81)**

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

Partially

Irrigation supports the NAP references to communities that have a high level of adaptive capacity and are resilient to the impacts of climate change. Communities are able make decisions and put resources into suitable adaptive actions. Government work programmes are focused on ensuring no one is left behind.

However IrrigationNZ would like to see the NAP ensures rural communities and the pressures they are under are included in this thinking, especially as they are at the sharp end of implementation of many environmental resilience and infrastructure investment actions. The NAP should also recognise the rural community's role in providing national resilience as providers of food and fibre,

a basic human need. The NAP should acknowledge the well-being benefits of green space and access to rural areas as part of the New Zealand way of life.

IrrigationNZ believes the NAP should look to improve education and the balance in messaging about what adaptation means including the food supply chain. IrrigationNZ supports the NAP reference to MOE in its role to improve community resilience by addressing inequities in learning outcomes and by supporting local curriculums and marau ā-kura to include understanding and responding to climate change. The aim is to support all children and young people to grow as lifelong learners, connected to the environment and communities and actively involved in a sustainable future. IrrigationNZ believe the NAP should also include adult education and assist with behaviour change within businesses including in the primary sector.

### **The economy and financial system (pages 84-98)**

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

Partially

IrrigationNZ supports but also calls for simplification of the process of continued delivery of the Sustainable Food and Fibre Futures Fund. The fund supports innovative projects that design and test new approaches and solutions to risks such as climate change in the primary sector. It includes a research call for regenerative agriculture projects.

IrrigationNZ supports the implementation of the Water Availability and Security work programme: As climate change is making the availability of freshwater more variable across the country, this is of key concern to the primary sector. This programme will help maintain the health of waterways, taking its lead from the National Policy Statement on Freshwater Management. It will help farmers adapt through making technological efficiencies and mapping areas suitable for water-intensive crops. This action will help avoid disruptions to business activity and land use, and potential flow-on impacts to sectors, regions and the economy as a whole. IrrigationNZ believe this policy must take move to the next step of water capture and storage strategic planning as identified in the WAS report.

IrrigationNZ supports the review process being undertaken with the Future Pathways work programme: This will position our research, science and innovation system for the future. It includes focusing resources on national goals (such as climate change) and exploring how research can best honour Te Tiriti obligations and promote mātauranga Māori.

A future-fit research, science and innovation system that is connected, resilient and adaptable can more effectively respond to the needs of businesses and sectors, and support the development of the right tools, information and innovative capacity to address climate risks.

IrrigationNZ has submitted that the Future Pathways programs for New Zealand R&D must ensure outputs reach the target audience and that education or extension programs should bear accountability under any nationally funded research.

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

Partially

IrrigationNZ supports but would look to the NAP to broaden the end user messaging from the Growing kai under increasing dry-climate adaptation and the primary sector, National Science Challenge report Growing Kai Under Increasing Dry.

43. Are there additional actions within the financial system that would help strengthen Māori climate resilience?

Yes

IrrigationNZ support the delivery of a Māori agribusiness extension program. This action will deliver a tikanga-based support programme for whenua Māori, developed by Māori for Māori. This will empower Māori landowners and agribusiness to take a te ao Māori approach to adaptation and lowering emissions. It will extend the current pilot programme, which offers resources and support to Māori land-owning collectives. The extended service will also set up a network of skilled and trusted Māori advisors to support Māori land owners to reduce emissions, and improve preparedness for physical climate impacts. IrrigationNZ is interested in working with Māori agrisector agencies in the development and delivery of specific programs to support on going climate change adaption programs.

### **Research strategy**

IrrigationNZ acknowledges the Deep South National Science Challenge reference in the NAP, in its research strategy (2019–2024), that highlighted the need for additional work on adaptation strategies to manage and reduce risk. It noted some specific gaps: such as climate change implications for drinking water supply and quality and more detailed analysis of primary industry impacts and implications (including cumulative stressors, biosecurity and climate-related diseases)

IrrigationNZ believe this research should be for water supply across all users.

### **Measures and indicators for assessing progress**

*IrrigationNZ acknowledges the NAP attempt at defining measures and indicators. Each critical and supporting action in this national adaptation plan includes a progress indicator. This defines the progress expected by 2024. Additional indicators to 2028 will be included in the final national adaptation plan.*

*To help the Commission to fulfil its function of assessing the effectiveness of this plan in reducing risk, the Ministry for the Environment will regularly assess the adaptation preparedness of certain organisations.*

IrrigationNZ submits that the NAP measures of success should include rural businesses and resilience in particular regard to delivery on the WAS report strategic objectives to support community food supply chain.

## **Managed retreat**

52. Do you agree with the proposed principles and objectives for managed retreat? Please explain why or why not.

IrrigationNZ has earlier presented in this submission that managed retreat is not just coastal zones but may also have to consider river margins and flood plains in respect to protection of productive fertile soils. The NAP needs to address retreat from extreme flood events that are no longer contained within river margins. A related issue is the housing for displaced persons (and general population growth) and the need for spatial planning to consider the protection of highly productive soils that have a higher priority for climate change adaptation and food production than unconstrained urban sprawl.