I hereby give notice that an ordinary meeting of the Environment and Climate Change Committee will be held on:

**Date:** Tuesday, 21 July 2020  
**Time:** 10.00am  
**Meeting Room:** Reception Lounge  
**Venue:** Auckland Town Hall  
301-305 Queen Street  
Auckland

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**Kōmiti Mō Te Hurihanga Āhuarangi me Te Taiao / Environment and Climate Change Committee**

**OPEN AGENDA**

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**MEMBERSHIP**

**Chairperson**  
Cr Richard Hills  
Cr Pippa Coom

**Deputy Chairperson**  
Cr Josephine Bartley  
Cr Dr Cathy Casey

**Members**  
Deputy Mayor Cr Bill Cashmore  
Cr Fa’anana Efeso Collins  
Cr Linda Cooper, JP  
Cr Angela Dalton  
Cr Chris Darby  
Cr Alf Filipaina  
Cr Christine Fletcher, QSO  
Mayor Hon Phil Goff, CNZM, JP  
Cr Shane Henderson

Cr Tracy Mulholland  
Cr Daniel Newman, JP  
Cr Greg Sayers  
Cr Desley Simpson, JP  
Cr Sharon Stewart, QSM  
Cr Wayne Walker  
Cr John Watson  
IMSB Member Glenn Wilcox  
IMSB Member Karen Wilson  
Cr Paul Young

(Quorum 11 members)

---

**Suad Allie**  
Kaitohutohu Mana Whakahaere Matua / Senior Governance Advisor

**15 July 2020**

Contact Telephone: (09) 977 6953  
Email: suad.allie@aucklandcouncil.govt.nz  
Website: www.aucklandcouncil.govt.nz

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**Note:** The reports contained within this agenda are for consideration and should not be construed as Council policy unless and until adopted. Should Members require further information relating to any reports, please contact the relevant manager, Chairperson or Deputy Chairperson.
Terms of Reference

Responsibilities

This committee deals with the development and monitoring of strategy, policy and action plans associated with environmental and climate change activities. The committee will establish an annual work programme outlining key focus areas in line with its key responsibilities, which include:

- climate change mitigation and adaptation policy, and implementation (with other committee chairs where cross over of responsibilities exists)
- coastal renewals, slips and remediation
- Auckland’s Climate Action Framework
- natural heritage (including ecology, biodiversity and biosecurity matters, such as kauri dieback)
- protection and restoration of Auckland’s ecological health
- water, including Auckland’s Water Strategy
- waste minimisation
- acquisition of property relating to the committee’s responsibilities and in accordance with the LTP
- grants for regional environmental outcomes.

Powers

(i) All powers necessary to perform the committee’s responsibilities, including:
   (a) approval of a submission to an external body
   (b) establishment of working parties or steering groups.

(ii) The committee has the powers to perform the responsibilities of another committee, where it is necessary to make a decision prior to the next meeting of that other committee.

(iii) If a policy or project relates primarily to the responsibilities of the Environment and Climate Change Committee, but aspects require additional decisions by the Planning Committee and/or the Parks, Arts, Community and Events Committee, then the Environment and Climate Change Committee has the powers to make associated decisions on behalf of those other committee(s). For the avoidance of doubt, this means that matters do not need to be taken to more than one of these committees for decisions.

(iii) The committee does not have:
   (a) the power to establish subcommittees
   (b) powers that the Governing Body cannot delegate or has retained to itself (section 2).
Exclusion of the public – who needs to leave the meeting

Members of the public

All members of the public must leave the meeting when the public are excluded unless a resolution is passed permitting a person to remain because their knowledge will assist the meeting.

Those who are not members of the public

General principles

- Access to confidential information is managed on a “need to know” basis where access to the information is required in order for a person to perform their role.
- Those who are not members of the meeting (see list below) must leave unless it is necessary for them to remain and hear the debate in order to perform their role.
- Those who need to be present for one confidential item can remain only for that item and must leave the room for any other confidential items.
- In any case of doubt, the ruling of the chairperson is final.

Members of the meeting

- The members of the meeting remain (all Governing Body members if the meeting is a Governing Body meeting; all members of the committee if the meeting is a committee meeting).
- However, standing orders require that a councillor who has a pecuniary conflict of interest leave the room.
- All councillors have the right to attend any meeting of a committee and councillors who are not members of a committee may remain, subject to any limitations in standing orders.

Independent Māori Statutory Board

- Members of the Independent Māori Statutory Board who are appointed members of the committee remain.
- Independent Māori Statutory Board members and staff remain if this is necessary in order for them to perform their role.

Staff

- All staff supporting the meeting (administrative, senior management) remain.
- Other staff who need to because of their role may remain.

Local Board members

- Local Board members who need to hear the matter being discussed in order to perform their role may remain. This will usually be if the matter affects, or is relevant to, a particular Local Board area.

Council Controlled Organisations

- Representatives of a Council Controlled Organisation can remain only if required to for discussion of a matter relevant to the Council Controlled Organisation.
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1 Apologies

At the close of the agenda no apologies had been received.

2 Declaration of Interest

Members are reminded of the need to be vigilant to stand aside from decision making when a conflict arises between their role as a member and any private or other external interest they might have.

3 Confirmation of Minutes

That the Environment and Climate Change Committee:

a) confirm the ordinary minutes of its meeting, held on Thursday, 12 March 2020, as a true and correct record.

4 Petitions

At the close of the agenda no requests to present petitions had been received.

5 Public Input

Standing Order 7.7 provides for Public Input. Applications to speak must be made to the Governance Advisor, in writing, no later than one (1) clear working day prior to the meeting and must include the subject matter. The meeting Chairperson has the discretion to decline any application that does not meet the requirements of Standing Orders. A maximum of thirty (30) minutes is allocated to the period for public input with five (5) minutes speaking time for each speaker.

At the close of the agenda no requests for public input had been received.

6 Local Board Input

Standing Order 6.2 provides for Local Board Input. The Chairperson (or nominee of that Chairperson) is entitled to speak for up to five (5) minutes during this time. The Chairperson of the Local Board (or nominee of that Chairperson) shall wherever practical, give one (1) day’s notice of their wish to speak. The meeting Chairperson has the discretion to decline any application that does not meet the requirements of Standing Orders.

This right is in addition to the right under Standing Order 6.1 to speak to matters on the agenda.

At the close of the agenda no requests for local board input had been received.
7 Extraordinary Business

Section 46A(7) of the Local Government Official Information and Meetings Act 1987 (as amended) states:

"An item that is not on the agenda for a meeting may be dealt with at that meeting if-

(a) The local authority by resolution so decides; and

(b) The presiding member explains at the meeting, at a time when it is open to the public,-

(i) The reason why the item is not on the agenda; and

(ii) The reason why the discussion of the item cannot be delayed until a subsequent meeting."

Section 46A(7A) of the Local Government Official Information and Meetings Act 1987 (as amended) states:

"Where an item is not on the agenda for a meeting,-

(a) That item may be discussed at that meeting if-

(i) That item is a minor matter relating to the general business of the local authority; and

(ii) the presiding member explains at the beginning of the meeting, at a time when it is open to the public, that the item will be discussed at the meeting; but

(b) no resolution, decision or recommendation may be made in respect of that item except to refer that item to a subsequent meeting of the local authority for further discussion."
Te Tāruke-ā-Tāwhiri: Auckland’s Climate Plan

File No.: CP2020/08377

Te take mō te pūrongo
Purpose of the report

1. To adopt Te Tāruke-ā-Tāwhiri: Auckland’s Climate Plan.

Whakarāpopototanga matua
Executive summary

2. In March 2020, the Environment and Climate Change Committee endorsed in principle proposed changes to Te Tāruke-ā-Tāwhiri: Auckland’s Climate Action Framework (ECC/2020/12).

3. These changes included:
   - an overarching, place-based approach (A Tāmaki Makaurau Response)
   - two core climate drivers of reducing our emissions and adapting to climate change
   - eight priorities for action
   - a change in title from Te Tāruke-ā-Tāwhiri: Auckland’s Climate Action Framework to Te Tāruke-ā-Tāwhiri: Auckland’s Climate Plan.

4. The Environment and Climate Change Committee also reaffirmed our commitment to a plan consistent with a 1.5 degree rise, an interim target of halving Auckland’s emissions by 2030, and a precautionary approach to planning for change (ECC/2020/12).

5. Te Tāruke-ā-Tāwhiri: Auckland’s Climate Plan is a regional, evidence-based plan aligned to our commitments. The plan sets out the strategic direction for the next 30 years across eight key, evidence-based priorities for action.

6. The eight priorities are: Natural environment; Built environment; Transport; Economy; Community and coast; Food; Te Puāwaitanga o Te Tātai; Energy and industry.

7. These priorities have been identified as those with the greatest material impact through extensive engagement, research, emissions modelling and assessment of risks to the region.

8. If adopted, the text will then be digitised with a view for the digital plan to be launched later in the year. Through this process some minor, non-substantive edits may be required to address accessibility and digital standards.

9. To implement the plan and deliver our climate goals will require action at all levels, from individual Aucklanders through to businesses and central government.

Ngā tūtohunga
Recommendation/s

That the Environment and Climate Change Committee:

a) adopt Te Tāruke-ā-Tāwhiri: Auckland’s Climate Plan (Attachment A of the agenda report).

b) note that the final plan will be a digital plan (website) to be launched later this year. This may require minor, non-substantive changes to meet digital standards.
c) delegate authority to the Chair and Deputy Chair of the Environment and Climate Change Committee and a member of the Independent Māori Statutory Board to make any final changes to the plan text based on feedback from the Environment and Climate Change Committee and application of digital standards.

d) note that work is on-going to deliver council’s contribution to delivery of the plan, including costing of additional actions for consideration as input into the 10-year budget (Long-term Plan).

Horopaki Context

Previous decisions

10. Previous decisions made by the Environment and Community Committee and Environment and Climate Change Committee in relation to Auckland’s Climate Action Plan are set out below.

☐ February 2018

Environment and Community Committee

a) approve the approach to the 2018 review and update of Low Carbon Auckland: Auckland’s Energy Resilience and Low Carbon Action Plan

☐ February 2018

Environment and Community Committee

a) endorse Auckland Council’s membership reapplication to the C40 Cities Climate Leadership Group, including the requirement to develop a climate plan consistent with the Paris Agreement aspiration of a 1.5°C maximum temperature rise

☐ June 2019

Environment and Community Committee

a) approve the draft Te Tāruke-ā-Tāwhiri: Auckland’s Climate Action Framework and summary document for public consultation.

f) agree to the development of detailed and costed actions for Auckland Council as its contribution to climate action, for consideration by the appropriate Committee as input to the Long-term Plan

☐ March 2020

Environment and Climate Change Committee

a) endorse the changes to Te Tāruke-ā-Tāwhiri: Auckland’s Climate Action Framework in principle, subject to direction from mana whenua and consideration of feedback from Local Boards including:

i) introducing an overarching Tāmaki Makaurau response

ii) confirming the two core drivers for climate action (i.e. reducing our emissions; preparing for change)

iii) moving from eleven key moves to eight priorities,

iv) changing the title from Auckland’s Climate Action Framework to Auckland’s Climate Plan.
b) seek direction from mana whenua on the naming process around Te Tāruke-ā-Tāwhiri.

c) reaffirm our commitment to a plan consistent with a 1.5 degree rise, an interim target of halving Auckland’s emissions by 2030, and a precautionary approach to planning for change.

11. Between March and April, resolutions have been received from 20 of the 21 Local Boards, all supporting the changes to the plan. Many provided more detailed feedback, which has been taken forward in the update to the plan and a summary is provided in Attachment B.

12. Follow up with the Mana Whenua Kaitiaki Forum has also confirmed the continued use of the Te Tāruke-ā-Tāwhiri title and narrative as the intent of the plan has not changed.

A digital plan

13. As a digital plan, in line with the Auckland Plan, the document should not be read as a standard written document. Relevant sections of the plan are hyperlinked, rather than grouped by chapter. More detailed technical information sits at the end of the document, rather than within its relevant sections.

14. Following the adoption of the text, staff will work towards the plan’s digital launch later in 2020. This involves ensuring the plan is ‘digitally ready’ through further testing and application of council’s digital standards. Delegated authority to the Chair and Deputy Chair of this Committee and a member of the Independent Māori Statutory Board is requested for any non-substantive changes.

Role of Auckland Council

15. Auckland Council has taken a leadership role in facilitating the development of this plan and will need to continue to lead by example. However, not all actions identified are the responsibility of Auckland Council. Meeting our climate goals will require ambitious action from across sectors and individuals.

16. The plan sets out roles and responsibilities across the region along with three core roles of council. These are:

- **Direct control**: Where council can lead by example, e.g., through delivery of services, infrastructure and facilities
- **Lever**: Actions where council has a role in planning, monitoring, regulation and/or research
- **Advocacy**: In many areas council will have a key role in advocating or influencing for change.

17. Further information on roles and responsibilities across the region is provided throughout the plan as appropriate.

18. Council’s response to climate change is already underway through many existing projects and programmes, but additional action will be needed to meet our climate goals laid out in the plan.

19. As resolved at Environment and Community Committee (June 2019), costed actions for Auckland Council’s contribution to delivery of the plan are being developed for consideration as input to the 10-year budget (Long-term Plan).
Tātaritanga me ngā tohutohu
Analysis and advice

Te Tāruke-ā-Tāwhiri: Auckland’s Climate Plan

20.  *Te Tāruke-ā-Tāwhiri: Auckland’s Climate Plan* is Attachment A.

21.  The plan sets an overarching Tāmaki Makaurau response, setting out our principles and values for addressing climate change as a region. These ensure that the plan:

- focusses on Te Ora o Tāmaki Makaurau: The wellbeing of Tāmaki Makaurau
- delivers multiple benefits from every action
- identifies roles and responsibilities across the region
- has actions that are equal and fair
- gives voice to young people
- recognises our international, national and regional commitments.

22.  Two core climate drivers are established:

**Reducing our emissions**: This section sets out our current emissions profile and introduces new modelling of a decarbonisation pathway and carbon budget for the region. The plan sets a goal to halve our emissions by 2030 and reach net zero by 2050, as agreed at Environment and Climate Change Committee in March 2020.

**Adapting to climate change**: This section of the plan identifies what climate change is likely to mean for the region and our approach to addressing the impacts. As confirmed at Environment and Climate Change Committee in March 2020, this incorporates a precautionary approach (i.e., we will plan for our current emissions pathway) and introduces the dynamic policy pathways approach (i.e., planning across climate change scenarios and making decisions at an appropriate time).

23.  These goals are underpinned by new research and evidence developed for this plan. This includes emissions modelling undertaken by technical consultants and verified by expert stakeholders; climate projections downscaled to the Auckland region (NIWA); and a climate change risk assessment technical report series.

24.  Based on evidence laid out in the above sections of the plan and extensive engagement across the region, eight priorities are identified to deliver against our goals.

<table>
<thead>
<tr>
<th>Priority</th>
<th>What this means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Environment</td>
<td>Oranga taiao, oranga tāngata: a healthy and connected natural environment supporting healthy and connected Aucklanders. The mauri (life essence) of Tāmaki Makaurau is restored</td>
</tr>
<tr>
<td>Built Environment</td>
<td>A low carbon, resilient built environment that promotes healthy, low impact lifestyles</td>
</tr>
<tr>
<td>Transport</td>
<td>A low carbon, safe transport system that delivers social, economic and health benefits for all</td>
</tr>
<tr>
<td>Economy</td>
<td>A resilient, low carbon economy, guided by our kaitiaki values, that supports Aucklanders to thrive</td>
</tr>
<tr>
<td>Community and coast</td>
<td>Communities and individuals are prepared for our changing climate and coastline and carbon footprints of Aucklanders are reduced</td>
</tr>
<tr>
<td>Priority</td>
<td>What this means</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Food</td>
<td>A low carbon, resilient food system that provides all Aucklanders with access to fresh and healthy food</td>
</tr>
<tr>
<td>Te Pūawaitanga ō Tātai</td>
<td>Intergenerational whakapapa relationships of tāiao (nature), whenua (land) and tangata (people) are flourishing. The potential and value of Māori is fully realised and Māori communities are resilient, self-sustaining and prosperous</td>
</tr>
<tr>
<td>Energy and industry</td>
<td>A clean energy system that supports and provides for a resilient, low carbon Auckland</td>
</tr>
</tbody>
</table>

25. An implementation section is also included within the plan providing further information:
   - Climate action post-COVID-19
   - Implementation action table
   - Roles and partnerships
   - Funding and financing
   - Indicators

**Stakeholder and subject matter expert feedback**

26. Extensive stakeholder engagement across the region has supported action development for the plan, with over 600 Aucklanders involved in its development and nearly 3,000 responses to consultation on the framework (the precursor to the plan) as previously reported to the Environment and Climate Change Committee in March 2020.

