

Policy

CLIMATE CHANGE POLICY

TEAM:	Strategy and Policy
RESPONSIBILITY:	Chief Executive
ADOPTED:	30 May 2019
REVIEW:	In 2021 and then every five years or as required.
CONSULTATION:	Required.
RELATED DOCUMENTS:	Ashburton District Council Long-Term Plan 2018-28 Ashburton District Plan Resource Management Act 1991 Local Government Act 2002

Policy Objective

To enable the Council to respond in a more integrated manner to climate change to:

- Ensure the sustainability of Council assets and services for the present and future resilience and well-being of the Ashburton District; and
- Enhance the resilience and preparedness of present and future Ashburton District households and businesses; and
- Manage the carbon emissions of the Council to provide an example of effective climate change mitigation for the District, and offer support and encouragement to businesses and households in their mitigation efforts.

Definitions

Adaptation means:

- in human systems, the process of adjustment to actual or expected climate and its effects, to moderate harm or exploit beneficial opportunities.
- In natural systems, the process of adjustment to actual climate and its effects

Climate Change means a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.

Council means Ashburton District Council.

Mitigation means a human intervention to reduce greenhouse gas emissions or enhance the sinks of greenhouse gases.

Resilience means the capacity of social, economic and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity and structure while also maintaining the capacity for adaptation, learning, and transformation.

Policy Statement

1. Scope

- 1.1 This policy is intended to guide the actions and decisions of Ashburton District Council.
- 1.2 This policy does not apply to Ashburton District Council council-controlled organisations or private households and businesses except to the extent those organisations, households, and businesses are users of Council services and assets.

2. Current Position

Climate change and its impacts

- 2.1 Climate change has the definition contained in this Policy.
- 2.2 The likely impacts of climate change in New Zealand include higher temperatures, flooding, water shortages, and sea-level rise. These impacts will affect many parts of our economy, environment, and society including agriculture, business, and finance, transport, biodiversity, and public health. For example:
 - a. Agricultural productivity is expected to be impacted. There are risks of drought and spreading of pests and diseases. There are likely to be costs from changing land-use activities to suit a new climate. Climate change is likely to drive greater innovation in efficient water use as well as constraints on water usage in, and methane and carbon emissions from, agriculture. Combined with concerns about water quality and nutrient discharges to land and water from farms, the economic and social impact on the farming community, and in turn on the wider Ashburton District community, could be substantial.
 - b. Households may find it more difficult to access adequate insurance cover for flood risk. Growers may find it more expensive to insure against weather related damage (e.g. from hail).
 - c. Hotter summers may damage transport infrastructure (buckled railway lines and damaged roads), with associated disruption and repair costs.
 - d. Our District may face increased biodiversity risks under climate change, as warmer temperatures alter habitats that are critical to some species. Council recognises that the Ashburton District community values and cares for biodiversity and accepts the shared responsibility to work together to ensure it is sustained and enhanced, both now and into the future.
 - e. Higher levels of heat-related human mortality in summer and a possible reduction in winter related mortality and illnesses such as colds and flu are two human health impacts from climate change. Climate change will have impacts on other social determinants of health such as extreme weather events causing reduced mental health and wellbeing, housing, food security, and clean recreational and drinking water which pose significant risks to human health.
 - f. Increased temperatures may reduce the comfort of occupants in domestic, commercial and public buildings and lead to business disruptions.

- g. The future likelihood of greater drought and smaller snowmelt will place greater importance on the use of water for the benefit of the surface water resources of the district, including its lakes, rivers, springs, and wetlands. These surface water resources support a range of ecosystems and indigenous biodiversity and enable agricultural, cultural and recreational activities. Finding the best future use of water resources for the long-term economic, environmental, social and cultural well-being of the Ashburton District will be a significant challenge for the whole community.
- 2.3 From an Ashburton perspective, the greatest of these risks appear to be those related to drought (as discussed in 2.2 a & g) and the increased severity and frequency of extreme weather events. Extreme weather events represent a threat to people and property, including both public and private infrastructure. Flooding and storm damage is a major risk given the proximity of many urban settlements to rivers and waterways. Sea-level rise is less significant for Council-owned public infrastructure, as the Council has no assets in the area up to 1.5 metres above mean high water springs. There will be other public infrastructure, such as electricity supply infrastructure, in affected areas. There is private infrastructure in this area that could be affected, particularly the hut sites at Rangitata, Hakatere, and Rakaia. Council will strive to protect all its communities through its asset management, civil defence emergency management, and district planning activities.
- 2.4 Reduction in emissions from landfill operations requires the capture of methane. Ashburton waste goes to Kate Valley Landfill where methane capture systems are already in place.
- 2.5 The impacts of climate change in Ashburton District, New Zealand (and globally) are expected to be more pronounced as time goes on. At the same time, those impacts are not expected to be distributed equally across communities. Some populations and communities (for example, communities situated near the coast or rivers, rural communities who are reliant on food production for income, those who may not be able to afford alternative housing should theirs be at risk) are more likely to experience the adverse effects of climate change disproportionately and require assistance to mitigate and adapt.

Council duties and responsibilities

- 2.6 Council has a range of statutory duties and responsibilities that can impact on, or are impacted by, climate change. These statutory and associated duties include land use planning, corporate planning, relationships with Māori, land transport, water supply, wastewater treatment, and disposal, stormwater treatment and disposal, waste management, civil defence emergency management, public health, building control, resource consenting and environmental monitoring. This list is not exhaustive. Few, if any, Council activities will be unaffected.
- 2.7 The 2018-28 Long-Term Plan records that Council responses to climate change will include:
 - a. Monitoring and planning for the provision of drinking water to address reduced water availability from groundwater and variable river flows
 - b. Investigating major rain events and their impact on wastewater and stormwater capacity and performance. Increased inflow from intense rainfall may result in overflows or other service failures.
 - c. Planning for the effects of increased demand, decreased river flows and lower groundwater availability on our water race network.
 - d. Planning for impacts on the road network, such as the effects of drought on the efficiency of roadside swale drainage, the impact of flooding on road assets, and increase drying of unsealed roads leading to surface material wind erosion.