27. This iteration of the plan has been reviewed by key stakeholders, including the Climate Working Group (with representation from across council, CCOs, DHBs and MfE); C40 Cities, and the Mayoral-appointed Independent Advisory Group of internationally recognised academic experts.

**Implications of COVID-19 on plan implementation**

28. It is important to note that implementation of the plan will be impacted post-COVID19 and by the region’s current economic situation – the impact is not only on council but on all stakeholders that need to contribute to climate action and implementing the plan.

29. For council a significantly constrained fiscal environment is expected for at least the first 2-3 years of the next LTP (Long-term Plan) period. However, given the strategic importance of reducing emissions and preparing for the impacts of climate change, climate action needs to remain a high priority.

30. To meet our climate goals, all actions within the plan will need to be implemented but we will need to prioritise.

31. It is worth noting that some actions will require ‘new’ funding, but others (such as council’s advocacy for example) do not require additional funding. The LTP process is also the opportunity to evaluate all other investments for their climate impacts and/or the co-benefits they deliver. In some cases it may be prudent not to proceed with such investments.

32. An additional section has been included in the implementation section of the plan to reflect the current financial climate and prioritisation approach as a first step.

33. As resolved at Environment and Community Committee, work is underway to prioritise and cost actions for Auckland Council as its contribution to delivery of the plan, for consideration as input to the Long-term Plan.
34. Work is also underway to determine how a climate ‘lens’ can be applied through the LTP to evaluate all other actions / investments for their climate impacts.

**Tauākī whakaaweawehuāhuarangi**  
**Climate impact statement**

35. The plan directly addresses the impacts of climate change.

**Ngā whakaaweawehuāngātirohanga a terōpūKaunihera**  
**Council group impacts and views**

36. Regular meetings and workshops took place across the council group for development of the plan and a working group was established from the outset to provide expertise from across the council group, central government and district health boards.

37. Input has been sought and received from across the council group at every stage of the development of the plan.

38. In addition, the team have been working closely across the council group in the development of costed actions for considerations in the Long-term Plan. This process is running concurrently with the finalisation of the plan.

**Ngā whakaaweawehuārohe me ngātirohanga ate pocariā-rohe**  
**Local impacts and local board views**

39. Local Boards have been engaged throughout the development of *Te Tāruke-ā-Tāwhiri: Auckland’s Climate Plan* as reported at previous committee meetings.

40. Formal resolutions have been received on the updated structure of the plan, with many providing more detailed feedback that has subsequently been included in the update to the plan. See Attachment B to this report.

41. Local boards are key to delivery of the plan and this is reflected in roles and responsibilities and with further engagement underway to support integration of climate change into local board plans and reports.

**Tauākī whakaaweawehuāMāori**  
**Māori impact statement**

42. Mana Whenua, through the Mana Whenua Kaitiaki Forum, gifted the cultural narrative of *Te Tāruke-ā-Tāwhiri*. This contribution is deeply acknowledged, and this cultural expression is central to the plan.

43. Climate change impacts and associated policy and action will have significant impacts for Māori communities, some of which are further discussed throughout the plan.

44. A Tāmaki and climate change subject matter expert rōpū (group) was established in March 2019 which has been supporting and advising mana whenua and council on climate change issues for Māori and providing direct advice and narrative for the plan and for on-going mahi in identification of actions.

45. This is reflected across the plan, but in particular though the foundational Te Ora ā Tāmaki Makaurau wellbeing framework and Te Puāwaitanga ō te Tātai.

46. A rangatahi Māori and Pasifika rōpū has also been working in partnership with council on this kaupapa in development of the rangatahi focused actions included in *A Tāmaki Makaurau Response*.
47. During the consultation process on the framework, a new parallel engagement approach was established to support and activate Māori communities on climate change issues. This resulted in a new benchmark of 25 per cent Māori consultation responses through formal submissions. A summary of engagement with Māori in development of the plan was provided as a memorandum to the Environment and Climate Change Committee in July 2020.

**Ngā ritenga ā-pūtea**

**Financial implications**

48. The costs associated with the development of the digital plan can be met within existing departmental budgets for 2020/21.

49. There are costs associated with engaging with Aucklanders, Māori and vulnerable populations. The engagement plan will be designed and managed within existing departmental budgets.

50. As resolved at Environment and Community Committee, work is underway to establish further detailed and costed actions for Auckland Council as its contribution to regional climate action, for consideration as input to the Long-term Plan.

51. Actions within the plan will result in budgetary implications for organisations across the region and identifying and unlocking appropriate funding and financing streams in the future will be critical. A climate finance work package is underway to identify partnerships and broader funding mechanisms such as bonds, grants, equity instruments and public/private partnerships.

**Ngā raru tūpono me ngā whakamaurutanga**

**Risks and mitigations**

52. No high or extreme risks have been identified in relation to the adoption of *Te Tāruke-ā-Tāwhiri: Auckland’s Climate Plan*.

53. The risk in relation to non-delivery of climate action is high as identified in council’s organisational risk register.

**Ngā koringa ā-muri**

**Next steps**

54. If adopted, plan text will be digitised for digital plan completion and launch (proposed for October 2020).

55. Costed actions for Auckland Council’s contribution to this regional plan continue to be developed for consideration as input to the Long-term Plan.

56. In the meanwhile, climate work will continue over the next 12 months, for example:
   - climate activity already underway / part of BAU will continue as funding allows
   - implementing additional actions and activity funded through the 20/21 budget
   - gearing up for broader implementing the plan with partners, including matters such as the most appropriate governance structures, advocacy, collaboration etc. - the focus being to get ownership and commitment to implementation from other stakeholders.
Ngā tāpirihanga
Attachments

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Ngā kaihaina
Signatories

<table>
<thead>
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<th>Author</th>
<th>Authorisers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sarah Anderson - Principal Specialist Sustainability and Climate Resilence</td>
<td>Jacques Victor – General Manager Auckland Plan Strategy and Research</td>
</tr>
<tr>
<td></td>
<td>Barry Potter - Director Infrastructure and Environmental Services</td>
</tr>
</tbody>
</table>
TE TĀRUKE-Ā-TĀWHIRI:
AUCKLAND’S CLIMATE PLAN
A note before reading this document.

This is the text of Te Tāruke-ā-Tāwhiri: Auckland’s Climate Plan.

Te Tāruke-ā-Tāwhiri is a digital plan and so does not follow the format of a standard pdf. In this document we have highlighted the proposed ‘levels’ of the text within the digital plan. These levels reflect the different interests that potential users of the digital plan might have and different levels of access and detail that they will require. Definitions for these different levels are below:

LP: This text will be on the landing page of the site and is intended to be accessible for all users of the plan

L1: Level 1 This text is linked to directly from the landing page and is also intended to be accessible to a wide audience

L2: Level 2 Text at this level is increasingly detailed but still needs to be relatively accessible and in a clear voice

L3: Level 3 This text is more detailed further information intended for technical experts and those with more granular interest in the plan. All Level 3 information is collated at the end of this document for ease of review.

Throughout this draft, boxes are provided to show where in the plan the text sits. These are provided at the start of each section and throughout the document. An example is provided on the left. It indicates that the section you are in is the Reducing our emissions goal and the ‘decarbonisation pathway’ of that goal. You can click on the links provided in the boxes to move between sections.

Any text with a BLUE HIGHLIGHT indicates that it is a link, either to another section of the plan or externally.

Any text with a PINK HIGHLIGHT indicates that this text should have a definition that will appear as users hover over the text.

Any text with a [SQUARE BRACKET and LIGHT GREY HIGHLIGHT] indicates we are awaiting an infographic, design or further text.

Although the plan will be digital, a content page is provided on page 3 of this document for ease of navigation.

Areas in development:

- It is proposed that there is a video and infographic to represent what the future region will look like if we deliver the plan. This provides a positive future vision and is essentially the ‘plan on a page’. This will be completed in advance of the proposed October launch of the plan.
Plan Structure

He Mihi
Te Tāruke-ā-Tāwhiri: Auckland’s Climate Plan

A Tāmaki Makaurau Response

Our Goals:
- Reducing our emissions
- Adapting to climate change

Our Priorities:
- Natural environment
- Built environment
- Transport
- Economy
- Community and coast
- Food
- Te Puāwaitanga o Te Tātai
- Energy and industry

Implementation
- Implementation approach
- Implementation plan
- Funding and financing
- Roles and partnerships
- Indicators
- Glossary
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LP: He Takutaku

He huarahi ki te ao tūroa  The pathway to the natural world
I te tīmatatanga, ko Te Kore In the beginning there was The Void
Ko To Pō Within The Void was The Night
Nā Te Pō From The Night, seeds were cultivated
Kaputa Te Kukune It was here that movement began — The Stretching
Ko To Pupuko There The Shoots enlarged and swelled
Ko Te Hihiri Then there was Pure Energy
Ko Te Mahara Then there was The Sub-conscious
Ko Te Manako Then The Desire to Know
Kaputa ki Te Whei Ao Movement from Darkness to Light, from conception to birth
Ki Te Ao Mārama From learning comes knowing
Tihewa mauri ora I sneezed and there is life
LP: He Mihi

Tuia ki te rangi
Tuia ki te whenua
Tuia ki te moana
Tuia te here tangata
E rongo te pō,e rongot e ao
E whēkite ana, e whūkaro ana i ngā uhitai a
Wainuiātea
Tupuna o ngā moana kiriwāwai mō
Papatūānuku Ngāki tonu ana a Taitua rāua ko
Tairāo
E haehae tonu ana i te uma o Nuku
Pipi tonu mai ana ngā wai o Roi i ngā kamo
Tangi ana mō Moana-tū-ki-te-repo
I kekeria kia rere tōna waiera
ki a Tangaroa-whakamau-tai
Ngaro atu, kāhore he hokinga mai

Kei hea rā he kāinga mō Matuku
He manu o te repo?
Kangaro i te aro tirohanga
Kua korokī ki ngā rākau teitei o te wao nui
Waiho ake a Poroka te tangi mokemoke

Ngaoki tonu mai ana te oati a Tangaroa ki a Tāne
Ngāki ana ki uta
Tāpohutu mai ana ngā url a Tāne
Ki te whakatutuki i te oati i Te Paerangi

Waiho ake ngā uhitai hei roimata
Whakamākūkū i ngā pāpāringa
Kia tū kau ake ki te wharehukahuka a Tangaroa
Kī te patatai e tau ai, e tau ai, kua tau

Bind the tapestry of life which affirms humanity’s connection to the natural world. To the celestial realm, to the earthly realm, to water - the sustenance for all life forms, and, to remember to keep everything in ‘balance’.

The mists of Wainuiātea, the mother of all oceans and waterways, rise like tears above the waterways that provide the fluid skin to clothe Papatūānuku.

The ancient waterways of Taitua and Tairāo forever eroding and tearing at the breast of Papatūānuku.

The tears (Roimata) continuously flow from the eyes
Mourning the death of Moana-tū-ki-te-repo
(swamplands, the youngest child of Wainuiātea)
Killed and drained of her life-giving purpose, to cleanse the waters of Tangaroa Whokomautai.
Lost forever and never to return

Where is home for Matuku now?
The bird of the marshlands and swamps? He is no longer seen.
His spirit floating on the highest branches of Te Wao Nui a Tāne.

Leaving Poroka to his lonely cry.

The promise Tangaroa made to Tāne is yet to be satisfied.
He continuously digs and scrapes at the ramparts of the domain of Tāne. Fulfilling the promise to take the life of the children of Tāne.

The promise he made to Tāne at Te Paerangi.

May the seaspray be evidence of those tears
That continually moisten the cheeks of Papatūānuku
They flow to the foamy domain of Tangaroa
Where in their own time they leave the turbulence of the oceans to come ashore to find peace and rest.
L1: Te Tāruke-ā-Tāwhiri: Auckland’s Climate Plan

Tāmaki Makaurau / Auckland is in a climate emergency. We have less than a decade to make the major changes to avoid the worst impacts of climate change.

Our region is already experiencing the effects of a changing climate. Over the last decade, Auckland felt the impacts of heavy rain events, storm surges and coastal inundation, extreme heat events, and droughts. These climate change impacts are expected to increase in frequency and severity.

Tāmaki Makaurau / Auckland is unique, which gives us strength in how we address climate change together. A Tāmaki Makaurau/AIDS response reflects our values and the foundations we need to succeed, including how we embed mātauranga Māori and Te Ao Māori principles, and how we work together as a region to ensure no one is left behind.

Our core goals

- **To reduce our greenhouse gas emissions** by 50 per cent by 2030 and achieve net zero emissions by 2050
- **To adapt to the impacts of climate change** by ensuring we plan for the changes we face under our current emissions pathway.

Delivering our core goals

To deliver our goals we have eight priorities for action. These priorities focus on the areas where we can have the greatest impact to reduce our emissions and adapt to climate change.

Increasing the scale and pace of action will be hard but done well, our climate actions can deliver broader environmental, economic, social and health benefits for all Aucklanders.

We have collaborated with stakeholders across Tāmaki Makaurau / Auckland to develop this plan. No single group can deliver the changes needed. We need to do this together.

We know from experience we can make major shifts when we are united in a common purpose. This plan sets the pathway for the changes we need to make for a net zero carbon, resilient future.

**VISION — VIDEO AND INFOGRAPHIC**

A vision video and infographic will be developed. They will demonstrate a positive future vision for the region in 2050 once we deliver the priorities of the plan. It seeks to demonstrate the outcomes of the actions identified. These are under development and will be completed once the plan has been agreed.
L1: Why Te Tāruke-ā-Tāwhiri?

[Embed Video here]:
https://www.tetarukeatawhiri.maori.nz/?fbclid=IwAR2sjVEyD2Vfyv2q4IDMSedanGayrEPX21d9kQQ25kIV9OJKP7HtpDUI8g

Te Tāruke-ā-Tāwhiri takes a deeply cultural narrative that is embedded in this place – Tāmaki Makaurau.

The narrative speaks to the struggles of Tāwhiri-māteā, the primal ancestor associated with weather. Tied to the Māori creation narratives of the universe and the world, Tāwhiri-māteā is seen to be influencing our climate and accelerating the change in our climate in response to human induced climate change.

The narrative calls for a change in our response to climate change, re-framing, re-imagining and re-setting the current system, and a shift from a human-centred approach to an ecological-centred approach given our symbiotic relationships with the natural environment.

The call to action is now.

Mana whenua cultural narratives speak to two key themes that are a result of almost 1000 years of observations and applied learning within Tāmaki Makaurau (built upon 50,000 years of mātauranga/indigenous knowledge systems that arrived with tupuna waka from across Te Moana-nui-a-Kiwa).

- The climate, as part of a wider whakapapa/intergenerational symbiotic system of relationships, is always moving and changing. We are responding specifically to the impacts of human induced change as a result of western-centred values, behaviours and systems.
- Our tupuna ātua/primal ancestors are reciprocating those behaviours, which we refer to Te Tāruke-ā-Tāwhiri – the struggles of Tāwhiri.
- Within those cultural narratives also lay the key to our response to ‘climate change’ through the construction of a mātauranga Māori framework or tāruke, using the knowing, thinking, living experience and wisdom of our tupuna/ancestors, as in the construction of a tāruke/crayfish pot from ake/ supple jack.

Tāmaki Makaurau is a story of place.

Tāmaki Makaurau – Tāmaki loved by many

Tāmaki herenga waka – Tāmaki the converging place of many canoes

Tāmaki herenga tangata – Tāmaki the converging place of many peoples

Te pai me te whai rawa o Tāmaki – The abundance and prosperity of Auckland

Blessed with a temperate climate, natural resources and a distinctive coastal isthmus, Tāmaki Makaurau/Auckland has attracted human settlement and commerce for about 1000 years.

It is a coastal region, bordered by the Hāuraki Gulf, Waiomatā, Manukau and Kaipara harbours and it is formed by a volcanic landscape, bush clad ranges and fertile plains.

Today, the number of people that have been attracted to the region has grown exponentially, and with this growth, comes benefits and challenges.

Our region is unique. Tāmaki Makaurau/Auckland benefits from its diversity and the opportunity to learn from all the knowledge and experience that has come before us. We cannot succeed unless we all work together, build on our collective knowledge, and make sure that no one is left behind.
L1: A Tāmaki Makaurau/ Auckland response to climate change

Our response to climate change must reflect our values and principles as Aucklanders and be appropriate for Tāmaki Makaurau/ Auckland.

Widespread engagement and consultation on the plan revealed a series of core principles (e.g. an equitable response, a Te Ao Māori lens). These core principles are foundations for developing and implementing Te Tāruke-ā-Tāwhiri: Auckland’s Climate Plan.

A Tāmaki Makaurau/ Auckland response reflects these core principles. A Tāmaki Makaurau/ Auckland response ensures that the plan:

- focusses on Te Ora ō Tamaki Makaurau: The wellbeing of Tāmaki Makaurau
- delivers multiple benefits from climate action
- identifies roles and responsibilities, so that Auckland can take action together
- considers the diverse perspectives of Aucklanders
- has actions that are equal and fair
- gives voice to our rangatahi/youth
- recognises our international, national, and regional commitments.
L2: Te Ora o Tāmaki Makaurau: The wellbeing of Tāmaki Makaurau/ Auckland

The global response to climate change must be underpinned by the best knowledge available. Indigenous knowledge systems have developed and implemented extensive mitigation and adaptation strategies. This has enabled indigenous peoples to reduce their vulnerability to past climate variability and change, which exceed those predicted by models of future climate change. However, this knowledge is rarely taken into consideration in the design and implementation of modern mitigation and adaptation strategies.

Te Tāruke-ā-Tāwhiri: Auckland’s Climate Plan acknowledges mana whenua as the first peoples of Tāmaki Makaurau, and an intimate part of the ecological and cultural fabric of the region. In response to the plan and to sustainability challenges, mana whenua have developed a Te Ao Māori well-being framework in parallel to the plan. This well-being framework is called Te Ora o Tāmaki Makaurau.

This wisdom and knowledge have enabled mana whenua to remain resilient for over 1000 years of living in Tāmaki Makaurau/Auckland, despite the far reaching inter-generational impacts of colonisation, westernisation, and urbanisation over the last 200 years.

Te Ao Māori (the Māori world) calls for the protection and preservation of whole living systems, and to maintain, sustain and regenerate the whakapapa relationships that enable the well-being of these systems. With a changing climate, the legacy of our ancestors that we in turn leave for future generations, lies in the balance.

To guide Auckland’s approach to climate action, mana whenua, through the Mana Whenua Kaitiaki Forum has partnered with the council to provide a Te Ao Māori perspective throughout the development of the plan. Early in the process, this forum set up a climate change working group to work with council representatives and subject matter experts on their response to climate change.

Te Tiriti o Waitangi

Te Tāruke-ā-Tāwhiri: Auckland’s Climate Plan recognises te Tiriti o Waitangi in Tāmaki Makaurau / Auckland’s past, present, and future.

Principles of te Tiriti o Waitangi, particularly the principles of partnership and active protection underpinned the development of this plan. At the outset, council sought a positive partnered relationship with Auckland’s mana whenua to respond to the threat of climate change.

Te ora o Tāmaki Makaurau incorporates kāpapa Māori and mātauranga-ā-iwi (tribal knowledge and its relationship to its land base). This lens is reflected in the development of climate actions within Te Tāruke-ā-Tāwhiri.

Click here to find out more about the development of Te Tāruke-ā-Tāwhiri and te Tiriti O Waitangi.
A response to Te Tāruke-ā-Tāwhiri (climate change)

Te Tāruke-ā-Tāwhiri, a narrative of climate change, speaks to the struggles of the ātua (primordial ancestors) as a result of human behaviour which is out of balance with the world around us.

Climate change is a threat to whakapapa connections of nature, people and place.

Leading the response

The Mana Whenua Kaitiaki Forum has taken the lead role in anchoring and guiding a Māori response to climate change within Tāmaki Makaurau and working closely with Māori community organisations. The approach has been underpinned by the following principles:

- **Whakapapa** centred approach to understanding and responding to climate change (Te Tāruke-ā-Tāwhiri)
- **Mātauranga Māori** forming the foundation to restoring balance with our tupuna ātua
- Mana whenua-led conversation, focused on a practical expression of our obligations of kaupapa Māori of Tāmaki Makaurau and the **manaakitanga** of its people and, in particular, our Māori communities
- Whakamana **Te Tiriti** – Working in partnership with the Kaunihora (and the Katauna)
- Recognising our wider whakapapa relationships with Māori communities Tāmaki Makaurau as well as across Te Moana-nui-a-Kiwa and the plight of our **rangataihia whānaunga**

Te Ora ō Tāmaki Makaurau Wellbeing Framework

Te Ora ō Tāmaki Makaurau is the well-being framework developed by the Mana Whenua Kaitiaki Forum in response to Te Tāruke-ā-Tāwhiri.
Within the framework, Kia Ora Te Tātai describes the world as a dynamic and complex ecosystem of whakapapa interconnections and interdependencies. All things - people, birds, fish, trees, weather patterns - are members of a cosmic family. Humans not only depend on ecosystems, but also influence them.

There are key linkage points between Te Tāruke-ā-Tāwhiri: Auckland’s Climate Plan and Te Ora o Tāmaki Makaurau, which will allow them to be used together. The well-being framework is a regional innovation that is built on generations of knowledge and reflects the world view of the various mana whenua iwi, rangatahi Māori and Māori communities of Tāmaki Makaurau.

Descending from Kia Ora Te Tātai are three dimensions of well-being. These dimensions can frame our understanding of an ecosystems or whole living systems approach to health and well-being.

Ngā Aho Taiao

The ability and capacity of ngā taiao (nature anchor) to sustain and maintain whole living systems and regenerate its own mauri, while contributing to the mauri of people and land.

Ngā Aho Whenua

The ability and capacity of the whenua (land anchor) to sustain and maintain whole living systems and regenerate its mauri, while contributing to the mauri of people and nature.

Ngā Aho Tangata

The ability and capacity of tangata (people) to sustain and maintain their mauri, while contributing to the mauri of the land and nature.

For mana whenua, this relates to their ability and capacity to maintain, sustain and regenerate their specific whakapapa relationships with land, nature and people of Tāmaki Makaurau.

For Māori communities, this relates to their ability and capacity to maintain, sustain and regenerate whānau and community well-being within Tāmaki Makaurau.

Māori values and principles

A Te Ao Māori lens can frame our thinking about and approaches to climate change. It also ensures the notion of taiao (nature), whenua (land) and tangata (people) remain an important focal point for all climate change related decisions.

Our Te Ao Māori lens is structured around core Māori values and principles derived from Māori views of the world. These values and principles provide an insight into Māori concepts and beliefs anchored upon intergenerational symbiotic relationships between people, place, nature and the wider universe (whole living systems) and the reciprocal responsibilities and obligations to care for, protect, activate, maintain and regenerate these whakapapa relationships.

The values and principles in the well-being framework are:

- Manaakitanga
- Kaitiakitanga/ Tiakitanga
- Whānaungatanga
- Rangatiratanga
- Mātauranga
- Ōritetanga
- Tōnuitanga

These values and principles when applied, can also be categorised as Ngā Mahi a te Ora/ Well-being Activities.
Related Information

Read about the Mana Whenua Kaitiaki Forum

Read about Auckland Council’s partnership approach with mana whenua

Read about the principles of Whakapapa: Mātauranga Māori, Kaitiakitanga

Read about Auckland Council Climate Plan and Te Tiriti
Ngā Ara Whakaahua Matua: Transformational priority pathways for local and central government

Discussion on these priority pathways and actions needs to be developed with the forum.

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<th>Big shifts / Big opportunities</th>
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<td><strong>Drive systemic change</strong></td>
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<td>Existing activities and programmes are reviewed and re-calibrated to align Te Ora ō Tāmaki Makaurau</td>
<td>Show leadership through shared decision-making to change and setup systems that work</td>
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<td><strong>Regeneration of ecological systems</strong></td>
<td><strong>Shift from a carbon dependent city and region</strong></td>
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<td>Shared decision-making governs the health and well-being of our ecological systems as an integrated whole</td>
<td>Tāmaki Makaurau/Auckland no longer relies on fossil fuels to function.</td>
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<tr>
<td><strong>Kaitiaki values guide our economy</strong></td>
<td>Tāmaki Makaurau/Auckland leads by example in a regenerative economy.</td>
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**ISSUE: Existing systems do not support Te Ora ō Tāmaki Makaurau**

**ISSUE: Preparing the system for change, to support whānau**

**ISSUE: Disruption of whakapapa and ecological systems**

**OPPORTUNITY: Co-design innovative solutions**

**OPPORTUNITY: Shift to a regenerative economy**

**TIONS:**
Collectively review and recalibrate all existing legislation, strategies, and policies
Use of mātauranga Māori as a fundamental evidence base and foundation
Invest in practical expressions of kaitiakitanga
Celebrate the abundant wealth and resilience of Māori.

** ACTIONS:**
- Mātauranga Māori plays an equal role in decision-making
- Establish a Māori Sustainability Office/Think Tank for the Whenua Whenua Kaikāi Forum
- Establish Mana Whenua supported rangatahi group (intergenerational)
- Establish an online Māori knowledge and information portal
- Preparing and educating Māori communities, businesses and land owners for change
- Promote new ways of collective action.

** ACTIONS:**
- Restore, rejuvenate and replenish our rēpo (wetlands), for example, by using whole of catchment for decision-making
- Restore and rejuvenate our moana (seas and harbours)
- Restore, rejuvenate and replenish our pura wai (freshwater springs)
- Restore, rejuvenate and replenish mahinga kai (food production).

** ACTIONS:**
- Use our dual knowledge systems to determine what a fossil fuel free future could look like for Tāmaki Makaurau
- Invest in opportunities for innovation and green technology
- Improve existing systems for waste, energy, land use and transport
- Enable whānau to prosper, be resilient and strong as we transition away from carbon dependence.

** ACTIONS:**
- Embed a resilient living systems approach into the Tāmaki Makaurau economy
- Use our dual knowledge systems transition and transform Tāmaki Makaurau
- Support innovation through the application of Māori values and mātauranga Māori
- Education & training programmes for a regenerative economy.

These five shifts have informed development of the priorities and actions of the plan and will be central to its ongoing implementation.
L2: Taking action together

To meet our climate goals, we need to act together.

We will deliver on this plan and our regional climate commitments through individual action, collective action, and partnerships.

We need the Auckland Council group to:

- ensure our regional systems support and drive the transition
- advocate for change
- work in partnership across sectors
- support communities and civil society in progressing climate action
- demonstrate leadership within its own operations and activities
- partner with mana whenua to ensure mātauranga Māori underpins our climate response.

We need central government to:

- set the national level context and put in place regulatory and policy drivers, to shape a just transition, to a carbon neutral and climate resilient future
- provide investment in key areas
- provide national level guidance to support the regulation and policy requirements.

We need mana whenua to:

- provide guidance and support to the ongoing development and implementation of this plan
- continue to support and advocate for the well-being of Tāmaki Makaurau, its whole living systems, whenua, wai, marae and whānau.

We need local boards to:

- work with communities to understand their priorities and deliver climate action
- lead initiatives that build community resilience and reduce emissions in their communities
- advocate for local facilities to have low carbon footprints
- advocate for climate resilience and emissions reduction
- foster strong local partnerships with mana whenua and Māori communities

We need businesses to:

- reduce emissions and prepare for the impacts of natural hazards and climate change
- lead innovation and partnering in adapting to climate change
- reduce emissions and identify ways to transition to low carbon, regenerative business practices
- help staff transition to low carbon lifestyles
- influence up and down value chains.

We need individuals and communities to:

- make decisions that reduce emissions and prepare for the impacts of climate change
- support and drive the transition to net zero emissions
- work together to understand and prepare for the changes we face from climate change
- support each other
- speak up.
We need young people and rangatahi Māori to:

- lead the change
- make decisions that reduce emissions and prepare for the impacts of climate change
- form an intergenerational collective and act as a channel between the council and stakeholders
- challenge and provide their voices in decision making.

We need civil society and NGOs to:

- hold the partners to account
- support and deliver individual and community-led action.

We need research institutions and academia to:

- provide thought leadership and research
- fill gaps in our understanding
- provide impartial assessments of the impact of action
- innovate in the development of new technologies and approaches.

We need C40 Cities to:

- continue to provide international thought leadership and resources to ensure we all learn from each other in delivering climate action
- provide continued advice, support, and challenge as we implement our plan
- provide opportunities for Auckland to continue to inform and influence internationally

Our implementation section and priorities contain more detailed information on the role of these groups in the delivery of this climate plan.

Related information:
Read about the roles in the delivery of this Auckland Climate Plan
Read about the Mana Whenua Kaitiaki Forum
L2: What Aucklanders have told us

Auckland Council took the lead in coordinating and developing this plan, bringing together private sector organisations, climate change experts, central government, public sector organisations, young people, and community members.

Climate evidence was developed to understand the key risks to the region and where we can deliver the greatest impact in reducing our emissions.

Mana whenua partnered with us and contributed Māori subject matter experts. In particular, they have supported rangatahi Māori in the development of their strategic priorities. They have also collaborated with Māori communities to shape and form Te Ora ā Tāmaki Makaurau as a whakapapa centred response to climate change and other issues that have impacted on, and continue to impact on, the well-being of nature, people and place.

Public consultation on the draft Auckland Climate Action Framework

In June 2019, Auckland Council consulted on the draft framework that led to this finalised plan.

In recognition of the disproportionate impacts of climate change, we also targeted engagement to those who may be impacted the most and are known to be less likely to engage in public consultations.

Nearly 3,000 Aucklanders responded, including 80 organisations and networks.

In addition to public consultation, Auckland Council commissioned a People’s Perception Survey, to further understand the views of Aucklanders on climate change. About 2,000 Aucklanders from across the region completed this survey.

Key feedback themes

Some key themes arose that have directly influenced this plan including:

- the urgency and scale of change needs to be emphasised
- an interim target is needed as a stepping-stone to reach our goals
- strong partnerships are needed to deliver our core goals
- there needs to be clarity over roles in delivering this plan
- a clear Māori voice needs to be incorporated into the plan
- equity needs to be emphasised in climate action across the region.
L2: Climate action can deliver multiple benefits

In declaring a climate emergency, Auckland recognises that urgent climate action is necessary to build a better climate future.

But the actions we take can also deliver social, environmental, economic and cultural wellbeing. These four well beings underpin quality of life in our communities. By recognising and maximising all benefits in the actions we take, we have the opportunity to create a more equal, happy and prosperous region, as well as a climate positive one.

An example of how this can be delivered can be seen in Auckland’s Urban Ngahere (Forest) Strategy (figure below), which identifies a range of co-benefits in growing our urban ngahere.

We need to make sure that every action we take delivers the maximum value for all Aucklanders.
L2: Equity, fairness, and climate change

Equity and climate change
Auckland is a founding signatory of C40 Cities’ Global Green New Deal, an initiative that reinforces the equity principles within the Auckland Plan, our Climate Emergency declaration and our collaborative approach to the development of this plan. The core of this initiative is a commitment to create thriving and fair communities for everyone; with inclusive, equitable climate action at the centre of all decision making.

Equity refers to whether the distribution of impacts (both benefits and costs) is fair and appropriate - being aware that people have different starts in life and different needs.

Equality treats everyone the same, but equity acknowledges the different needs people have and ensuring that everyone has what they need to succeed.

Climate change is a social issue
Climate change is not only an environmental issue. It is also a deeply social issue, with significant implications for those that are most vulnerable.

As climate impacts increase, society faces the prospect of exacerbating existing poverty and inequality. Climate change may become the biggest human rights challenge of the 21st century.

There are many different areas of equity that need to be considered in the context of climate change:

- socio-economic differences (e.g. household income)
- where people live
- the access people have to services and workplaces
- differences in the nature of people’s job (e.g. whether the job is indoors or outdoors)
- differences in accessibility needs.

Climate change also creates intergenerational inequality. If we fail to take action, we risk leaving a world significantly different – and less habitable – to our children and our children’s children.

Equity, fairness, and climate change through a Te Ao Māori Lens
From a Te Ao Māori perspective, we need to consider equity and fairness from the perspective of nature, place and people. Recognising the rights and interests of nature, place and people from a whole living systems perspective is critical.

At a human level, it is also about addressing issues of equity and equality for Māori and in particular tamariki (children), rangatahi (youth) and whānau haua (whānau with impairments). The implications are that Māori experience equity in the enjoyment of all benefits of living in Tāmaki Makaurau, including the benefits of being citizens of Aotearoa New Zealand.
In practice, this means that both the Crown and Auckland Council need to actively protect and reduce disparities between Māori and non-Māori. It means that the council needs to ensure it addresses the inequality of the ability and capacity of mana whenua to practically express their kaitiakitanga obligations and responsibilities across Tāmaki Makaurau. Also, that the council ensures Māori communities effectively respond and participate in council decision-making processes.

How we are addressing equity in our plan

There are clear risks to equity that we need to address, and some actions may produce inequitable outcomes. Equity issues need to be clearly identified, assessed and made transparent as part of any decision-making process. We have applied an equity lens throughout the plan, considering the implications of our actions on all Aucklanders and making sure that we are not leaving anyone behind in our transition to a zero carbon and climate resilient region. However, this plan also has the potential to create a much fairer and vibrant Auckland through well designed actions, as well as, Auckland Council, central government, business, Māori, and communities all working together.

Related information:

Link to Level 3
L2: Rangatahi voice

Throughout the development of the plan, over 100 rangatahi have provided their voice and input through a series of events and wānanga.

This section has been developed by rangatahi to highlight their unique and critical role in addressing climate change. It identifies strategic actions rangatahi see as vital to ensure we address climate change in a fair way.