- e. Continuing to build relationships with tangata whenua and foster Maori contribution to decision-making. Mana whenua will be affected by the impact of climate change on Māori customary rights due to rising sea levels inundating customary lands, including mahinga kai and sacred sites (wahi tapu and urupā).
 - f. Continuously improving our Biodiversity Action Plan, Civil Defence Emergency Management Plan and District Plan to ensure that land use development, biodiversity enhancement and community resilience are appropriate for a changing climate including increased extreme weather events.
- 2.8 Future operational activities also offer scope for new climate change response. Reviewing the District Plan and Development Contributions Policy offers the opportunity to build environmental and economic resilience by enabling, promoting and supporting climate-appropriate economic development. So too does Council-led developments (such as the Ashburton Industrial Park, the Ashburton CBD Project, and the Library and Civic Centre) and planned investment in economic development. Council projects also enable modelling of sustainable development, such as water harvesting.
- 2.9 The range and potential scale of climate impacts on Council's statutory duties, roles and responsibilities (and the potential for Council to lessen the adverse effects) show that climate change response is essential local government work. Council's approach to climate change adaptation and mitigation will benefit from more consistency and alignment as this will be more effective and efficient than ad hoc approaches.

Response from Central Government

- 2.10 Government is developing and implementing a work programme for long-term management of climate change response in New Zealand. These initiatives include:
- a) Legislation:
 - i. A Zero Carbon Bill
 - ii. Amendments to the Climate Change Response Act 2002
 - iii. Two-stage reform of the resource management system. Stage Two will address climate change and is planned to commence in 2019.
 - b) Response to the recommendations of the Climate Change Adaptation Technical Working Group.
 - c) Consultation on a proposed *National Disaster Resilience Strategy*.
- 2.11 The unfolding of these initiatives over 2019 and beyond will provide more certainty about the roles and responsibilities of local authorities (and may increase them). They will also provide better information, support and (potentially) funding for local authorities as they manage local climate change response.

Response from Council

- 2.12 Council puts most of its climate change effort into adaptation, as will many territorial authorities. Government and local communities expect that local government will pay increasing attention to all aspects of climate change.
- 2.13 Council currently governs its climate change adaptation work through the corporate planning and reporting systems. These mechanisms provide for some consistency and integration and there is potential for continuous improvement.
- 2.14 Council proposes to establish a benchmark for its carbon emissions and strive to reduce these emissions.

3. Policy Goals

- 3.1 Council will strive to understand climate change and what it means for the Ashburton District now and in the future, and create opportunities to share that knowledge with the wider community.
- 3.2 Council will respond to climate change in ways that:
 - a. Ensure the sustainability of Council assets and services for the present and future well-being of the Ashburton District; and
 - b. Enhance the resilience and preparedness of Ashburton households and businesses in the present and for the future; and
 - c. Reduce carbon emissions from its own activities.

4. Principles

- 4.1 In making decisions that can impact on (or are impacted by) climate change, Council will consider the following principles, alongside other decision-making considerations:
 - a. **Kaitiakitanga/Stewardship** – Council shares in a collective duty of care to safeguard the natural environment. Policies and decisions on climate change need to be flexible and enabling to allow for local decisions and empower organisations and individuals to reduce emissions.
 - b. **Anticipatory Governance** – Council will think and act with the long-term in mind to provide clear and consistent plans towards a low emissions economy.
 - c. **Equity/Justice** – Council will consider the needs of the most vulnerable and those without a voice – including future generations – as it responds to climate change. This includes recognising and advocating for the needs of communities and individuals disproportionately affected by climate change.
 - d. **Informed decision-making** – Council will use the best available information to understand the potential impacts of climate change and available options for responding to those impacts – including their costs and benefits. Council will make this information available to engage in meaningful conversations with communities.
 - e. **Work as one** – Wherever practicable, Council will work co-operatively and collaboratively with partner organisations and communities in the District. Council will also strive to ensure greater alignment and integration of its activities relating to climate change.
 - f. **Resilience** – Some impacts of climate change are already inevitable. Council will work with communities and businesses to improve their understanding of climate change risks and what they can do to avoid and mitigate climate change risk so that they can continue to thrive.

5. Decision-making and resource allocation

- 5.1 Council will have appropriate regard for climate change adaptation and mitigation in its decision-making and resource allocation.
- 5.2 Council will continue to develop its people, processes and tools to ensure that decision-making and resource allocation that can impact on (or is impacted by) climate change is integrated, effective and efficient.