Rangatahi have identified the value of Ka noho teina te tangata, ka noho tuakana te talao as a core philosophy that guides our kaupapa (thoughts, discussions) and tikanga (practices) in this climate space.

Through this foundational philosophy, rangatahi have identified strategic action areas.

Actions identified have been taken forward in our priorities and the implementation section of the plan.

Kawa: Ka noho teina te tangata

Our generation has a unique and critical role to play in reviving the practices and customs that support transformational change to happen in relation to climate change, building our current and future resilience.

“Ka noho teina te tangata” captures an ancient belief system, articulated through our indigenous creation stories; that Ranginui (sky father) married Papatūānuku (earth mother). From this union births the natural world and all within, including humanity. This solidifies our co-existence and interdependence with nature.

“Ka noho teina te tangata” affirms the importance of whakapapa (genealogical links) as our traditional system that measures our standards of behaviour, sense of belonging and sense of responsibility. This reaffirms and acknowledges the antiquity of ‘te taiāo’ (environment) in contrast to the existential infancy of ‘te ira tangata’ (humanity).
“Ka noho teina te tangata” is a whakatauākī (proverbial saying) suggesting, in order of priority, that we must;

ka noho - be still, be prepared, be present, be observant

teina - actively understand our infancy, be reminded of our position, know our place.

te tangata - then interact accordingly

As a generation our natural disposition as teina (junior), within the constructs of whānau and society, perfectly positions us to better understand the expectations derived from “ka noho teina te tangata”.

We accept and declare our role and responsibility in climate action and resilience is to restore and protect intergenerational equity.

This calls for urgent transformation and behavioural shifts that ensure governance, decision-making, monitoring, accountability and action must be rangatahi-led, founded in the philosophies of ‘ka noho teina te tangata’. For how we respond to climate change today, determines how future generations are impacted by climate change tomorrow.

Kaupapa: Indigenous Framework

Climate resilience is secured by re-lensing the narrative surrounding climate change. Focusing on these four pou (symbolic pillars) guides our ability to maintain the integrity of ‘ka noho teina te tangata’.

Whare: The omnipresent nature of this pou refers to "ngā tohu a te rangi, ngā tohu a te whenua" - the all-encompassing eco-systems that exist within our universe, both celestial and terrestrial. Manifested as tohu (indicators) within the environment, ‘whare’ disciplines our attention to the greatness of nature and provides a means by which we can evaluate the vitality of the tangible ecosystems of kai, wai and whenua.

Wai: Wai is a universal connector, which possesses mauri (an essence and vitality) and sustains all forms of life. Wai depicts the deep connection between the environment, the celestial and the people. Whilst whenua sustains physically, wai grounds the individual’s identity (Ko wai au? Ko wai koe?). The way that we move and connect must be reflective of the ebb and flow of waters across Tāmaki.

Whenua: Whenua solidifies the physical dependence of each individual to the land, both in our connection to whenua (placenta) as the source of sustenance, and to the earth (whenua) as a source of sustenance. In ensuring the health and sustenance of our whenua, we safeguard the wellbeing of all ecosystems within. Whenua manifests in our role of practicing kaitiakitanga.

Kai: Kai is the transmitter of systems of sustenance. It allows for the retention of indigenous knowledge which reinforces the inextricable link between interdependent ecosystems. This affirms our responsibility to ensure sustainable and regenerative food systems, in accordance with geographically local indicators of the land.
Tikanga: Te Nanakia a Māui (Innovation waka)

Climate actions today will survive futures when we are capable of changing as fast as change itself. This depends on our ability to ‘ka noho teina te tangata’ and be haututu (explorers and disruptors).

“Te nanakia a Māui” refers to the mischievous and adventurous nature of Māui. Spoken throughout Polynesian narratives, Māui is a common ancestor renowned for his trickery, curiosity, self-confidence, resolve and innovative wisdom who, in concern of comforting future generations, altered the climate forever.

According to whakapapa, the sense of innovation derives from ancestors like Māui. Instinctively rangatahi attain “te nanakia a Māui” and are active disruptors, heretics, radicals, and mavericks. These are qualities vital to leading and transforming climate action.

The innovation waka depends on our collective ability to celebrate and nurture the innate desire of rangatahi to operate at the edge of current thinking, espouse unorthodox views, question existing practice and open new fields of inquiry.

Ultimately, all scales of government and society must contribute to intergenerational equity and the delivery of ‘ka noho teina te tangata’, led by rangatahi, as the tool that transforms our praxis of climate action and resilience, shifts us into innovation and supports us to move in the right direction as quickly as possible.

Our learning, from working together as individuals, organisations, communities and agencies, to develop this framework, has been dependent on our preparedness to actively realise intergenerational equity. As we collectively embark on this journey for climate action and resilience, rangatahi are uncompromising in the philosophies of ‘ka noho teina te tangata’.

Ngā Mahinga: Our Strategic Agenda

Informed by the framework we have curated four strategic actions that prioritise climate action and resilience.

- **Support**: Through council process and practice and enabling access to the right tools at the right time, in the right way.
- **Endorse**: Through your words and actions, rangatahi are enabled and encouraged to deliver in their own ways.
- **Resource**: Through financial, pro-bono, and products so that we can do our work.

- **Ka noho** - wairua/ngākau: Our raising agent of care that causes spiritual and emotional attachment.
- **Teina** - hinengaro: Our determinant of transforming understanding and relationship.
- **Te tangata – tinana**: Our physical interaction with.
Strategic Action 1: Support, endorse and resource the establishment of a roopu that enables us to put the indigenous framework into action

**What this means in practice** – form an intergenerational collective, that is rangatahi-led, to act as a channel between council and stakeholders. The purpose of the collective is to manage activities to support climate action and resilience.

1. Phase One: Establish trust and rapport through a series of wānanga that facilitates collective consciousness and a common agenda.
2. Phase Two: Develop an indigenous measurement tool to support management, prioritisation, and measurement of the state of progress against the indigenous framework.
3. Phase Three: Using a collective impact model, establish a term of reference for working between the intergenerational collective, council and stakeholders
4. Phase Four: Establish rangatahi ropu (group) to create a collective impact movement for change (that supports bringing climate justice and resilience actions to life). Members represent key atua maori that are most impacted by climate change.

Strategic Action 2: Support, endorse and resource the restoration of ‘te mauri o te wai’ in accordance with our indigenous measurement tool

**What this means in practice** – enabling capability and capacity for ancient knowledge sharing, transformational education approaches and action that rejuvenates and regenerates our natural water systems within the Tāmaki Makaurau region.

Sub Actions:

1. ‘Ka noho’ - wairua and ngākau: Assist mana whenua to re-educate themselves, regenerate and recapture local pū rākau, waiata, mōteatea, haka and other narrative stories through various media
2. ‘Teina’ - hinengaro: Re-educate communities and organisations across Tāmaki Makaurau, and abroad, by developing materials and providing permanent platforms and opportunities for local narratives to be shared
3. ‘Te tangata’ - tinana: Promote, progress and fund current and emerging initiatives, programmes and groups who are actively committed to the restoration, sustainability, and protection of water systems within their communities

Strategic Action 3: Support, endorse and resource the relationship between tangata (people) and whenua (place) in accordance with our indigenous measurement tool

**What this means in practice** – actively partnering with hapū, iwi and recognised organisations to co-design and implement reconnection programmes for rangatahi and their whānau.

Sub Actions:

1. ‘Ka noho’ - wairua and ngākau: Assist rangatahi and their whānau to reconnect with their own pepeha and the pepeha of Tāmaki Makaurau
2. ‘Teina' - hinengaro: prioritise ancient wisdom and cultural perspectives in co-designed programmes that address climate change issues and inspire climate action

3. ‘Te tangata' - tinana: Promote, progress and fund current and emerging initiatives, programmes and groups who are actively committed to the restoration, sustainability, and protection of interaction between tangata and whenua systems within their communities

Strategic Action 4: Support, endorse and resource food sovereignty in accordance with our indigenous measurement tool

**What this means in practice** – reconnecting people of all ages to where our sustenance comes from - how it grows and how we can be more resilient when we understand this.

Sub Actions:

1. ‘Ka noho' - wairua and ngākau: Assist rangatahi to reconnect with mātauranga Māori to nurture skills and awareness around what it means to be self-sufficient

2. ‘Teina' - hinengaro: Enable educational programmes focused on reviving ancient Māori food practices as a way to help rangatahi and their whānau understand self-sovereignty beginning with food sovereignty.

3. ‘Te tangata' - tinana: Promote, progress and fund current and emerging initiatives, programmes and groups who are actively committed to the restoration, sustainability and protection of food sovereignty systems within their communities.

Related information

[Read about consultation with Rangatahi](#)

To find out more detail about the strategic actions identified here, read [Rangatahi Voice - Full document](#)
L2: Our commitments

Auckland is committed to reducing emissions and ensuring our region is resilient to the impacts of climate change. Auckland Council first committed to significant emissions reductions in 2012, and now we’re scaling up our commitments alongside the growing ambitions of cities, businesses and governments globally. The principles of Te Tiriti o Waitangi are foundational to our commitments to climate action.

Timeline of our commitments

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
<th>Description</th>
<th>Read about</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>Auckland commits to 40 by 40</td>
<td>Our first emissions reduction target is set in the Auckland Plan 2012 at 40 per cent reduction of greenhouse gas emissions by 2040. Auckland’s vision is established for a prosperous city with a thriving green economy, powered by efficient, affordable and clean energy, using sustainable resources.</td>
<td>Auckland Plan</td>
</tr>
<tr>
<td>2014</td>
<td>Low Carbon Auckland launched</td>
<td>The action plan outlines five key transformation areas required for Auckland to achieve the 40 by 40 target and sets an interim goal of 10-20 per cent reduction by 2020. It provides a 30-year pathway and a 10-year plan to guide Auckland’s transformation.</td>
<td>Low Carbon Auckland</td>
</tr>
<tr>
<td>2015</td>
<td>Auckland joins the Global Covenant of Mayors for Climate Action</td>
<td>Auckland’s mayor commits to the Global Covenant of Mayors, and pledges to reduce Auckland’s greenhouse gas emissions, track progress and prepare for the impacts.</td>
<td>The 2030 Agenda for Sustainable Development, is adopted by all United Nations member states. Read about sustainable development goals.</td>
</tr>
<tr>
<td>Item 8</td>
<td></td>
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<tr>
<td><strong>Auckland joins the C40 Cities Climate Leadership Group</strong></td>
<td>Auckland joins the global network of over 90 cities committed to tackling climate change while at COP21, where the Paris Agreement was negotiated. C40 membership enhances and resources Auckland’s ability to work with and learn from leading global cities facing similar climate challenges.</td>
<td><a href="#">Read about C40 Cities Climate Leadership</a></td>
<td></td>
</tr>
<tr>
<td><strong>The Auckland Transport Alignment Project is initiated</strong></td>
<td>The council and central government agree a strategic approach to guide the development of Auckland’s transport system over the next 30 years. The reduction of transport-related greenhouse gas emissions is one of the several benefits of this partnership.</td>
<td><a href="#">Read about the Auckland Transport Alignment Project</a></td>
<td></td>
</tr>
<tr>
<td><strong>National Civil Defence Emergency Management Plan</strong></td>
<td>The National Civil Defence Emergency Management Plan sets out the roles and responsibilities of central and local government, lifeline utilities providers, emergency services and non-government organisations in emergency management. That is, the roles of these agencies in reducing risks, preparing for, responding to and recovering from emergencies.</td>
<td><a href="#">Read about the National Civil Defence Emergency Management Plan</a></td>
<td></td>
</tr>
<tr>
<td><strong>2016 Global Paris Agreement enters into force</strong></td>
<td>The Paris Agreement between 196 countries signals a concerted global effort to limit global temperature increase by reducing emissions. The aim is to keep global temperature rise well below 2°C, whilst pursuing efforts to limit the rise to 1.5°C.</td>
<td><a href="#">Read about the Paris Agreement</a></td>
<td></td>
</tr>
<tr>
<td><strong>Auckland signs C40 Paris pledge for action</strong></td>
<td>Auckland signs the C40 Paris Pledge for Action in support of the objectives in the Paris Agreement to limit global temperature rise to less than 2°C and raise ambition before the agreement takes effect in 2020.</td>
<td><a href="#">Read about the C40 Paris Pledge for Action</a></td>
<td></td>
</tr>
<tr>
<td><strong>Auckland Unitary Plan becomes operative in part</strong></td>
<td>The Auckland Unitary Plan sets policy for a quality compact urban form which can enable low carbon development. It also sets the objective to ensure communities are</td>
<td><a href="#">Read about the Auckland Unitary Plan</a></td>
<td></td>
</tr>
<tr>
<td>Year</td>
<td>Event Description</td>
<td>Information</td>
<td></td>
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<tr>
<td>2017</td>
<td>Auckland Council commissions research to understand climate change impacts in Auckland</td>
<td>New Zealand’s National Institute for Water and Atmospheric research (NIWA) is commissioned to model the impacts of climate change on the Auckland Region to 2110. This research allows us to better understand the risks, vulnerabilities and opportunities associated with our changing climate so we can better plan, invest and build for the future. Read about the <a href="#">NIWA Climate Projections</a> or the <a href="#">Te Māori Plan</a> is reviewed and updated.</td>
<td></td>
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<tr>
<td></td>
<td>Mayor signs C40 Green and Healthy Streets Declaration (Fossil Fuel Free Streets)</td>
<td>The mayor signs a declaration to transform Auckland’s streets into greener, healthier, and more prosperous places to live by: • procuring only zero-emission buses from 2025 • ensuring a major area of our city is zero carbon by 2030. It seeks to make our streets safe and accessible for everybody, improving air quality and reducing greenhouse gas emissions. Read about the <a href="#">Healthy Streets Declaration/ Fossil Fuel Free Streets</a></td>
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<tr>
<td>2018</td>
<td>Auckland commits to an integrated regional climate action plan</td>
<td>Auckland Council approves the development of a strategy incorporating both climate change adaptation and mitigation. Read about the <a href="#">development of Auckland Climate Action Framework</a></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Auckland Council commits to partner with mana whenua through the Mana Whenua Kaitiaki Forum to develop an integrated regional climate action plan.</td>
<td>Auckland Council has co-developed Te Tāruke-ā-Tāwhiri: Auckland’s Climate Plan.</td>
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<td></td>
<td>Mayor signs Towards Zero Waste Declaration</td>
<td>By signing C40’s Advancing Towards Zero Waste Declaration, the mayor pledged to move Auckland towards: • cutting the amount of waste generated by each citizen 15 per cent by 2030; • reducing the amount of waste sent to landfills and incineration by 50 per cent and • increasing the diversion rate to 70 per cent by 2030. Read about <a href="#">C40’s Zero Waste Declaration</a> or <a href="#">Auckland’s Waste Minimisation Plan 2018</a></td>
<td></td>
</tr>
<tr>
<td>Item 8</td>
<td>Auckland’s Waste Minimisation Plan 2018 builds on these with a target for Zero Waste to 2040.</td>
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<tr>
<td>Te Tāruke-ā-Tāwhiri: Auckland’s Climate Plan</td>
<td>Auckland Council becomes a member of the Climate Leaders Coalition committing to alignment with the Paris Agreement, public transparency on emissions, setting targets for emissions reductions and influencing emissions reductions in supply chains.</td>
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<tr>
<td>Te Tāruke-ā-Tāwhiri: Auckland’s Climate Plan</td>
<td>Auckland Council successfully reapplied for membership to the C40 Cities Climate Leadership Group, including the requirement to develop a climate plan (i.e. Auckland Climate Action Framework) consistent with the Paris Agreement aspiration of 1.5°C maximum temperature rise.</td>
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<tr>
<td>2019</td>
<td>Consultation draft of Te Tāruke-ā-Tāwhiri, Auckland’s regional climate action response approved along with the resolution to develop detailed and costed actions for Auckland Council’s contribution to climate action.</td>
<td></td>
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<tr>
<td>Climate Change Response (Zero Carbon) Amendment Act 2019</td>
<td>The Climate Change (Zero Carbon) Amendment Act 2019 provides a framework by which New Zealand can develop and implement clear and stable climate change policies that:</td>
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<td></td>
<td>• contribute to the global effort, under the Paris Agreement to limit global average temperature increase to 1.5 degree Celsius above pre-industrial levels</td>
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<tr>
<td></td>
<td>• allow New Zealand to prepare for and adapt to, the effects of climate change.</td>
<td></td>
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</tr>
<tr>
<td>Mayor signs Global Green New Deal</td>
<td>Through the Global Green New Deal, cities have reaffirmed their commitment to protecting our environment, strengthening our economy, and building a more equitable future by cutting emissions from the sectors most responsible for the climate crisis. This means</td>
<td></td>
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</tr>
</tbody>
</table>

Read about Auckland Council’s C40 membership
Read the Auckland Climate Action Framework
Read the Climate Change Response Act 2002 and the (Zero Carbon) Amendment Act 2019
Read about the Global Green New Deal
<table>
<thead>
<tr>
<th>Item</th>
<th>Action Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Auckland declares a climate emergency</td>
</tr>
<tr>
<td></td>
<td>Declaration of a Climate Emergency including the requirement to include climate impact statements in all Auckland Council committee reports</td>
</tr>
<tr>
<td></td>
<td>READ about Auckland Council’s declaration of a ‘climate emergency’</td>
</tr>
<tr>
<td>2020</td>
<td>Te Tāruke-ā-Tāwhiri, Auckland’s Climate Plan approved</td>
</tr>
<tr>
<td></td>
<td>Auckland Council approves Te Tāruke-ā-Tāwhiri, Auckland’s Climate Plan.</td>
</tr>
</tbody>
</table>

**Related information**

[READ about Auckland Council’s International, national and regional climate change commitments](#)
L1: Reducing our emissions: Climate change mitigation

Our goal is to reduce our greenhouse gas emissions by 50 per cent by 2030 (against a 2016 baseline) and achieve net zero emissions by 2050.

In this section we consider:

- Our current emissions pathway
- Auckland’s greenhouse gas emissions profile
- A decarbonisation pathway for Auckland
- Auckland’s carbon budget

L2: Our current emissions pathway

Between 2009 and 2016, Auckland’s gross greenhouse gas (GHG) emissions increased by over 5 per cent, while net GHG emissions reduced by 1 per cent due to increased carbon sequestration from forestry.

In 2016, Auckland’s gross GHG emissions were 11.3 million tonnes of carbon dioxide equivalent (MtCO2e). Carbon sequestration from forestry, where carbon dioxide is removed from the atmosphere and stored in trees, reduced this figure by around 10.5 percent resulting in net GHG emissions of 10.1 MtCO2e.

Under a ‘business as usual scenario’, without additional action to reduce emissions, Auckland’s net greenhouse gas emissions are expected to increase by around 19 per cent by 2050 to 12.4 MtCO2e. This is clearly at odds with Auckland’s climate goal of net zero emissions by 2050. The ‘business as usual’ scenario reflects estimated population growth and growth rate assumptions across sectors and activities.
## L2: Auckland’s greenhouse gas emissions profile

Auckland’s GHG emissions are reported in line with the Global Protocol for Community-scale Greenhouse Gas Emission Inventories (the GPC), a robust framework for accounting and reporting city-wide GHG emissions. GHG emissions produced in Auckland can be broken down into five key sectors. The emissions data below is from Auckland’s Greenhouse Gas Emissions Inventory to 2016 – the latest data available at the time of writing.

<table>
<thead>
<tr>
<th>Sector</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Transport**                        | This sector consists of emissions from private and light commercial vehicles, trucks, buses, trains, ferries and other ships and aviation.  
                                         | This sector is Auckland’s biggest source of emissions at 43.6% of our total emissions, with 86 per cent of this from travel by road.                                           |
| **Stationary energy**                | This sector includes emissions from energy consumption in buildings, including electricity and natural gas, and energy use in manufacturing and construction.  
                                         | ‘Stationary energy’ is responsible for 26.6 per cent of Auckland’s total emissions.                                                                                                                          |
| **Industrial processes and product use** | This sector consists mostly of non-energy related greenhouse gases from industrial processes, which in Auckland, are almost entirely associated with steel production.  
                                         | GHG emissions from industrial product use are mainly associated with the use of hydrofluorocarbons (HFC’s) and perfluorocarbons (PFCs) which are used as refrigerants in air conditioning units and refrigerators.  
                                         | This sector is responsible for about 20.2 per cent of Auckland’s total emissions.                                                                                                                                 |
| **Agriculture**                      | Agriculture emissions include methane and nitrous oxide from livestock, animal wastes and fertiliser use. Agricultural energy use, such as for heating greenhouses, is classified differently and sits under the ‘Stationary energy’ sector.  
                                         | This sector is responsible for about 6.4 per cent of Auckland’s total emissions.                                                                                                                                 |
| **Waste**                            | Emissions from landfilled waste and wastewater treatment are reported for this sector, with emissions from decomposing waste in landfills responsible for most reported emissions.  
                                         | The ‘Waste’ sector is responsible for about 3.1 per cent of Auckland’s total emissions.                                                                                                                                 |

The figure below provides further detail on the activities and associated emissions across these five sectors.
Auckland’s GHG emissions profile and the climate actions modelled to develop the illustrative decarbonisation pathway are based on **production-based emissions** (sector-based emissions), primarily from emissions generated within Auckland’s boundary and grid supplied energy.

It is also important to consider climate action in the context of **consumption-based emissions** relating to the consumption of goods and services in Auckland that give rise to emissions outside of Auckland’s boundary e.g. certain construction materials and imported food.

Production-based emissions and consumption-based emissions are accounted for differently and further work is underway to better understand Auckland’s consumption emissions profile.

Although our emissions reduction targets relate to production-based emissions, some of the actions in this Plan also focus on reducing consumption-based emissions. A number of actions in Priority 2: Built environment, Priority 4: Economy, Priority 5: Community and coast and Priority 6: Food.
L2: A decarbonisation pathway for Auckland

One of the overarching goals of the plan is to achieve net zero emissions by 2050. To transition towards this goal, we have set an ambitious interim GHG emissions reduction target of 50 per cent by 2030 (against a 2016 baseline).

This aligns the plan with the objective of the Paris Agreement to limit global temperature rise to well below 2°C above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels.

Auckland’s emissions need to peak and then rapidly decline to move onto a decarbonisation pathway that meets our climate goals. The longer it takes to achieve peak emissions, the steeper and more severe Auckland’s emissions reduction pathway will need to be to meet our emissions reduction targets and stay within our carbon budget.

Emissions modelling

The CURB Tool (developed by the World Bank in partnership with C40 Cities) and supplementary modelling were used to model climate action across the sectors in Auckland’s greenhouse gas emissions profile and develop an illustrative decarbonisation pathway.

The opportunities and challenges of decarbonising specific sectors and activities were considered to identify a combination of climate actions that could reduce net GHG emissions by 50 per cent by 2030 and 94 per cent by 2050 (against a 2016 baseline).

Not all sectors have been modelled to deliver the same level of emissions reductions. This is intentional to reflect the different challenges and opportunities facing each sector. However, our modelling has shown that to achieve our climate commitments, we need bold, ambitious climate action across every sector. We will not meet our emission reduction targets through action in one sector alone.

Figure 2: Modelled decarbonisation pathway showing net emissions reductions across sectors
The graph above illustrates one pathway as to how modelled climate actions for each sector could reduce emissions from the business as usual projection (the top line on the graph). This is based on several assumptions, with the level of certainty decreasing over time.

Each coloured band represents the emissions reduction that has been modelled for that sector from 2016 to 2050. Each band subtracts emissions from the business as usual projection. The grey area under the coloured bands represents the total emissions that remain over time.

The table below provides a summary of the data from the illustrative decarbonisation pathway.

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2030</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auckland’s estimated population</td>
<td>1,614,400</td>
<td>2,040,100</td>
<td>2,464,100</td>
</tr>
<tr>
<td>Business as usual projection: net emissions (MtCO2e)</td>
<td>10.1</td>
<td>11.5</td>
<td>12.4</td>
</tr>
<tr>
<td>Decarbonisation pathway: net emissions (MtCO2e)</td>
<td>10.1</td>
<td>5.1</td>
<td>0.6</td>
</tr>
<tr>
<td>Decarbonisation pathway % reduction against 2016 baseline</td>
<td>-</td>
<td>50%</td>
<td>94%</td>
</tr>
<tr>
<td>Business as usual projection emissions per capita (tCO2e)</td>
<td>6.3</td>
<td>5.6</td>
<td>5.0</td>
</tr>
<tr>
<td>Decarbonisation pathway emissions per capita (tCO2e)</td>
<td>6.3</td>
<td>2.5</td>
<td>0.3</td>
</tr>
<tr>
<td>Decarbonisation pathway % reduction per capita</td>
<td>-</td>
<td>56%</td>
<td>94%</td>
</tr>
</tbody>
</table>

Table 1: Auckland’s estimated population and business as usual, decarbonisation pathway and per capita emissions projections at 2016, 2030 and 2050.

Residual emissions

Even with ambitious action across sectors, there is likely to be residual emissions in 2050. The illustrative pathway shows approximately six per cent of emissions remaining in 2050.

To achieve net zero emissions by 2050, it is likely that additional strategies and new technologies will be required, as well as carbon sequestration, to address these remaining emissions. This is an issue shared by other C40 cities, who have also identified residual emissions in 2050 in their climate action plans and recognise that additional strategies and technologies will be required.

We will be monitoring progress against the decarbonisation pathway on an annual basis and updating Auckland’s emissions trajectory every three years to maintain an up to date estimate of residual emissions.
Halving emissions by 2030

Our goal to reduce net emissions by 50% by 2030 brings into focus the need for significant and rapid climate action to deliver decarbonisation across sectors. Key aspects of the modelled decarbonisation pathway at 2030 include:

- **Transport** – Auckland’s largest source of emissions represents 68 per cent of the overall emissions reduction modelled for 2030. Modelled actions include:
  - avoided motorised vehicle travel, through actions such as remote working and reduced trip lengths, reduces transport emissions by around 10 per cent.
  - a substantial mode shift to public transport and walking and cycling reduces emissions in the transport sector by 14 per cent.
  - a switch to electric and zero emissions vehicles (passenger, commercial and freight) drives much of the emissions reduction in the transport sector, accounting for 55 per cent of the transport related emissions reduction.
  - increased fuel efficiency of vehicles.
  - an increase in Transport Orientated Developments also reduces emissions.

- **Stationary energy** – Modelled actions include:
  - decarbonising process heat through switching from gas to electricity, in addition to best practice technology and energy efficiency measures, accounts for 36 per cent of emissions reductions from stationary energy.
  - The percentage of renewable grid electricity increases to 94 per cent accounting for 37 per cent of the emissions reductions in the stationary energy sector.
  - retrofitting 50 per cent of existing residential and commercial buildings to a high standard of energy efficiency and replacing natural gas boilers with heat pumps for heating (75 per cent replaced) and hot water (50 per cent replaced) significantly reduces emissions from energy use in buildings.
  - All new residential and commercial buildings operate at net zero emissions from 2030.

- **Industrial process and product use** – steel making accounts for most emissions from industrial processes in Auckland and also presents significant decarbonisation challenges. The 23 per cent reduction in emissions in this sector largely focuses on energy efficiency and the adoption of best practice technology.

- **Waste** – although ambitious waste reduction targets have been modelled, the emission reductions from the waste sector make a relatively small contribution to the decarbonisation pathway.

- **Agriculture, forestry and land use** – methane emissions from livestock decrease by 10 per cent in line with the Climate Change Response (Zero Carbon) Amendment Act. On land emissions, such as those from fertiliser use, are also reduced. Extensive tree planting delivers additional carbon sequestration to reduce net emissions.

The gross emissions reduction modelled for each sector from 2016 to 2030 is outlined in the table below and illustrated in Figure 3 below.
<table>
<thead>
<tr>
<th>Sector</th>
<th>Gross emissions reduction 2016 – 2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stationary energy</td>
<td>65%</td>
</tr>
<tr>
<td>Transport</td>
<td>64%</td>
</tr>
<tr>
<td>Waste</td>
<td>0%*</td>
</tr>
<tr>
<td>Industrial processes and product use</td>
<td>23%</td>
</tr>
<tr>
<td>Agriculture</td>
<td>15%</td>
</tr>
</tbody>
</table>

*Modelled emissions for the waste sector remain at around the same level from 2016 to 2030. Compared to the ‘business as usual’ projection for the waste sector this represents a 24% reduction in emissions.*

*Figure 3: Total gross emissions and the relative decarbonisation of sectors from 2016 to 2030*
Modelled climate actions

The targets outlined below provide a summary of the climate actions modelled against the ‘business as usual scenario’ to develop the illustrative decarbonisation pathway.

<table>
<thead>
<tr>
<th></th>
<th>2030</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Buildings</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All new residential and commercial buildings to operate at net zero emissions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retrofit 50% of existing residential and commercial buildings to a high standard of energy efficiency</td>
<td>Retrofit 100% of existing residential and commercial buildings to a high standard of energy efficiency</td>
<td></td>
</tr>
<tr>
<td>Replace 75% of gas heaters in existing residential and commercial buildings with electric heat pumps</td>
<td>Replace 100% of gas heaters in existing residential and commercial buildings with electric heat pumps</td>
<td></td>
</tr>
<tr>
<td>Replace 50% of gas water heaters in existing residential and commercial buildings with electric heat pump water heaters</td>
<td>Replace 100% of gas water heaters in existing residential and commercial buildings with electric heat pump water heaters</td>
<td></td>
</tr>
<tr>
<td>40% of new dwellings are in transit-oriented developments</td>
<td>65% of new dwellings are in transit-oriented developments</td>
<td></td>
</tr>
<tr>
<td><strong>Energy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>94% of grid electricity is renewable - all coal and half of gas-fired power generation replaced with renewable electricity generation</td>
<td>100% of grid electricity is renewable</td>
<td></td>
</tr>
<tr>
<td>20% of residential and commercial buildings installed with solar PV</td>
<td>50% of residential and commercial buildings installed with solar PV</td>
<td></td>
</tr>
<tr>
<td>22% of process heat switched from gas to electricity by 2030</td>
<td>50% of process heat switched from gas to electricity by 2030</td>
<td></td>
</tr>
<tr>
<td>42% reduction in process heat emissions as a result of waste heat recovery, high temperature heat pumps, best practice technology and switching from gas to biofuels.</td>
<td>50% reduction in process heat emissions as a result of waste heat recovery, high temperature heat pumps, best practice technology and switching from gas to biofuels.</td>
<td></td>
</tr>
<tr>
<td><strong>Transport</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vehicle kilometres travelled by private vehicles reduced by 12% as a result of avoided motorised vehicle travel, through actions such as remote working and reduced trip lengths</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public transport mode share to increase from 7.8% to 24.5%</td>
<td>Public transport mode share to increase from 7.8% to 35%</td>
<td></td>
</tr>
<tr>
<td>Cycling mode share to increase from 0.9% to 7%</td>
<td>Cycling mode share to increase from 0.9% to 9%</td>
<td></td>
</tr>
<tr>
<td>Walking mode share to increase from 4.1% to 6%</td>
<td>Walking mode share to increase from 4.1% to 6%</td>
<td></td>
</tr>
<tr>
<td>100% of Auckland’s bus fleet to be zero emission</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2030</td>
<td>2050</td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>40% of passenger and light commercial vehicles to be electric or zero emission</td>
<td>80% of passenger and light commercial vehicles to be electric or zero emission</td>
<td></td>
</tr>
<tr>
<td>18% increase in fuel efficiency of the light vehicle fleet (internal combustion engine)</td>
<td>25% increase in fuel efficiency of the light vehicle fleet (internal combustion engine)</td>
<td></td>
</tr>
<tr>
<td>8% of road freight to shift to rail</td>
<td>20% of road freight to shift to rail</td>
<td></td>
</tr>
<tr>
<td>40% of road freight to be electric or zero emission</td>
<td>80% of road freight to be electric or zero emission</td>
<td></td>
</tr>
<tr>
<td>15% increase in fuel efficiency of the freight vehicle fleet (internal combustion engine)</td>
<td>25% increase in the fuel efficiency of the freight vehicle fleet (internal combustion engine)</td>
<td></td>
</tr>
<tr>
<td><strong>Waste</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food waste reduced by 30% and 30% of the remaining waste diverted to anaerobic digestion and composting</td>
<td>Food waste reduced by 50% and 100% of the remaining waste diverted to anaerobic digestion and composting</td>
<td></td>
</tr>
<tr>
<td>Paper/cardboard waste reduced by 30% and 30% of the remaining waste recycled</td>
<td>Paper/cardboard waste reduced by 50% and 100% of the remaining waste recycled</td>
<td></td>
</tr>
<tr>
<td>Plastic waste reduced by 30% and 30% of the remaining waste recycled</td>
<td>Plastic waste reduced by 50% and 100% of the remaining waste recycled</td>
<td></td>
</tr>
<tr>
<td>Wood waste reduced by 30% and 30% of the remaining waste incinerated to produce energy</td>
<td>Wood waste reduced by 50% and 100% of the remaining waste incinerated to produce energy</td>
<td></td>
</tr>
<tr>
<td>50% of electricity currently imported by wastewater treatment plants is met by internal generation</td>
<td>100% of electricity currently imported by wastewater treatment plants is met by internal generation</td>
<td></td>
</tr>
<tr>
<td><strong>Industrial processes and product use</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23% reduction in GHG emissions from industrial processes as a result of efficiency gains, innovation and introducing biochar into the steel making process</td>
<td>82% reduction in GHG emissions from industrial processes as a result of efficiency gains, innovation and the use of hydrogen and biochar in the steel making process</td>
<td></td>
</tr>
<tr>
<td><strong>Agriculture, forestry and land use</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10% reduction in methane emissions from livestock</td>
<td>47% reduction in methane emissions from livestock</td>
<td></td>
</tr>
<tr>
<td>Plant 80% of 19,350 hectares of new forest (15,480 hectares)</td>
<td>Plant 100% of 19,350 hectares of new forest</td>
<td></td>
</tr>
<tr>
<td>30% reduction in GHG emissions sources on land e.g. from fertiliser use and liming</td>
<td>80% reduction in GHG emissions sources on land e.g. from fertiliser use and liming</td>
<td></td>
</tr>
</tbody>
</table>

*Table 3: a summary of climate actions modelled to inform the illustrative decarbonisation pathway*
The urgent need to move onto a decarbonisation pathway

The modelled decarbonisation pathway starts from 2016 as, at the time of modelling, the latest annual GHG inventory data was to 2016. The modelled decarbonisation pathway shows emissions holding steady from 2016 to 2020 and then decreasing rapidly. However, provisional data considered after the modelling was completed suggests that annual emissions may have increased above the values modelled for 2017 – 2019.