Co-Benefits in Climate Policy and Key Insights

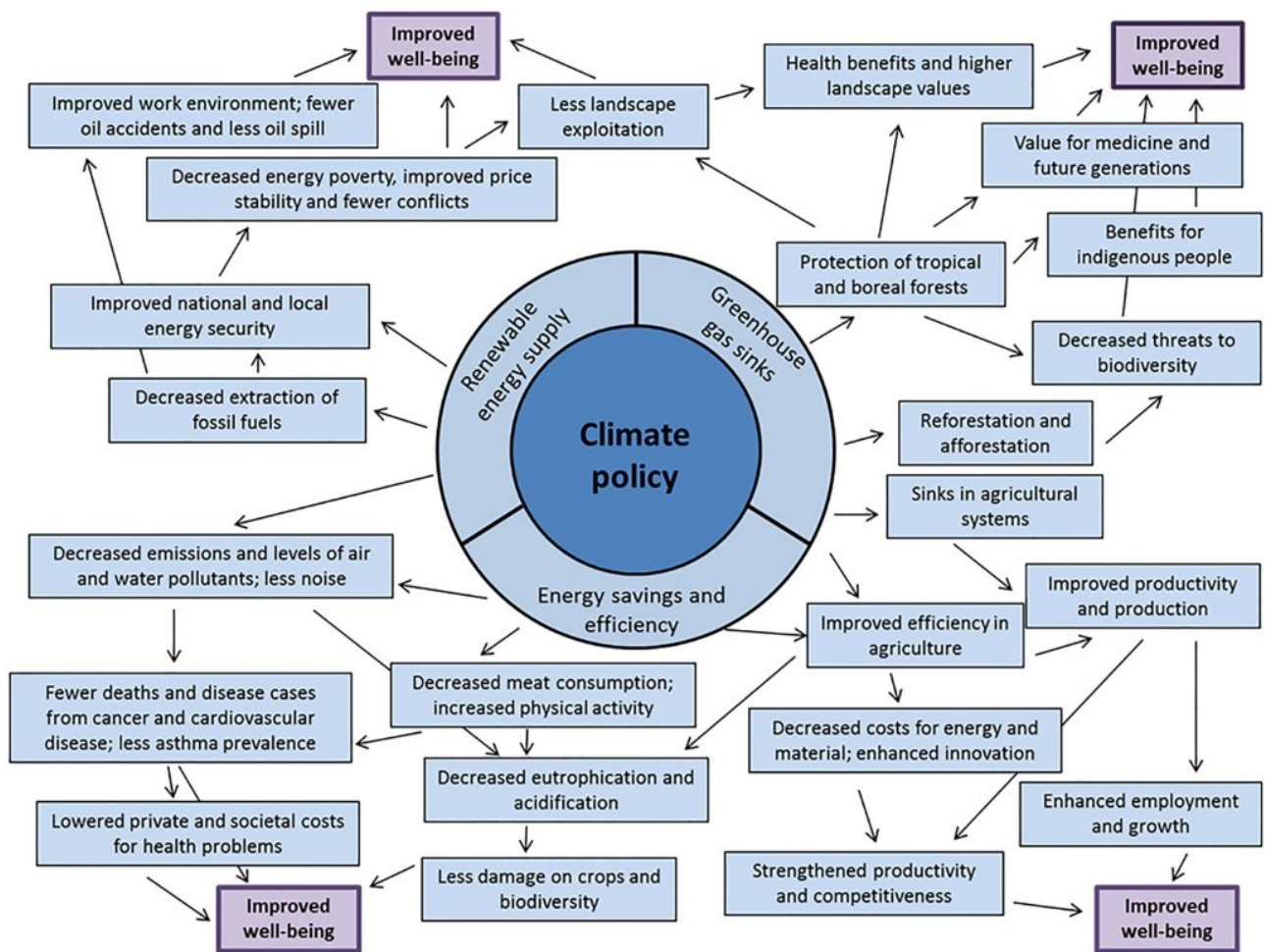


Figure 1. Co-benefit categories in climate policy. The three main components of climate policy in the circle may result in chains of potential positive effects, which – as examples – eventually may improve well-being. Developed after Alfredsson and Karlsson (2016).

Figure 1 is from an academic article, Climate policy co-benefits: a review (2020), which reviews co-benefits in climate policy. Figure summarises the main co-benefits and their connections. This article additionally found the following insights to climate policy:

- Climate policy co-benefits in well-researched fields such as air quality and health are large, often equalling or exceeding mitigation costs.
- Despite their significance, co-benefits are seldom considered in decision-making, leading to biased policies and goal failures.
- In several areas, such as diet and energy security, co-benefits are sparsely researched, but emerging evidence points to high values.
- More research is needed, including on how to describe the total value of different co-benefits.

- Improved processes, documentation requirements and criteria in decision-making are needed, in order to ensure that political decision-makers consider co-benefits

Article Reference:

Mikael Karlsson, Eva Alfredsson & Nils Westling (2020) Climate policy co-benefits: a review, *Climate Policy*, 20:3, 292-316, DOI: [10.1080/14693062.2020.1724070](https://doi.org/10.1080/14693062.2020.1724070)

Preparing a Climate Change Policy for Local Authorities

Summary and Insights from Workshops

FEBRUARY 2020



WORKSHOP OVERVIEW

Simpson Grierson, Climate Planning and CLIMSystems, with contributions from Toitu Envirocare, Victoria University, Waikato Regional Council, and Watercare, held workshops on 10 - 12 February 2020 with 27 local authorities from across New Zealand.

The workshops provided attendees with a practical guide to preparing a climate change policy that addresses both physical and transitional risks arising from adjusting to a low-carbon and climate resilient economy. Among other essential considerations, the workshops covered:

- Essential **elements of a climate policy**
- How to undertake **climate scenario analysis**, and its importance in a climate policy
- Embedding climate informed decision-making into existing **core governance mechanisms** (long term plans; financial and infrastructure planning)
- Quantifying a local authority's **exposure to climate risk**, including financial, economic, legal, environmental risks
- Tackling **capability and capacity issues**
- How to pre-empt issues arising from impending **climate risk disclosure obligations**.

KEY MESSAGES

The first key message for local authorities was that the Policy sets the rules, whereas the Strategy is the game plan. As such, it is essential that the Policy comes first.

The second key message was that the growing global pressure on financial institutions (banks, investors, insurers, etc) to internalise the cost of climate change-related financial risk is already affecting the cost of lending and allocation of capital. Coupled with the Government proposal to introduce mandatory disclosure of climate related financial risk for certain

organisations, climate change-related financial risk must be taken into account when developing local authority policies, strategies and plans. For this reason, the CFO must be at the table when responses to climate change are being considered.

The third key message is that we are now in a time of rapid transition from a high to low carbon global economy. Local authorities must be managing the transition of their organisations and communities, now.

RISK EXPOSURE ASSESSMENT

We highly recommend that, before developing a response framework (policies, strategies and any deep dives into TCFD type risk disclosure) local authorities carry out an initial risk exposure assessment. This will allow the organisation to set essential parameters and direction for any subsequent climate change related risk identification and management. Simpson Grierson is a leader in the provision of advice on climate change-related legal risk. We have a number of tools to identify and size exposure to key climate related risks; tools specifically designed to mitigate climate related liability risk exposure to decision makers.

Workshop attendees were surveyed on a range of relevant matters. Disaggregated results from this survey are attached to this report and provide valuable insights in to the level of progress being made on climate-related risk at the local authority level.

Powerpoint slides from the workshops are also attached.

If you would like further information or assistance on any matters related to climate risk, please contact:

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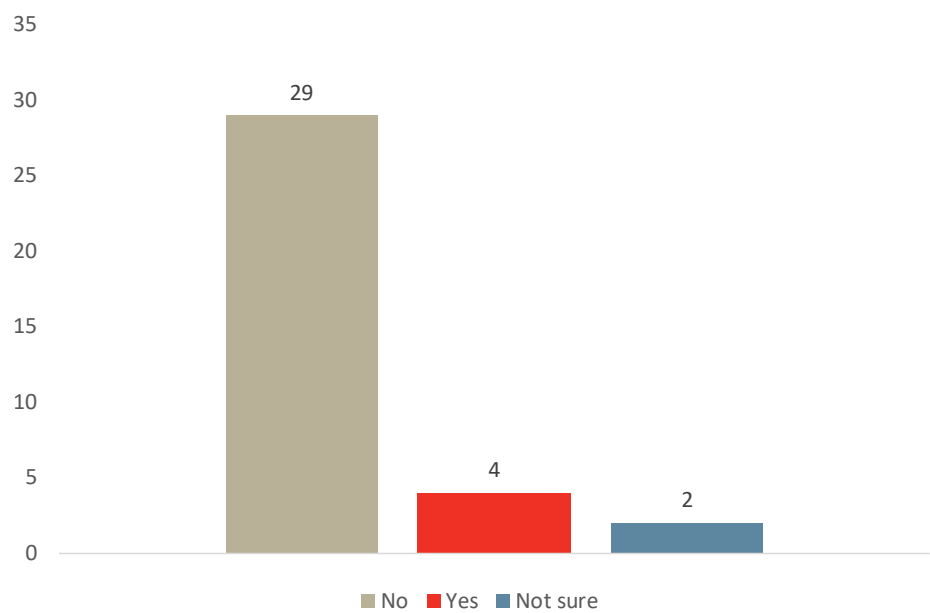
SURVEY RESULTS

LEVEL OF PREPAREDNESS OF LOCAL AUTHORITY ATTENDEES AT CLIMATE WORKSHOPS

The majority of workshop attendees (approximately 70%) were from district or city councils, with the remainder representing regional councils (20%), Unitary Authorities (8%) and Council-controlled organisations (2%).

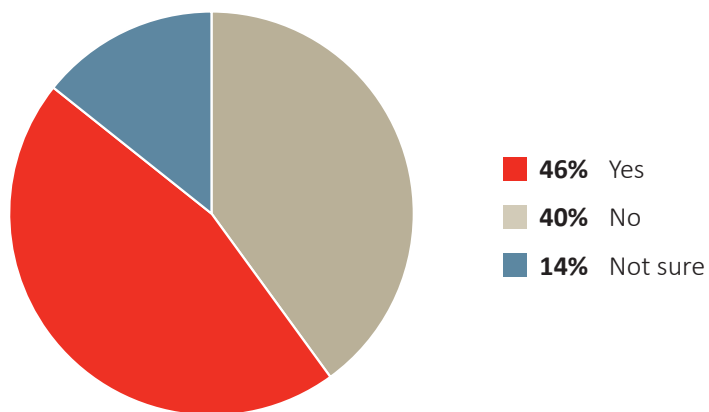
Q1. DOES YOUR LOCAL AUTHORITY CURRENTLY HAVE A CLIMATE CHANGE POLICY, AND IF SO, DOES IT ADDRESS SOME OR ALL OF THE MATTERS THAT HAVE BEEN DISCUSSED TODAY

Attendees were asked whether their local authority has a climate change policy. The results are stark, indicating that local authorities are only recently starting to think about climate change risks and future planning:



Q2. HAS YOUR LOCAL AUTHORITY CONSIDERED CLIMATE CHANGE IN TERMS OF THE FINANCIAL RISK IT POSES TO YOUR ORGANISATION?

Attendees were also asked if their local authority had considered climate change in terms of the financial risk it posed to the organisation. The majority of local authorities in attendance had considered this:

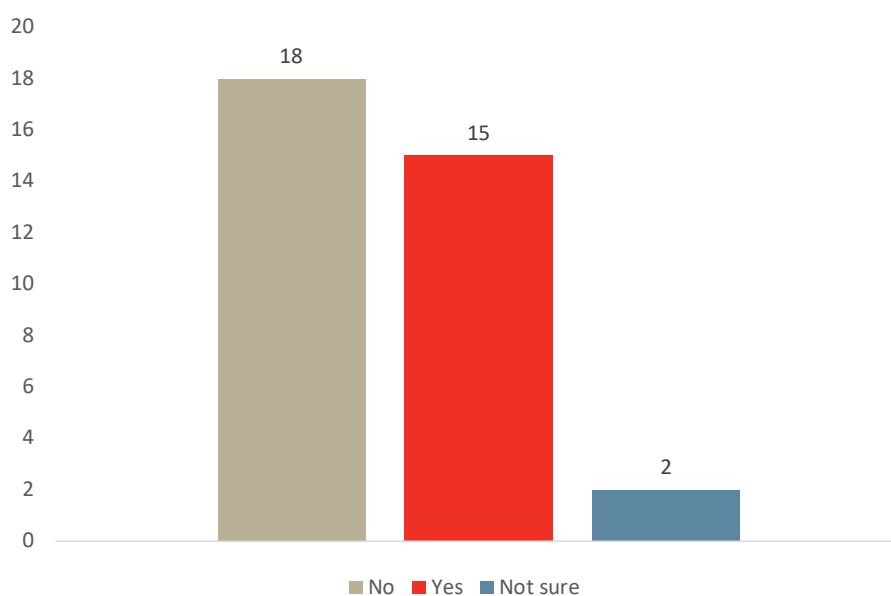


Attendees were then asked the follow up question, who in your organisation do you need to talk to in order to better understand this? Answers included:

- Environmental planners;
- Asset management team;
- Finance department
- Commercial & Corporate Services Group Manager;
- CFO and CEO;
- Senior leadership team;
- Level 2 managers;
- LTP consideration;
- Auditors; and
- Treasurer.

Q3. HAS YOUR LOCAL AUTHORITY CARRIED OUT A SCENARIO ANALYSIS TO BETTER UNDERSTAND THE POTENTIAL EFFECTS OF CLIMATE CHANGE ON THE ORGANISATION AND COMMUNITY, AND TO HELP IT DETERMINE THE BEST PATHS FORWARD IN A RANGE OF DIFFERENT FUTURE SCENARIOS?

Attendees were also surveyed as to whether their local authority had carried out a scenario analysis to better understand the potential effects of climate change on the organisation and community, and to help it determine the best paths forward in a range of different future scenarios. The results indicate that the majority of local authorities had not carried out a scenario analysis, with some noting that this was about to be undertaken by their respective local authorities:



Q4. WHAT DO YOU SEE AS THE TOP THREE BARRIERS THAT YOU NEED HELP WITH TO OVERCOME CHALLENGES TO MAINSTREAM THE CONSIDERATION OF CLIMATE CHANGE INTO YOUR ORGANISATION?

- 1** Resources/capability/cost
- 2** Lack of expertise, guidance and understanding
- 3** Political will

Other significant barriers included:

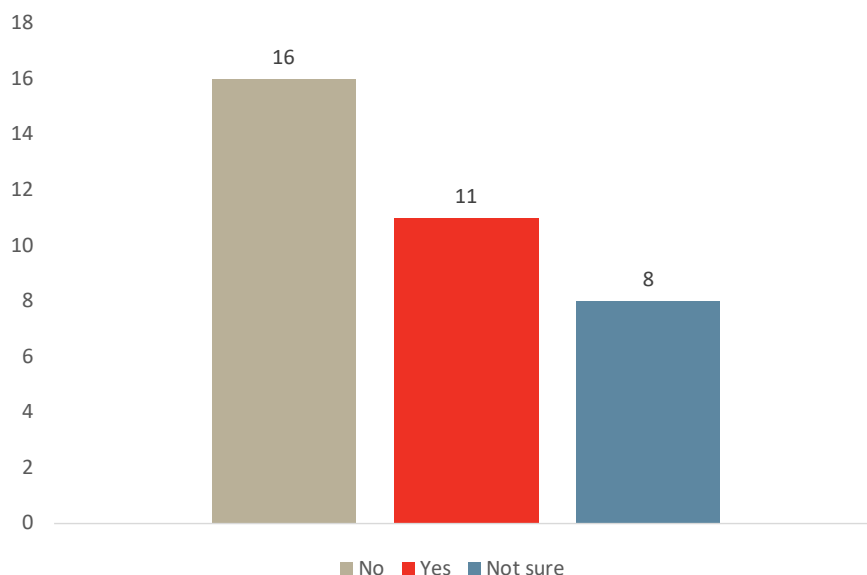
- Lack of leadership
- Difficulty prioritising the issue/keeping to the status quo
- Size and scope of local authority
- Knowing where to get the best information
- Waiting for climate change policies and strategies to be prepared/implemented
- Getting elected members on board
- Lack of central government support/legislation
- Novelty of the issue
- Competing agendas
- Short electoral cycles

Q5. WHAT IS YOUR LOCAL AUTHORITY DOING, IF ANYTHING, TO ENSURE THAT IT IS MANAGING THE TRANSITION RISK TO THE ORGANISATION AND THE COMMUNITY?