As a result, a steeper decarbonisation pathway may be required than the one outlined by the modelled decarbonisation pathway in order to achieve a 50% reduction in GHG emissions by 2030. This is illustrated in Figure 4.

Figure 4: Auckland’s historical annual emissions, business as usual projection and modelled decarbonisation pathway
Implementing a decarbonisation pathway

Delivering a decarbonisation pathway in line with the modelled pathway, will require transformative and committed action across sectors and by a range of diverse stakeholders including Auckland Council, Central Government, businesses and individuals.

Reducing GHG emissions by 50 per cent by 2030 is not plausible, unless bold and ambitious climate action is taken.

Auckland Council cannot deliver the required reductions in greenhouse gas emissions on its own but has an important role to lead and support emissions reductions in Auckland.

L2: Auckland’s carbon budget

Our emissions reduction targets are informed by a carbon budget (CO2e) that sets out the total cumulative GHG emissions that Auckland can produce to play its part in keeping global emissions within the 1.5°C temperature rise threshold. Auckland’s carbon budget is 164 MtCO2e from 2017-2050 - equivalent to a budget 14 times the size of Auckland’s annual emissions in 2016. Our carbon budget has been calculated by C40 Cities in line with Auckland delivering a 'fair share' contribution to achieving the objectives of the Paris Agreement.

Under the projected business as usual scenario, we are likely to exceed our carbon budget around 2030.

The modelled decarbonisation pathway delays the date at which the carbon budget is exceeded until around 2038 and flattens the curve, significantly slowing the rate at which emissions are added to our cumulative total. The modelled decarbonisation pathway still exceeds our carbon budget, emphasising the need for additional strategies and new technologies, as well as carbon sequestration, to address remaining emissions and achieve net zero emissions by 2050.
Figure 5: Auckland's cumulative gross emissions projections and carbon budget

Related information:

Read about the CURB tool and modelling our greenhouse gas emissions pathways

Read about What You Can Do to reduce greenhouse gas emissions
L1: Adapting to climate change

It is likely that our current emissions pathway will result in an average warming of 3.5 degrees Celsius or more by 2110. This will lead to a continued and catastrophic increase in the impacts and risks we are already facing across our region, such as flooding, heatwaves, drought, and coastal storms.

For example, the drought Auckland experienced in 2020 is likely to become more common, with seasonal changes in rainfall patterns and more dry days projected. The impacts of climate change will be stark for the ecosystems on which we rely—such as ocean acidification and increasing pests and diseases to mass extinctions. The loss of our natural environment will play out further in large scale movements of people, and health implications from declining food sources, air, and water quality.

All warming will lead to significant changes to our world, but to reduce the impacts we will face as much as possible, we must continue the drive to keep within 1.5 degrees Celsius of warming globally, and this plan lays out our contribution to this.

However, we must plan for uncertainty. Our plan takes a precautionary approach, preparing for the impacts of a continued ‘business as usual’ emissions pathway.

This does not mean that we are taking every adaptation action now.

Planning well together, with clear timelines for when decisions must be made, can avoid unnecessary investment or the risk of locking into major investments that are not fit for purpose into the future. One way of doing this is through Dynamic Adaptive Policy Pathways (DAPP).

In this section we cover:

- Auckland’s climate future
- Auckland’s climate risks
- Our approach to adaptation
L2: Auckland’s climate future

Auckland’s temperature is projected to increase by between 1.5 and 3.75 degrees Celsius by the end of the century, depending on the pace and scale of change in our global emissions. Our current emissions pathway is likely to result in a 3.5 degrees Celsius rise for the region by the end of the century.

As our average temperature increases, so does the probability of more extreme weather events.

This means that what we would see as a hot day today is more common into the future with more even hotter extreme events.

Temperature changes

The Auckland region is projected to warm considerably into the future.

Over the past century, Auckland’s mean annual temperature has increased by about 1.6 degrees Celsius and the impacts of this are already being felt across the region. It is projected to increase further by between 1.5 and 3.75 degrees Celsius by the end of the century, depending on the pace of global emissions reductions.

This means we’re likely to have four times as many ‘hot days’ per year. That is 80 days above 25 degrees Celsius, compared to 20 days currently.

Rainfall changes

Annual total rainfall and seasonal rainfall patterns are likely to change in the Auckland region.

Rainfall in spring is likely to decrease by 15 per cent in some parts of the region. Auckland is projected to be more drought prone. An increase in the number of dry days is expected. This will add more than 21 dry days per year by 2110. Drier periods will bring water shortages for residential, agricultural, and industrial use.

Rainfall intensity is projected to increase because a hotter atmosphere can hold more moisture. The intensity of short-duration events is projected to increase by 14 per cent.
per degree of warming. This could mean more intense flooding, affecting our infrastructure, properties, health and safety, as well the local economy.

**Marine and coastal changes**

The Auckland region is starting to feel the effects of sea level rise. If global emissions remain unchecked, they’re projected to rise by a metre, by the end of this century.

However, we know that glaciers and ice sheet melting is accelerating so the change could be even greater.

In a region with 3,200 kilometres of coastline, this means serious threats of coastal erosion, storm surges and flooding.

*This means that before the end of this century, approximately 1.5 to 2.5 per cent of Auckland’s land area, may be exposed to sea level rise. This covers 0.3 per cent of buildings, 80 per cent of coastal ecosystems and six per cent of dairy land.*

Low lying coastal towns and infrastructure will be more exposed to coastal inundation/flooding with storm surge.

Marine ecosystems are highly susceptible to climate change. Ocean acidification will threaten the condition and survival of some marine species. A rise in ocean temperatures will see species on the move and changes to ecosystems and moana kai.

**Other combined effects**

Climate change doesn’t happen separately from other changes like population growth, changes in land use, changes to food and energy security, and rising inequality. In fact, climate change may make many of these challenges even more difficult to solve or may make related impacts on people and communities even more severe.

It is also true that our climate change effects aren’t isolated from other regions and countries. Migration related to climate is already happening across the world. Auckland will need to be part of the solution to support these displaced people.

Many of the implications of climate change will play out through our water systems, whether through too much water in the wrong place (flooding) or too little (drought). **Climate and water** are fundamentally linked and actions to address this cut across our priorities.
L2: The potential risks to Auckland

To both mitigate and adapt to climate change, and to inform planning and decision-making, we must understand the climate change risks and impacts on our ecosystems, people, and economy.

Our research

To support this, Auckland Council produced a [Climate Change Risk Assessment technical report series](#).

This research is underpinned by the [Auckland Region climate change projections and impacts research](#) undertaken by the National Institute of Water and Atmospheric Research (Pearce et al., 2018).

The Climate Change Risk Assessment technical report series used the [Intergovernmental Panel on Climate Change methodology](#) (IPCC, 2014) to assess impacts on people, the environment and infrastructure. It identifies the parts of Auckland most susceptible to impacts of climate change and the associated social and environmental vulnerability.

The research specifically covers:

- health effects of extreme heat
- climate change, air quality and health impacts
- creating conditions for disease vectors
- social vulnerability
- climate change impacts and risks for terrestrial ecosystems
- climate change impacts and risks for marine and freshwater ecosystems
- effects of coastal inundation and sea level rise on Auckland.

The following infographic summarises some climate impacts on the Auckland region.
The technical report series will be expanded and built on as new data and other resources become available. Our eight priorities have been informed by the risks identified in these reports and expert input from across Auckland.

**Impacts of climate change for Māori**

Indigenous peoples are not only among the most vulnerable to the impacts of climate change, they also hold many of the solutions to adapting to it.

To guide Auckland’s approach to climate action, the Mana Whenua Kaitiaki Forum partnered with the council to provide a Te Ao Māori perspective throughout the development of the plan.

Climate change has significant implications for Māori:

- Being predominantly coastal people, mana whenua relationships to ancestral taonga, cultural knowledge and practices are at risk. Sea level rise is compromising wāhi tapu (sacred sites), Māori land holdings, marae and other significant sites.
- There will also be potential socio-economic impacts on whānau (families). Proposed responses to climate may present a further disadvantage for Māori.
- Whānau Māori (Māori families) who are already in a precarious financial position, have less access to resources to respond to rapidly worsening conditions.
- Marae, urupā (burial grounds) and wāhi tapu (sacred sites) will be exposed to inundation and flooding.
- Indigenous flora and fauna are under threat from a changing environment, particularly where those changes are so fast or significant that species cannot adapt or are overrun by exotic invasive species that can.

Those climate migrants within Tāmaki Makaurau/ Auckland and our Pacific islands’ whānau will need additional support.

The council has also worked together with the Mana Whenua Kaitiaki Forum and Ngā Pae o te Maramatanga to develop a Te Ao Māori Lens for the Climate Change Impact Assessment Framework. This lens draws together mātauranga Māori and western science and applies core Māori values and principles across proposed climate actions, prioritisation and implementation. This Te Ao Māori Lens framework sits within Te Ora ő Tāmaki Makaurau.

**Climate change and natural hazards**

Details on Auckland’s natural hazard risks and the actions Auckland Council will continue to take to mitigate the impact can be found in the Natural Hazard Risk Management Action Plan.
L2: Our approach to adaptation

Our plan takes a precautionary approach, preparing for the potential of a continued increase in greenhouse gas emissions.

The precautionary approach applies when a potentially serious risk exists alongside scientific uncertainty. This allows us to consider some risks as unacceptable not because they have a high probability of occurring, but because if they do occur, the consequences may be severe or irreversible.

This doesn’t mean that we are taking action to reflect a 3.5-degree Celsius warmer world right now but does mean that we plan and build resilience, so that we are ready if it does occur.

An approach that helps us flexibly plan and adapt despite uncertainty and changing conditions is called dynamic adaptive policy pathways planning (DAPP).

Dynamic Adaptive Policy Pathways (DAPP)

We cannot be certain of all the changes we will face from climate change. For instance, temperature increase is dependent on a range of factors, like how quickly we reduce our emissions globally. This means we often need to leave options open for as long as possible while ensuring we are preparing for any outcome.

Adapting to climate change requires decisions that avoid the risk of locking decisions and investments into one potential future. For example, building infrastructure that cannot be changed should it become no longer fit for purpose as climate impacts increase.

The DAPP approach develops a series of actions over time (pathways). It is built on the idea that decisions are made as conditions change, before significant damage occurs, and as existing policies and decisions prove no longer fit for purpose.

To determine which Pathway we should follow, we develop a series of ‘Triggers’. For example, as the sea-level rises the frequency of hazard events, such as flooding, exceeds an agreed ‘trigger’. At this point additional or different actions are needed, and an alternative pathway is taken to avoid reaching the threshold at which damage occurs.

By exploring different pathways early and testing the consequences, an adaptive plan can be designed that includes a mix of short-term actions and long-term options.

The plan is monitored for signals that a decision point is approaching to:

- implement the next step of a pathway
- shift to an alternative pathway
- reassess the objectives of the plan itself.
The DAPP approach was developed in the Netherlands and is now embedded into the National Coastal Hazards and Climate Change Guidance and is being used in coastal and riverine flooding settings and for infrastructure decision making. Our plan takes this approach across our priority areas, particularly in the Built Environment and Community and Coast priorities.

An example of how this approach can be applied is in the case of how we manage our water.

Prioritising adaptation action

Adaptation can often be thought of a future issue, but without action now we risk far greater financial and human costs into the future. There are some key areas we know we need to prioritise to ensure we are as prepared as we can be for the impacts we face:

- Development of long-term, strategic approaches to change that keep options open, e.g., DAPP.
- Community and business engagement and empowerment, focusing on those impacted the most.
- Ensuring climate change is a key consideration in decisions that have the potential to lock us into poor resilience outcomes in the long term.
- Addressing immediate, known risks that are affecting Aucklanders today
- Establishing strong partnerships and governance that allows complex decision making, and for a variety of voices to be heard.
- Addressing research gaps that are preventing adaptive action.

These areas of focus are reflected in the priorities of this plan.

Related links

Read about Ministry for the Environment’s climate change and adaptation programme.
Te Tāruke-ā-Tāwhiri: Auckland’s Climate Plan Priorities:

Please click on one of the boxes below to go to that Priority section of the Plan.
L1: Natural environment

Our goal
Oranga taiao, oranga tāngata: a healthy and connected natural environment supports healthy and connected Aucklanders. The mauri (life essence) of Tāmaki Makaurau is restored.

Why this is a priority

Ki te kore te tangata e manaaki i tōna taiao, ka kore te tangata e whai oranga
If people do not take care of the environment, we are not taking care of our own health and wellbeing.

The quality of our beaches, harbours, bush, streams and maunga is dependent on how we treat them.

When we lose sight of the environment in our daily actions, we directly impact the quality of our natural world and degrade the basis of our economy, our health, well-being, and our cultural and spiritual identity.

Our natural environment is at risk
We rely on healthy ecosystems to:
- trap and sequester carbon
- retain water
- prevent soil erosion
- offer protection from extreme weather
- provide a local source of food.

Auckland holds about 20 per cent of New Zealand’s threatened birds, reptiles and plants. Rapid urban growth, pests and diseases, pollution and ongoing loss of habitat have affected these species and their ability to move and adapt to climate change.

Many existing biodiversity and biosecurity programmes, such as Auckland Council’s Natural Environment Targeted Rate (NETR), already help build the resilience of native species and ecosystems to climate change, by reducing threats to their survival and promoting landscape functionality through improved connectivity. But this is not enough.

These targeted programmes need to expand and develop, as our understanding of the likely impacts of climate change grows.

We need to capture carbon
Increasing the potential to capture carbon in terrestrial and marine environments is key to meeting our goal of reducing emissions.

It is estimated that in 2016, carbon sequestration from Auckland’s forests reduced the region’s gross emissions by just over 10 per cent.
We need to protect existing carbon sinks, including mature forests and other terrestrial and freshwater ecosystems, coastal ecosystems, and healthy soils.

We need more trees

We also need to plant more trees and expand these carbon-capturing ecosystems to enhance carbon sequestration in the future.

Access to green space is not equal across the region, as shown by tree canopy cover.

In the southern suburbs, tree cover dips as low as 8 per cent, but in the northern and western suburbs it increases to 30 per cent.

This affects air and water quality, access to shading, biodiversity, safety and mental health, resulting in real impacts on the quality and length of peoples’ lives.

Indicators

[An infographic will be designed to illustrate these measures]

- Carbon sequestered by trees/vegetation, soils, and marine ecosystems.
- State and quality of locally, regionally, and nationally significant environments.
- Tree canopy cover, regionally and in my local board area.
- Marine and freshwater quality indicators (e.g. nutrients, sediment, temperature) from State of the Environment reporting, contaminant loads in harbours and streams.
- Air quality indicators (e.g. particulate matter) from State of the Environment reporting.
- Soil health indicators (e.g. nutrient levels) from State of the Environment reporting.
- Number of approved developments that incorporate hua, rakau, hua whenua, native trees and green spaces.
- Extent of terrestrial, freshwater, and marine environments formally protected (as percentage of total area).

Our natural environment priority action areas

Our actions to deliver this priority are guided by the values and principles in Te Ora o Tāmaki Makaurau Well-being Framework.

Action N1: Build the resilience of Auckland’s indigenous biodiversity, habitats, and ecosystems to the impacts of climate change

Indigenous flora and fauna are under threat from a changing environment, particularly where those changes are so fast or significant that species cannot adapt or are overrun by exotic invasive species that can adapt quickly.

To reduce the vulnerability of our indigenous biodiversity we need to:

- increase our understanding of potential climate change risks to Auckland’s indigenous ecosystems and species and ensure that these are integrated into planning and policy considerations
- increase our commitment to control key pests and weeds that are expected to benefit from climate change, across a full range of Auckland’s indigenous ecosystems
- expand habitat protection, restoration, and enhancement programmes to increase the viability, geographical extent, and connectivity of indigenous terrestrial, freshwater and marine ecosystems
expand habitat restoration within the Kaipara Harbour, Hauraki Gulf and Manukau Harbour

develop approaches that support resilience and recovery of indigenous biodiversity from climate change effects (e.g. drought, storms) and increase public understanding of the importance of pre-emptive action

increase opportunities for community-led monitoring programmes and connection to our natural environment

promote, progress and fund current and emerging initiatives, programmes and groups actively committed to the restoration, sustainability, and protection of interaction between tangata (people) and whenua (land) systems within their communities.