Attendees were also asked what their local authority is doing, if anything, to ensure that it is managing the transition risk to the organisation and the community. While some respondents said their local authority wasn't doing anything or was doing very little, other answers included:

- Discussions with the community about the development suitability of land;
- Understanding changes in stormwater management and water availability;
- Natural hazards programme e.g. Regional Natural Hazard Management Strategy;
- Coastal Erosion Response Policy;
- Start up for Māori environmental projects office;
- Developing a Climate Change Strategy and Action Plan;
- Engaging with the Mana Whenua Kaitiaki Forum;
- Working with the relevant parent council (from a CCO perspective);
- Developing working groups in specific areas e.g. Climate Change Working Group;
- Emissions reduction targets;
- Declaring a climate emergency;
- Carbon neutrality resolution;
- Working with the community to develop a Project Plan, Communication & Engagement Plan, and Community Assessment Panels;
- 30-Year Infrastructure Plan;
- Asset Management Programme;
- Sustainability Strategy;
- Emissions stocktake;
- Undertaking a risk assessment;
- Flood modelling work/management planning;
- Establishing a Climate Change Communicator position;
- Collaborating with other councils;
- Incorporating climate change into decision-making;
- Looking at reporting requirements;
- Recognising M&A through the Regional Plan;
- Ensuring infrastructure meets the specifications for extreme weather events;
- Using a web-based sea level rise tool;
- Recognising Sustainable Development Goals (including Goal 13 – climate action);
- Contributing to the Ministry's National Climate Change Risk Assessment;
- Working with a technical advising group of university, science, communication, and community groups;
- Building internal capability;
- Investing in PD;
- Recognising climate change as a key theme in the Infrastructure Strategy;
- Community initiatives e.g. flood network initiative;
- Reviewing the district plan; and
- Preparing a climate change road map.

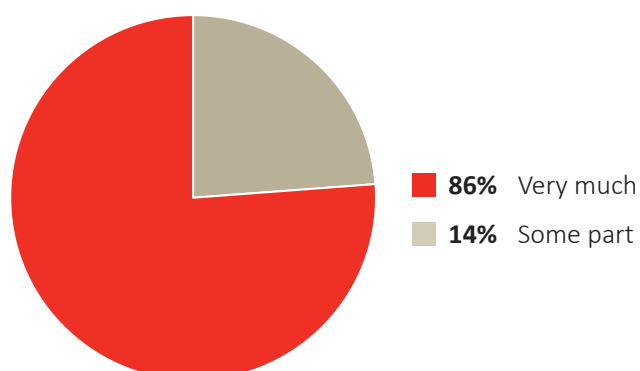
Q6. HAS YOUR LOCAL AUTHORITY TAKEN ANY STEPS IN PREPARING TO MAKE DISCLOSURE OF ITS CLIMATE-RELATED RISK?



IF SO, WHAT IS IT DOING?

- City risk analysis
- Joined with CDP
- Regional Emissions Inventory
- Corporate Emissions Inventory
- LTP assumptions e.g. sea level rise and other indicators
- Preparing draft disclosure
- Coastal hazards information
- Coastal Structures Policy
- Including climate change in LTP
- Undertaking GHG emissions accounting
- Toitū Envirocare verification
- Conversations among finance/legal/policy teams

Q7. WAS THIS WORKSHOP HELPFUL FOR YOU TO UNDERSTAND THE ESSENTIAL ELEMENTS OF A CLIMATE CHANGE POLICY?



WORKSHOP POWERPOINT SLIDES



PRACTICAL WORKSHOP: Preparing a Local Authority Climate Change Policy

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Caveat Please Read

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Local Governments Responding to Climate Change

Climate change is a pressing issue for local government that is already manifesting as a legal, social, economic and environmental risk. Local governments make decisions that span generations (e.g. roll-out of infrastructure, planning for future settlements) and as such need to be actively assessing and responding to the direct and indirect risks that climate change presents. However, since climate change presents a plethora of direct and indirect challenges that are likely to change over time, it will be impossible to effectively manage the issue in an ad-hoc and reactive manner.

Climate change requires a focus on both mitigation and adaptation activities. Mitigation limits the long-term contribution of greenhouse gas emissions to global environmental change and adaptation responds to the impacts that will already be locked into the climate system. The integration of mitigation and adaptation activities act as drivers for a low carbon economy, accessing economic and social opportunities.

Robust decision-making frameworks minimise future uncertainty as issues and information emerge and become important. In fact, this has been identified as the priority for Australian local governments:

Local governments will better respond to the challenges of climate change in an environment where adaptive responsibilities are clear, response and evaluation frameworks are consistent across jurisdictions, approaches to mainstreaming climate change adaptation are implemented, and decisions are made on the basis of the best data and information. (National Climate Change Adaptation Research Facility (NCCARF), 2013)

NCCARF. (2013). Challenges of adaptation for local governments: Guidance Policy Brief Number 5. Retrieved June 5, 2017, from http://www.nccarf.edu.au/sites/default/files/attached_files_publications/GOVERNMENT_070313_A4.pdf



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Why Have a Climate Policy?



An internal climate change policy (or corporate standard) allows the organisation to place a **climate change lens** over all of council's activities and use the existing system to drive adaptation and mitigation.

Staff members in local government have a range of viewpoints and approaches.

It can allow for the **consistent application** of standards, agreed use of information sources and specific **triggers for change**.

Adopting a formal policy places limitations on the extent that personal viewpoints affect the professional judgments of people who may be sceptical or deny the existence of climate change.



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Climate Policy Feeds into the Core Governance Framework



Long Term Plan
Financial Planning
Infrastructure Plans
Emergency Management
Development planning



Quantifying exposure

- Council
- Community
- Businesses
- Environment



Response Plan

- Actions
- Roles & Responsibilities
- Timing
- Opportunities
- Adaptation + Mitigation
- Community responses



Regulatory
Market
Community
Internal



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Climate Policy Components



Context

- Objectives
- Where things are at

Climate change scenarios

- Mitigation
- Adaptation

Governance

- Core mechanisms

Capability / Capacity

- Skills
- Working groups
- Networks

Monitoring and Review

- Metrics
- Review points

Disclosure

- What to disclose
- Who to disclose to

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Policy Context: Objectives



Example Components of Context Section

- Support long term financial planning, asset management, strategic planning, emergency management and other key Council processes with consistent, timely and scientifically sound information related to climate change.
- Ensure that climate change adaptation is a core component of planning for a more resilient Council and is therefore mainstreamed into council's functions and activities.
- Commit Council to becoming a leader in climate change innovation and community resilience planning.
- Acknowledgement that a focus must be placed on the significant impacts that climate change will have on the natural assets and ecosystems in the Council area.
- Ensure that Council is well placed to benefit from economic development opportunities that may eventuate due to its proactive climate change adaptation and community resilience commitment

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Policy Context: General Context



Minimal Elements of a Context Section

- International issues and trends (e.g. Paris Agreement)
- Central Government Regulation
- Council's risk summary
- Market forces
- Other issues



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Climate Change Scenarios

- Scenario analysis is a tool to enhance critical strategic thinking
- Policy context:
 - What physical climate scenarios?
 - What carbon price?
 - What regulations to track?
 - What complex scenarios will be used to stress-test or use as outliers?



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Scenarios

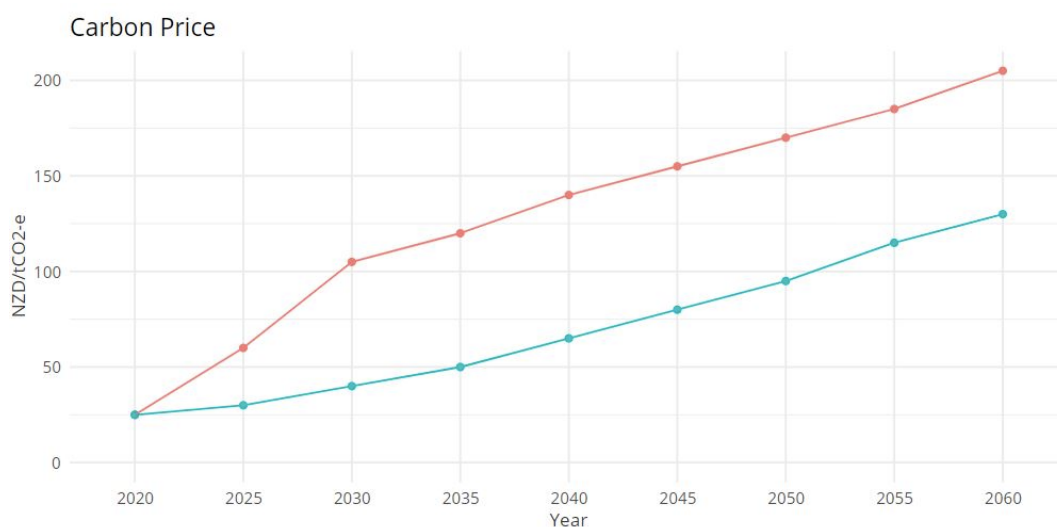
- What information will you use?
- What time period/s will you choose?
 - Minimum outlook (e.g. 2050)
 - Multiple outlook (2030, 2050, 2070)
- Where will you get information from?
- What will be used for quantitative analysis
 - Specific values, and/or
 - Scenario testing



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Policy Scenarios

Quantify the price of carbon into all financial modelling. Have more than one price range.



https://www.bec2060.org.nz/_data/assets/image/0005/182453/1-carbon-price.jpg

Policy Scenarios

- Emissions reduction target
 - Align to Central Government
 - Or more progressive..?
 - What scope? (Scope 1, 2, 3)
 - Any stepping stone targets (e.g. 2030, 2035, etc.)
 - Any stepping stone actions (e.g. all council vehicles 100% electric by 2025)
 - Where are the stubborn emissions..?
- What is the current value of Council's carbon exposure (with future carbon prices)
- What is Council's policy on carbon offsets (where from)?

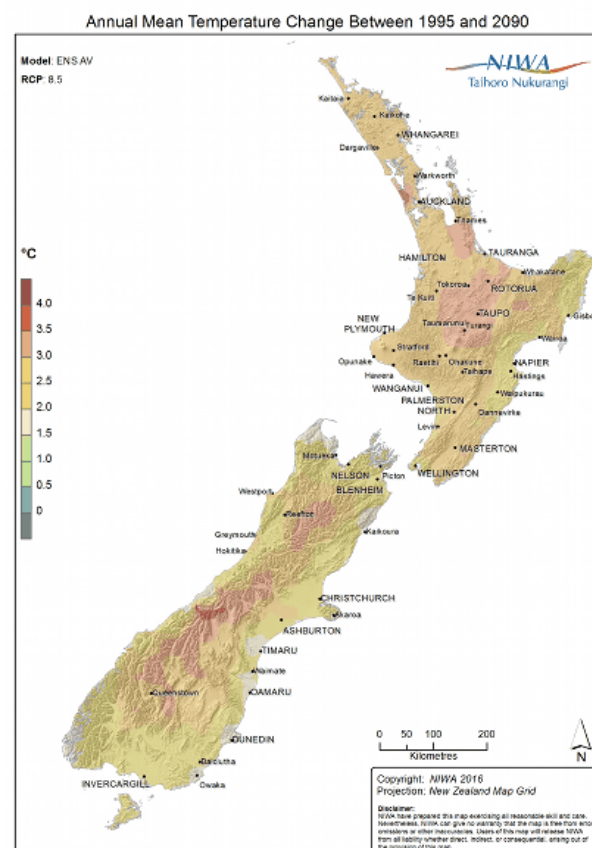


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Remember – climate models have differing results.

Have policy refer to technical manual.