**Action N2: Grow and protect our rural and urban ngahere/forest to maximise carbon capture and build resilience to climate change**

We need to follow the principles of knowing the benefits of trees in the Auckland region, growing the right tree in the right place and protecting existing trees.

These principles have been developed and endorsed through our [Urban Ngahere Strategy](#).

- Undertake and support research to improve understanding of the multiple benefits of trees in the Auckland region, incorporating mātauranga Māori and indicators of mauri.
- Increase indigenous tree plantings in road corridors, parks and open spaces.
- Provide support, guidance and advice for landowners to undertake ecological restoration and tree planting on private land and establish mechanisms to track these.
- Use research and technology, in partnership with iwi and communities, to identify priority areas for future planting that achieves multiple outcomes.
- Build the capacity and capability of existing marae and community nurseries and conservation/planting groups through assistance, advice, and training programmes.
- Protect important trees through improved planning regulations and ensure publicly managed trees are not removed without clear justification.

**Action N3: Integrate connected, nature-based solutions in development planning**

Nature-based solutions are actions that work with and enhance the environment to help people adapt to climate change.

These may include protecting, restoring, or enhancing natural habitats or incorporating natural elements into built environment projects, for example green infrastructure and enhancing natural ecosystems, to provide for coastal management.

Investing in nature-based solutions in growth and regeneration areas can address inequity in the quality of our natural environment.

- Increase uptake of nature-based solutions within the council family projects and develop further supporting tools for decision making, where these are not currently available.
- Provide new and promote existing regulatory, planning, and educational tools to support nature-based solutions and maintain habitat corridors on private land and developments.
- Incorporate protection, managed retreat and restoration of indigenous coastal ecosystems into planning for sea level change.
- Establish a monitoring framework to show the benefits of nature-based solutions projects.
- Empower and partner with community groups and the public to encourage community-led projects.
- Enhance, extend, and connect Auckland’s blue-green networks to protect and enhance ecosystem function and species viability.
Action N4: Maximise potential of terrestrial and marine ecosystems to capture carbon

- Support research and pilot projects that measure the biological sequestration of carbon in terrestrial, freshwater, and marine ecosystems.
- Improve understanding of soil carbon sequestration potential of different land management practices.
- Identify opportunities for businesses and individuals in the region to contribute to carbon sequestration schemes that support their emissions reduction goals and wider social and environmental outcomes.

Action N5: Advocate for land use practices that deliver healthy, resilient soils, waterways, and ecosystems

- Support rural Aucklanders to manage land in ways that grow resilience to climate change and enhance mauri, support biodiversity and health of waterways.
- Establish land management actions that will create ‘green infrastructure’ to benefit farmers, land managers and the wider region (e.g. planting trees, riparian fencing, and planting, protecting and restoring wetlands).
- Trial soil quality enrichment practices to enhance plant growth and carbon sequestration.

Note: Further Māori well-being actions in development linking to Te Puawaitanga o Te Tātea

Roles in delivery

While the public sector (including Auckland Council, Department of Conservation and the Ministry for Primary Industries) has a key role to play, it is only through partnerships and collective action with marae, hapū and iwi, and communities that we will fulfil our role as kaitiaki (guardians) and restore the health of our natural environment.

The Department of Conservation (DOC) and Auckland Council signed a memorandum of understanding in 2011, an agreement to work together to manage Auckland’s open spaces, natural heritage, and wild places.

This agreement takes into consideration that Aucklanders and visitors to the region do not distinguish between land managed by the council or DOC.

Joint projects to achieve shared goals in our blue and green spaces include Pest Free Auckland 2050[link], initiatives to prevent the spread of kauri dieback and other biosecurity threats, environmental volunteering, protection of heritage areas and promotion of outdoor recreation across the Auckland Region.

To inform, prepare and guide its response to climate change impacts, DOC has developed a Climate Change Adaptation Action Plan (CCAAP), due for release in 2020

Related information

Read about Auckland Council’s Urban Ngahere Strategy

Read about Department of Conservation’s Climate Change Adaptation Action Plan

Read about the Whakaoratangi I te Puhinui/Puhinui Stream Restoration Programme case study

Read about the Natural Environment Targeted Rate

Read about Auckland’s Indigenous Terrestrial and Freshwater Ecosystems
L1: Built environment

Our goal

A low carbon, resilient built environment that promotes healthy, low impact lifestyles.

Why this is a priority

How and where Auckland grows and how our existing and future built environment performs and functions, are critical factors in determining the success of our climate goals.

Our built environment includes the buildings where we live, work, and learn, the infrastructure systems that enable the region to function, and the urban spaces that shape our city.

Around 1.66 million people currently live in Auckland - by 2050 this number could grow by another 720,000 people to reach 2.4 million.

To accommodate this growth, Auckland’s built environment will change significantly. This could mean 313,000 new homes, along with new infrastructure, commercial buildings, and community facilities.

The decisions we make when planning and designing our built environment determine to what extent we lock in future emissions and our exposure to climate risks.

To move to a low carbon and resilient region, climate change and hazard risks need to be integral to the planning system that shapes Auckland.

Integrating land-use and transport planning is vital to reduce the need for private vehicle travel and to ensure housing and employment growth areas are connected to efficient, low carbon transport systems.

Performance of buildings

Operational energy use in residential and commercial buildings accounts for over 10 per cent of Auckland’s total emissions.

The performance of new and existing buildings needs to significantly improve to support a low carbon, climate resilient future. The energy performance of Auckland’s buildings is generally low, due to the Building Code setting relatively low energy efficiency standards. The performance of buildings is strongly linked to our health and well-being outcomes.

Cold, damp homes contribute towards high levels of respiratory illness, such as asthma and rheumatic fever. At the other end of the scale, the number of hot days is expected to increase, with overheating in poorly performing buildings set to become a more significant health issue.
Almost one quarter (23 per cent) of Auckland’s buildings are exposed to flood hazards. With climate change set to increase the severity and frequency of flooding, it is essential that we plan, manage, and retrofit our built environment to be resilient to impacts of climate change and other natural hazards.

Management and design of infrastructure and buildings

Climate change must be a key consideration in the management of existing infrastructure and the planning and design of new infrastructure systems. Infrastructure can lock in long-term climate impacts and influence people’s lifestyles and choices for many decades.

Understanding the climate and natural hazard risks relevant to infrastructure systems, and how we use and maintain them, is fundamental to enhancing resilience and reducing long-term costs.

We need to consider the lifecycle impacts of buildings and infrastructure from design to deconstruction and support a circular economy that re-uses resources and diverts construction waste from landfill.

Construction and demolition waste currently account for 50 per cent of Auckland’s total waste stream and this figure is projected to grow.

The embodied emissions of construction materials need to be addressed through:

- re-using materials
- reducing construction and demolition waste
- using construction materials with low embodied emissions, such as structural timber.

Creating low carbon, climate resilient places

Creating places that support low carbon lifestyles and enable people to be resilient to the impacts of climate change is an essential component of delivering a sustainable built environment.

Places provide additional opportunities for climate action that go beyond those provided by buildings and infrastructure.

Neighbourhoods or precincts can provide an appropriate scale to deliver climate action that can be replicated and rapidly scaled up. For example, delivering a zero emissions area in the city centre will reduce emissions and improve air quality. It will also encourage a rapid transition to low/zero emission vehicles and transport modes.

Zero emissions area in the city centre, will be delivered as part of the mayor’s commitment to the C40 Green and Healthy Streets (initially known as Fossil Fuel Free Streets) declaration.

Our public spaces, from urban spaces and streets to local and regional parks, can support the transition to a low carbon, climate resilient region.

Optimising the use of public spaces delivers multi-functional benefits including:

- connected communities
- enhanced water management
- reduction of the urban heat island effect to enhance resilience, food growing and energy generation.
Indicators

An infographic will be designed to illustrate these measures:

- Percentage of annual dwellings consents within 1000m of a train or busway station (rapid transit network stations).
- Percentage of major development and infrastructure proposals that complete a climate change impact assessment, starting at the business case stage.
- Quantity and value of building infrastructure exposed to climate risks.
- Percentage of residential and commercial buildings retrofitted to a high standard of energy efficiency.
- Percentage of new buildings built to a sustainable design standard per annum.
- Number of buildings located in a hazard zone.
- Percentage of buildings exposed to flood hazards.
- Number of buildings consented in flood plains and flood prone areas per annum.
- Tonnes of construction and demolition waste and percentage sent to landfill per annum.
- Number of low carbon precincts delivered.

Our built environment priority action areas

Our actions to deliver this priority are guided by the values and principles in Te Ora o Tāmaki Makaurau Well-being Framework.

Action B1. Ensure our approach to planning and growth aligns with low carbon, resilient outcomes

- Review provisions in the Auckland Unitary Plan (AUP) from a climate and natural hazards perspective and use this to inform the statutory review of the AUP and future plan changes.
- Ensure growth modelling assesses the impacts of different growth scenarios on climate change mitigation and adaptation.
- Review and update growth modelling criteria in line with the latest climate evidence, knowledge, and projections.
- Collaborate to ensure climate change mitigation and adaptation is a priority in national planning legislation.
- Maintain and uphold a quality compact urban form approach as outlined in the Auckland Development Strategy.
- Develop masterplans that demonstrate and promote the opportunity for zero carbon, transit-oriented developments that build climate resilience.
- Develop Auckland Council requirements and guidance for development with known natural hazard risks and formalise the approach to consenting and vesting of at-risk assets [NHRMAP Action 11, 18].
- Investigate mechanisms to improve consenting for projects that reduce and manage natural hazards [NHRMAP Action 14] and develop a natural hazard management toolbox for regulatory staff [NHRMAP Action 13].

Action B2. Ensure new infrastructure is planned and designed to minimise climate risks and lifecycle emissions

- Assess climate change impacts for all new developments and infrastructure, starting at the business case stage, to identify to what degree a proposal supports or conflicts with our climate goals over its lifecycle.
• Embed a Dynamic Adaptive Policy Pathways (DAPP) approach to support decisions being made at the right time.
• Assess and support pathways to decrease construction of new infrastructure in known hazard zones.
• Ensure that long term resilience and natural hazard planning are embedded in new infrastructure developments.
• Deliver stormwater solutions and water sensitive urban design to enable resilient development and build community resilience.
• Reduce infrastructure carbon for water and wastewater assets and build their resilience in line with the latest climate projections.

Action B3: Ensure the management of existing infrastructure increases climate resilience and reduces emissions

• Address natural hazard and climate risk in asset management plans, applying natural hazards risk criteria and methods such as Dynamic Adaptive Policy Pathways (DAPP).
• Address climate change issues relating to Auckland’s closed landfills, including exposure to climate risks and greenhouse gas (GHG) emissions.
• Understand where critical infrastructure may be vulnerable to the impacts of climate change and identify interdependencies (NHRMAP).
• Improve the understanding of economic impacts of natural hazards on Auckland Council assets (NHRMAP).
• Transition to a zero emissions Ports of Auckland by 2040.

Action B4: Identify and deliver alternative water supply options to address population growth and climate change while protecting and enhancing te Māuri o te Wai

• Investigate alternative water sources that consider the impacts of climate change while ensuring the protection and enhancement of te Māuri o te Wai.
• Investigate energy and emissions requirements for possible new water supply options (including desalination and wastewater reuse) to inform decision making for new sources.
• Monitor and model climate impacts on the water system to understand the resilience of the network.
• Identify low-lying water and wastewater assets that are within projected sea level rise over the next 100 years.

Action B5: Encourage sustainable design and construction for new buildings

• Advocate for central government to progressively update the Building Code on a regular basis with all new buildings required to operate at net zero carbon by 2030.
• Remove barriers for sustainable and construction, including council processes and other mechanisms such as incentivisation and upskilling.
• Document, share and promote processes and lessons learned on delivery of net zero energy buildings, such as Te Kōpua, a net positive energy, zero carbon building project in Henderson, to inspire and enable easier and faster uptake of sustainable building design.
• Promote and incentivise the certification of new apartment properties to performance standards that meet the requirements of the Healthy Homes Act (e.g. Passive House), as opposed to taking a fixed heating approach.
• Deliver on Auckland Council’s Sustainable Asset Standard for all community facilities projects and use third party green building and sustainable infrastructure rating tools to measure and reduce the environmental impact of our assets.
Action B6: Deliver and support retrofit programmes to transition to low-carbon, resilient, healthy buildings

- Deliver a residential retrofit programme to improve the health and efficiency of Auckland’s residential buildings, including the installation of insulation, double glazing, efficient heating and lighting, and renewable energy generation.
- Establish a commercial building retrofit programme to improve the performance and resilience of Auckland’s commercial buildings and promote and enable fuel switching from natural gas to electricity.
- Establish a programme for installing climate resilience measures at a building and area scale, to address climate risks.
- Support uptake of productive roofs in Auckland - showcase opportunities through pilots on public assets, address current barriers to uptake and investigate incentives.
- Investigate the role of productive roofs (e.g. biodiversity enhancement, energy generation, stormwater management, rainwater harvesting and food growing).

Action B7: Develop and support initiatives to minimise construction and demolition waste

- Update the Building Code to consider waste and climate impacts for full lifecycle of buildings (including deconstruction) when consents are lodged.
- Continue research into the role of reused and recycled construction materials and ensure Auckland Council contracts are maximising opportunities to recover useful materials.
- Continue to roll out the “Building out Waste” tools guidelines to educate the wider construction industry, and support and integrate community and social enterprises into construction and demolition waste initiatives.
- Develop a deconstruction hub that provides infrastructure for industry to exchange key materials and share best practice expertise.
- Embed circular economic principles to address construction and demolition waste (i.e. Waste Management and Minimisation Plan).
- Use demonstration projects to drive demand for recovered materials.

Action B8: Ensure public spaces support a low carbon, climate resilient Auckland and optimise multi-functional benefits

- Embed climate change mitigation and adaptation measures into all park plans for the region.
- Ensure public spaces meet the growing demands of a growing population and urban intensification by optimising spaces for recreation, water management, biodiversity enhancement, and energy and food production.
- Prioritise the use of green infrastructure to deliver multiple benefits with a low carbon footprint, and include lifecycle analysis in business cases.
- Install temporary assets to confirm community needs before any permanent infrastructure is built.
- Explore initiatives to reduce travel needs and adapt locations and scheduling for more local events such as sporting events.
- Use underutilised land for energy generation and carbon sequestration.

Action B9: Establish and rapidly scale low carbon, resilient precincts across Auckland

- Create climate positive districts at suitable locations across the region.
- Identify and optimise opportunities for delivering low carbon, climate resilient neighbourhoods through Panuku’s development projects, such as the Panuku Precinct in Henderson and the Unlock Takapuna programme.
• Deliver a zero emissions area in the city centre and apply lessons learnt to other urban centres.

Note: Further Māori well-being actions in development linking to Te Puāwaitanga ō Te Tātai

Roles in delivery

The success of climate action in the built environment is dependent on a range of stakeholders working together including Auckland Council and council-controlled organisations (CCOs) - such as Watercare and Panuku, working with iwi and central government, including the Ministry for the Environment (which administers the Resource Management Act), the Ministry for Business, Innovation and Employment (which administers the Building Code) and Kīnga Ora – Homes and Communities.

The private sector needs to play a significant role in planning, designing, constructing, and operating infrastructure, buildings and places that support a low carbon, climate resilient future. This requires planners, engineers, architects and designers, developers and builders, infrastructure providers and construction material producers and suppliers working towards a common purpose to meet our climate goals.

Individual choices relating to how we invest in, operate and retrofit buildings have an important role to play. Auckland communities need to advocate for and demand a low carbon, resilient built environment that promotes healthy low impact lifestyles.

Related information

Read about [Watercare’s Climate Strategy](#)

Read about [zero emissions area in Auckland’s city centre](#)
L1: Transport

Our goal

A low carbon, safe transport system that delivers social, economic and health benefits for all.

Why this is a priority

In 2016, transport-related emissions accounted for about 44 per cent of Auckland’s total emissions. About 86 per cent of these are related to travel by road. Between 2007 and 2017, total emissions from the on-road transport sector grew about nine per cent.

To achieve 1.5 degree Celsius compliance, we need to make fundamental shifts to how we undertake our personal travel, how this travel is powered, how we transport freight, and how much we travel.

We need to be smarter in placing and protecting new assets to ensure they are resilient in the long-term. Also, we must be innovative in how we maintain our infrastructure, to lower embodied emissions.

We need to make significant changes to how we grow as a region and how we move around it. Land use and growth are addressed in our Built Environment priority. Reducing emissions and building resilient transport systems should yield wider benefits such as:

- improved public health
- better water quality
- equity and social justice
- longer-term economic resilience.