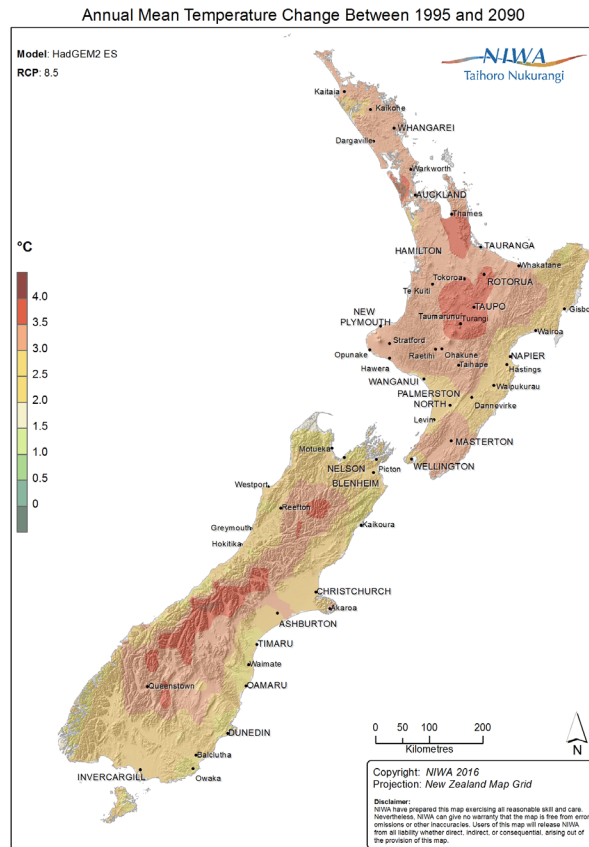
Use policy to set the meta framing of the modelling (e.g. IPCC scenario, timeframe etc.).



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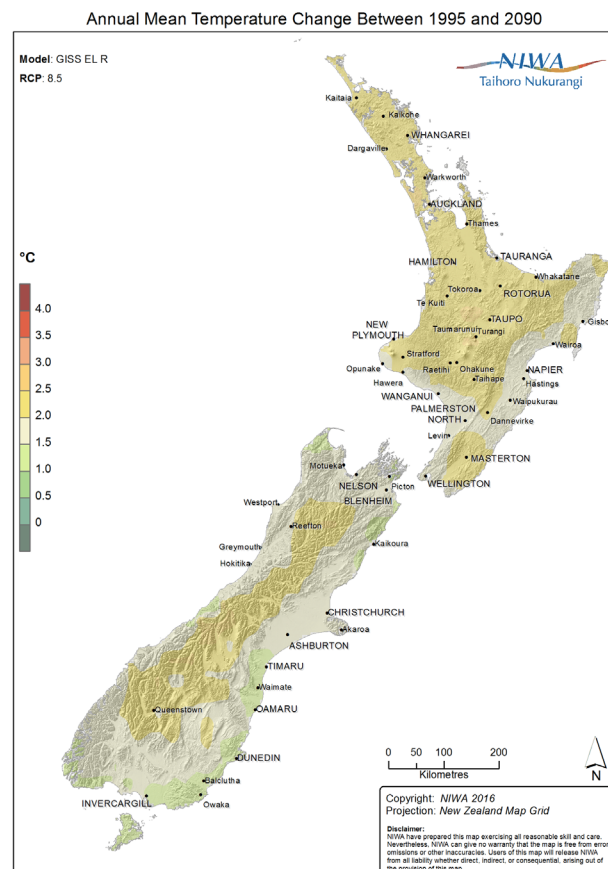
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Climate Variables

Mean temperature (absolute change C)	Very cold nights
Maximum temperature (absolute change C)	Maximum 1-day precipitation (absolute change mm)
Minimum temperature (absolute change C)	Extremely wet day precipitation
Precipitation (percentage change)	Simple daily intensity (absolute change mm/hr)
Pan evaporation (percentage change)	Consecutive dry days
Relative humidity (percentage change)	Consecutive wet days
Solar radiation (percentage change)	Duration of Droughts
Surface wind (percentage change)	Frequency of Moderate Droughts
Temperature of Heatwave Amplitude	Frequency of Severe Droughts
Heatwave Frequency	Frequency of Extreme Droughts
Heatwave Duration	Duration of Floods
Days in year > 40°C	Frequency of Moderate Floods
Hot days	Frequency of Severe Floods
Hot nights	Frequency of Extreme Floods
Warm spell duration	
Cold spell duration	

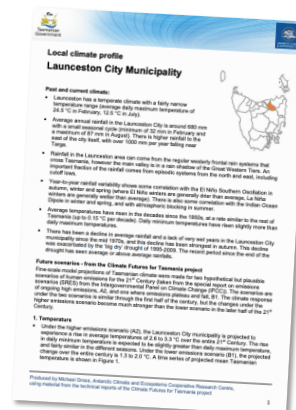


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Scenario Examples

- **General** – that refer to local technical guidelines, which will at a minimum include RCP 8.5 or worst case modelled IPCC GCMs:

“For climate change projections Council will use the Council technical guideline on climate change.”



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Scenario Examples

- **Explicit (detailed)** – that embed the scenarios / variables into the policy itself.

“Council will use at a minimum IPCC 8.5 and as a minimum include changes to average and extreme annual and seasonal projections for 2030, 2050, 2070 and 2100”

- Also has to consider timing with RMA (e.g. 100 years)



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Other Scenarios

- Litigation
- Insurance
- Lending risk
 - Council
 - Community
- Food security
- Water security
- Energy security
- Health (e.g. Pandemics, vectors)
- Environmental (e.g. invasive species)



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Governance

- List the core mechanisms that will drive decision-making
- Describe what you want by when..?
- Prioritise what you want to focus on first

- Corporate Plan
- Financial Management
- Public Risk Register
- Asset Management
- Land Use Planning
- Disaster Management
- GHG Emissions
- Climate Risk Management
- Adaptation Planning
- Climate Change Policy



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Additional components

- Community engagement
- Cultural considerations
- Procurement
- Definitions of “suitably qualified” climate change experts (for consulting)



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Capability / Capacity



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Capability / Capacity

- Establish capability assessments (staff surveys)
- Defining skills required – for each department / area – link to professional development in position descriptions Identify key conferences
- Working groups
 - Make up of the working group
 - When they meet etc.
- Networks
 - Defining key stakeholders
 - Regional / national working groups
- Resourcing
 - Align to budget planning



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Monitoring and Review

RELEVANCE	The indicator should have a strong link to the adaptation goals
FAMILIARITY	The indicators should be easy to understand by the users
DATA AVAILABILITY	Data for the indicators should be easily available and be gathered at reasonable costs
MEASURABILITY	The identified indicators should be capable of being measured, preferably as objectively as possible
RELIABILITY	The results of the indicators should have a limited degree of uncertainty and margin of error. Factors that increase reliability are; good quality of the underlying data, clear and specific definition of the indicator and a transparent and direct calculation methodology.
NON-REDUNDANCY	Indicators within a framework should not measure the same aspect
COMPLETENESS	The total set of indicators should consider all aspects that affect the adaptation goals



Adapted from: (Rooijen and Nesterova, 2013)

Monitoring and Review

- Requirements under financial and/or non financial reporting
- TA assets
 - Exposed units or length (total and by area)
 - Value of the above (replacement)
 - Damage curves
- TA changes to income
- Residential properties (number, damages, exposed \$)
- Business properties (number, damages, exposed \$)
- When to Review
- Science based targets



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Indicator tracking summary for Asset Management (#4)

Select council:
Kingborough CouncilSelect indicator:
Asset Management (#4)

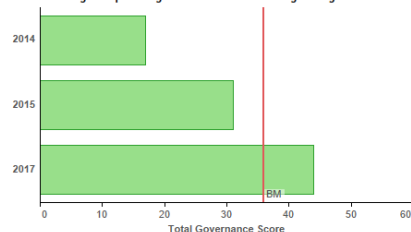
Click on an Year to filter the indicator scores for a specific Assessment Year

Asset Management (#4) indicator score for each assessment year
Asset management documents were reviewed for words associated with managing climate change (e.g. "climate", "climate change", "sea level rise", "greenhouse gas", and "adaptation")

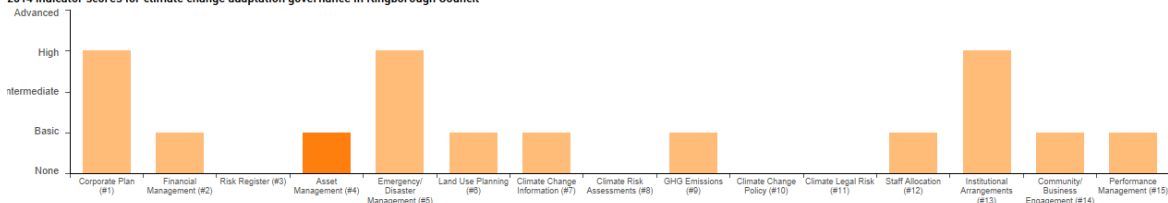
	2014	2015	2017
None	None	None	None
Basic	Basic	Basic	Basic
Intermediate	Intermediate	Intermediate	Intermediate
High	High	High	High
Advanced	Advanced	Advanced	Advanced

Information removed
commercial in confidence

Total climate change adaptation governance score for Kingborough Council



2014 indicator scores for climate change adaptation governance in Kingborough Council



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Indicator tracking summary for Asset Management (#4)

Select council:
Kingborough CouncilSelect indicator:
Asset Management (#4)

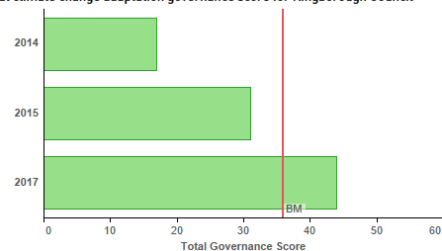
Click on an Year to filter the indicator scores for a specific Assessment Year

Asset Management (#4) indicator score for each assessment year
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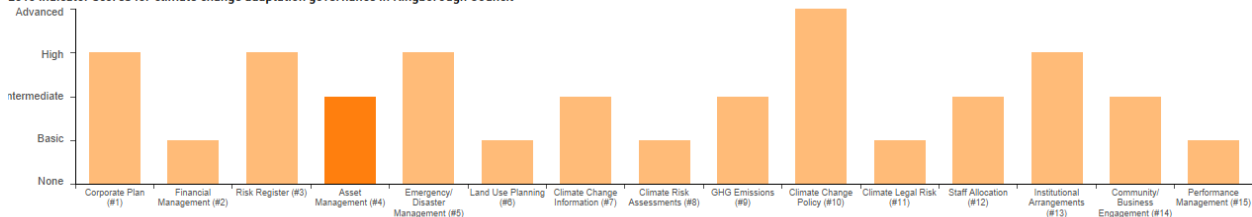
	2014	2015	2017
None	None	None	None
Basic	Basic	Basic	Basic
Intermediate	Intermediate	Intermediate	Intermediate
High	High	High	High
Advanced	Advanced	Advanced	Advanced

Information removed
commercial in confidence

Total climate change adaptation governance score for Kingborough Council



2015 indicator scores for climate change adaptation governance in Kingborough Council



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Indicator tracking summary for Asset Management (#4)

Select council:
Kingborough CouncilSelect indicator:
Asset Management (#4)

Asset Management (#4) indicator score for each assessment year

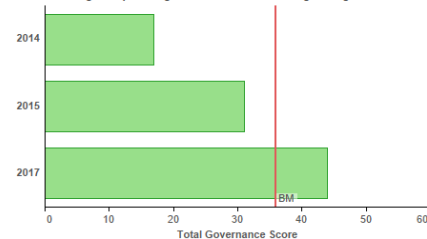
Asset management documents were reviewed for words associated with managing climate change (e.g. "climate", "climate change", "sea level rise", "greenhouse gas", and "adaptation")

	2014	2015	2017
None	None	None	None
Basic	Basic	Basic	Basic
Intermediate	Intermediate	Intermediate	Intermediate
High	High	High	High
Advanced	Advanced	Advanced	Advanced

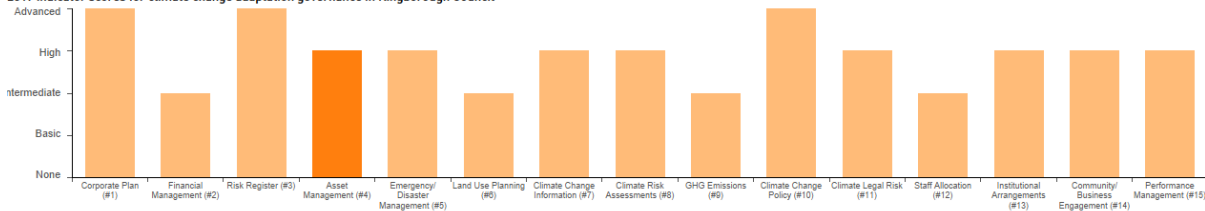
Information removed
commercial in confidence

Click on an Year to filter the indicator scores for a specific Assessment Year

Total climate change adaptation governance score for Kingborough Council



2017 indicator scores for climate change adaptation governance in Kingborough Council



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Monitoring and Review

- Set a baseline (may be various baselines) e.g. carbon recording may have patchy earlier than set date
- Ensure systems to gather the information are establish and someone has ownership of collecting then
- Set key performance indicators
- Link to other reporting (e.g. Sustainable Development Goals, LTP etc.)
- Data visuals



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Review Points

- Set review times (e.g. in line with existing policy), and
- Set review triggers
 - IPCC Assessment Report (AR6 is next)
 - Litigation (council or precedents)
 - Regulatory change
 - Market triggers (e.g. trouble getting finance, insurance, etc.)
 - Significant extreme event (outside, say, 1% return rate)
 - Increase in exposure (e.g. number of houses exposed to x event increasing)
 - After an audit



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Please Reach Out

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BARRISTERS AND SOLICITORS

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