We all will have to make fundamental shifts in our behaviour to achieve the scale of change required. This priority focuses on how this can be supported while making sure that Auckland grows as a great, inclusive place to live.

Light vehicle travel

The highest priority is reducing emissions generated by light passenger vehicles and commercial vehicles, given these generate about 80 per cent of on-road emissions.

Over the last decade, the amount of travel we each undertook using light vehicles remained relatively stable. Over the same period, we welcomed around 230,000 new Aucklanders, which increased the demand for personal travel.

Another trend that contributes to emissions is that many of our short trips are undertaken by private vehicles, while the number of people per vehicle has decreased over time.

New Zealand does not have regulations influencing the fuel efficiency of light vehicles that enter our fleet. Also, there has been low uptake of electric vehicles, reflecting their high purchase price.
Heavy vehicle travel

Heavy vehicle movements have increased substantially over recent years generating a disproportionately high share of emissions per kilometres travelled because of their engine sizes and loads they carry. Heavy vehicles account for about 20 per cent of on-road emissions.

About 95 per cent of Auckland’s intraregional freight movements and the great majority of interregional movements are by road.

Indicators

An infographic will be designed to illustrate these measures

- Petrol and diesel sales for land transport, per annum.
- Percentage and number of internal combustion engine (ICE) light and heavy vehicles in fleet.
- Percentage and number of electric vehicles and hybrid light and heavy vehicles in fleet.
- Average fuel consumption/km of ICE and hybrid light and heavy vehicles in fleet.
- Average vehicle kilometres travelled per ICE light and heavy vehicles in fleet.
- Average vehicle kilometres travelled per electric vehicles and hybrid light and heavy vehicles in fleet.
- Freight tonnage moved by rail, coastal shipping, and road per annum.
- Public transport boardings total per capita.
- Cycle counts at selected sites.
- Cycling mode share.
- Walking mode share.

Our transport priority action areas

Our actions to deliver this priority area are guided by the values and principles in Te Ora o Tāmaki Makaurau Well-being Framework.

Accelerating and broadening the actions

Auckland needs to adopt a comprehensive approach to reduce emissions in the transport sector involving actions that Avoid, Shift, and Improve:

- Avoid the need to undertake travel or reduce distances travelled by motor vehicle through measures such as compact land use, remote working, and pricing.
- Shift passenger, commercial and freight movements to lower carbon alternatives.
- Improve the energy efficiency of motor vehicles through technology including improved fuel efficiency and electrification.

This transport priority builds on our commitments and work already underway through seven action areas.

Regional investment programmes

Regional programmes provide ways for us, with the support of government, to deliver many of the transport systems investments necessary to achieve emissions reductions. A range of these investments support shifting travel from motor vehicles to lower carbon modes.

The Auckland Transport Alignment Project (ATAP), which is being updated in 2020, reflects the joint transport investment priorities – including climate change - of Auckland Council and central government.

The draft Government Policy Statement (GPS) on Land Transport for 2021 includes climate change as a strategic priority. The Regional Land Transport Plan for Auckland (2021-2031), which will set out the
region’s land transport objectives, policies, and measures for the next ten years, is being developed to be consistent with ATAP and the GPS.

**Wider policy, advocacy, and reform**

Much broader effort is needed beyond investing in transport infrastructure and services to achieve significant reductions in emissions, and this effort needs leadership from central government. For example, transitioning our vehicle fleets to lower carbon and more fuel-efficient alternatives is a critical part of our climate response.

Additionally, bold, targeted transport pricing reforms are needed to reduce private motorised travel and facilitate shifts to alternative modes. However, equity concerns will need to be addressed as part of any pricing schemes.

**Action T1. Changing the way we all travel**

- Encourage a shift to public transport use, walking and micro-mobility devices, rather than driving.
- Use motor vehicles much more efficiently, including for business purposes; shorten trips, and fulfil several travel needs at once.
- Choose lower emissions options when purchasing, sharing, or leasing a vehicle.
- Apply pricing and parking measures to reduce private motorised travel and facilitate shifts to alternative modes.

**Action T2. Make travelling by public transport more appealing than using personal vehicles**

- Make travel by public transport faster, more frequent, and reliable over a wider network.
- Adjust public transport prices to support low-income Aucklanders and increase inter-peak ridership.
- Prioritise investment along congested corridors and expand Auckland’s Rapid Transit Network.

**Action T3. Rapidly increase access to bicycles, micro-mobility devices and the safe, connected, and dedicated infrastructure that supports their use**

- Accelerate investment in dedicated cycleways that can also be used by other micro-mobility devices and improve access to public transport hubs, education facilities and other key destinations.
- Improve bicycle and micro-mobility parking and other end-of-trip facilities.
- Improve access to communal and personal transport devices for low-income Aucklanders.

**Action T4. Rapidly improve safety, connectivity, and amenity of walking infrastructure**

- Accelerate investment in high-quality, safe, and connected pathways.
- Improve road crossings, where pedestrians are disadvantaged because of high exposure to traffic, long waits at signals or significant distances between controlled crossing points.
- Prioritise improvements to walking infrastructure at key destinations including public transport hubs and around education facilities.

**Action T5. Accelerate the transition of our passenger and light commercial vehicle fleet to low emissions vehicles**

- Implement policies and regulations, such as fuel efficiency standards and incentivisation schemes, that facilitate faster uptake of lower emissions vehicles.
- Invest in electric vehicle recharging capacity and incentivise uptake of electric vehicles through targeted parking and network priority.
• Reduce emissions from our public transport fleet, including procurement of only electric buses from 2025.

**Action T6. Make heavy freight systems more efficient and low carbon**
• Implement policies that facilitate faster uptake of lower emissions vehicles
• Consolidate loads, mitigate empty runs, swap freight transit from heavy vehicles to rail and coastal shipping, and facilitate small vehicle last mile deliveries from freight hubs.

**Action T7. Enhance the resilience of our transport network**
• Assess the current criticality and susceptibility of our transport network assets (and the services using it) to hazards and update this assessment for potential future hazard conditions.
• Work with NZTA and KiwiRail to understand similar criticality and susceptibility conditions for our state highways and rail network.
• Use these analysis to reduce long-term cost and ensure resilience of future asset design and construction.

**Note: Further Māori well-being actions in development linking to Te Puāwaitanga o Te Tātai**

**Roles in delivery**

Leadership is needed from Auckland Council, Auckland Transport and central government to deliver on these actions.

To build the future we want, we need all Aucklanders and our entire economic community to commit to making the necessary changes.

Our community must live the values of:
• rangatiratanga - demonstrating leadership across New Zealand and the global community
• manaakitanga - protecting and looking after Tāmaki Makaurau/Auckland
• kaitiakitanga - fulfilling our responsibilities as guardians of our environment for the benefit of future generations.

**Related information**
Read about [Auckland Transport Alignment Programme (ATAP)](#)
Read about [Auckland’s City Rail Link](#)
Read about [Waka Kotahi – NZ Transport Agency’s Toito Te Taiaro Sustainability Action Plan](#)
L1: Economy

Our goals
A resilient, low carbon economy, guided by our kaitiaki values, that supports Aucklanders to thrive.

Why this is a priority
Disruptions such as climate change, technological change and global pandemics have highlighted vulnerabilities in our regional and global economy. These disruptions have demonstrated the need for a more resilient economy that is regenerative, distributive, local and enables Aucklanders to thrive.

Businesses must plan for increasing climate and non-climate related disruption.

Identifying potential risks and hazards at both business and industry sector level is key to building resilience.

Developing and implementing interventions, which include the transition away from carbon intensive sectors and practices, can deliver long-term growth, skills, job creation and sustainability.

The 21st century is being characterised by shocks and volatility that challenge the way we view our economic systems and their foundations. This includes challenging the pursuit of growth at the expense of our natural environment and wellbeing of societies.

To deliver our climate goals there is a need for a more resilient economy that is regenerative, distributive and enables Aucklanders to thrive

A regenerative economy
A regenerative economy ensures that natural resources are extracted at a rate that they can be replenished.

Embedding these principles in our economy is increasingly important as we better understand the finite nature of our natural resources and the implications of exceeding our planetary boundaries.

According to research commissioned by the Sustainable Business Network, Auckland’s economy could reduce emissions by 2700 kg CO2e by 2030 across the food, transport and logistics, and construction sectors.

Up to $8.8 billion in additional economic activity could be freed up through innovative business models taking a circular economy approach.

Pursuing low carbon, resilient process and product innovations can create new forms of value, prompt new markets and support sustainable growth by reducing reliance on finite resources.
A distributive approach focuses on enabling all Aucklanders to thrive by:

- providing equal access to economic opportunities
- supporting Aucklanders into quality jobs with long-term security
- embracing alternative ownership models, such as co-operations and employee-owned companies.

Lessons learned from disruption

If we embrace disruptive innovation and new technologies, climate innovation in cities globally can target an additional 1.3 GtCO2e of GHG reduction by 2030. This could lead to an emergence of new sectors that can provide secure and quality jobs to our growing region, leading to better social outcomes.

While the global economy was tested by COVID-19, we have seen society embracing the principles of sharing and distribution, and an increasing desire to buy local.

Exposed global supply chains have accelerated the need to look inwards and invest in local suppliers, and reinforce economic structures that are vital to a more resilient, climate-proof economy.

How and where we work was also tested during the pandemic, balancing different ways of working and communicating in our own specific contexts at home and at work.

We may not need to or want to work remotely every day, but those who can do this two or three days a week could help lower congestion, reduce our transport emissions and create more pleasant urban environments.

Indicators

These measures will be designed into an infographic:

- Percentage change in total solid waste generation per year.
- Percentage change in domestic kerbside refuse per capita per year.
- Business innovation in Auckland (SNZ).
- Number of Auckland businesses disclosing their climate risks and greenhouse gas emissions in their annual plan.
- Value of sustainable finance instruments pursued by Auckland businesses (SNZ).
- Number of jobs created for the green economy (or percentage of employment in the green economy).
- Percentage change in the average wage in Auckland.
- Number of businesses adopting regenerative business models.
- Percentage of Auckland Council Group supplier contracts with carbon reduction KPIs.
- Environmental impact and social cost of economic production and consumption.
- Percentage change in tCO2e per million $NZ GDP.

Our economy priority action areas

Our actions to deliver this priority are guided by the values and principles in Te Ora o Tāmaki Makaurau Well-being Framework.

Action E1. Accelerate Auckland’s transformation to a resilient, regenerative, and distributive economy

- Investigate new economic tools and frameworks, such as the City Doughnut tool, to inform Auckland’s economic transition.
- Accelerate business capability and pathways to resilient and regenerative business models.
- Assess climate change risks to Auckland’s economy and develop targeted programmes to support the most affected sectors.
- Accelerate the shift to a more resilient and sustainable finance system through redirecting capital towards sustainability outcomes, improving how we value social and environmental impacts and building awareness and capacity in the financial sector more broadly. Build awareness in the financial sector to value social, environmental and climate impacts of investments.
- Define regenerative economy for Auckland in collaboration with mana whenua, iwi, business and community and in alignment with Te Ora O Tāmaki Makaurau.

**Action E2. Accelerate the uptake of innovation that supports the delivery of a resilient, climate-proof, and regenerative economy**

- Partner and collaborate with central government, business, academia, and Māori to enable adoption of technology and solutions that accelerate the decarbonisation of Auckland.
- Provide a climate innovation hub that enables Aucklanders to introduce climate compatible solutions to the market.

**Action E3. Accelerate the decarbonisation of Auckland’s business sector**

- Decarbonise operations, supply chain and products and services.
- Enable alternative and remote ways of working for Aucklanders.
- Where applicable, businesses need to disclose climate-related financial risks.

**Action E4. Ensure Aucklanders are prepared for the transition to a zero-carbon economy**

- Provide employees with the necessary training to support a low-carbon economy.
- Collaborate with business, community, academia and Māori to develop a regional transition plan for Auckland.
- Build low-carbon and climate-resilient skills into the New Zealand’s education system.

**Action E5. Leverage public sector and large business procurement to deliver climate outcomes for Auckland**

- Work with large businesses and suppliers to reduce emissions and climate risk throughout supply chains.
- Encourage the adoption of innovation, green technology and circular solutions, and support suppliers as they transition to a lower carbon economy.

**Action E6. Manage our resources to deliver a zero waste, circular economy**

- Implement the Auckland Waste Management and Minimisation Plan, including roll-out of an urban household kerbside food scraps collection and establishing the Resource Recovery Network across Auckland.
- Undertake research and feasibility studies on onshore processing solutions for plastics, paper and cardboard from kerbside collections.

*Note: Further Māori well-being actions in development linking to Te Puāwaitanga o Te Tātai*
Roles in delivery

We cannot do this in silos; local and central government, business, academia, community, and Māori must collectively work together to actively restore and regenerate the degraded systems and environments that our economy relies on.

Business and government will play a leading role in the delivery of this priority, but the choices we make as individuals and communities will define how our future economy is shaped.

Related links
Read about the circular economy
Read about the Aotearoa Circle Sustainable Finance Forum
L1: Communities and coast

Our goal

*Communities and individuals are prepared for our changing climate and coastline, and carbon footprints of Aucklanders have reduced.*

Why this is a priority

Placeholder for relevant whakatauki

*English translation*

Climate change will affect everyone differently and our ability to adapt depends on local impacts and individual circumstances.

If we don’t take action to reduce our carbon footprint and become more resilient now, then climate change will likely have more significant impacts on our lives, our health, our homes, and our livelihoods.

Our people

Some people are disproportionately affected, through poverty and insecure housing or health conditions.

Intergenerational equity, as well as cultural and socio-economic equity, is critical to a fair transition. As a society, we are only as safe as our most vulnerable.

Adapting to the impacts of climate change and reducing emissions require major system changes. Individual, rangatahi and community action are vital in influencing our everyday choices and driving the changes we need.

We all play a role; rethinking how we live, how we travel, the energy we use, what we buy and how we eat.

We know from our People’s Perceptions Survey that Aucklanders identified the lack of awareness of climate change and what can be done, as the second-most important climate change issue facing their local area.

Our formal education sector and community groups play an important role in engaging and connecting rangatahi / youth with the natural environment and providing education for sustainability to foster kaitakitanga and enable climate action.

Our coast

Risks also emerge when people are in areas more exposed to the impacts of climate change, for example flooding, sea level rise or heat.
Our coasts are changing because of natural and human processes, including the impacts of climate change. Addressing these impacts must be collaborative, that is, working across levels of government, with mana whenua and affected communities.

We need to manage our changing coastline together through careful planning, working with iwi, and communities to make the right decisions for their areas.

Our approach to adapting to climate change

Climate change will affect everyone differently and our ability to adapt depends on local impacts and individual circumstances. Some are disproportionately affected, for example through poverty and insecure housing or health conditions. Intergenerational equity as well as cultural and socio-economic equity is critical to a fair transition. As a society, we are only as safe as our most vulnerable.

The approach to adaptation needs to be able to change with the needs of the community and as we see the implications of climate change become increasingly apparent.

Dynamic adaptation policy pathways (DAPP) takes this approach to make sure the decisions being made are planned with the community over time.

We need local skills, knowledge, and energy to build community resilience to the impacts of climate change. Our resilience has often been tested, for example through pandemics, and we can learn from our experiences to ensure no one is left behind.

Indicators

These measures will be designed into an infographic:

- Percentage of Aucklanders who are aware of and concerned about climate change.
- Percentage of Aucklanders who are willing to change their lifestyle to ensure we meet our climate commitments.
- Number of Aucklanders engaged in living a low carbon lifestyle.
- Percentage of Aucklanders that feel connected to their local communities and empowered to take action together.
- Number of households identified as disproportionately impacted by climate change.
- Number of Coastal Compartment Management Plans delivered.
- Number of Community Climate Action Plans delivered.
- Number of households and organisations adopting and utilising climate-resilient strategies.

Our community and coast priority action areas

Our actions to deliver this priority are guided by the values and principles in Te Ora ô Tāmaki Makaurau Well-being Framework.

Action C1. Work together to strengthen the resilience of our communities, people, and places
- Establish a prioritised programme of support for communities and individuals who are most impacted.
- Engage and educate communities and industries to be aware of current and future climate risks and consequences of hazards.
- Identify how mana whenua, communities, and their places can be more resilient.

**Action C2. Address the effects of climate change on our coastline**

- Establish long-term management approach for our changing coastline, and work with mana whenua and communities to create coastal management plans.
- Undertake a regional coastal erosion study and a coastal hazard vulnerability assessment and work with communities to discuss options and prepare them for the future.
- Support iwi and hapū to account for climate change impacts from sea level rise.
- Incorporate protection, managed retreat, and restoration of indigenous coastal ecosystems into planning for sea level change.
- Develop a tsunami hazard model that takes sea level rise impacts into account.
- Review provisions in the Auckland Unitary Plan (AUP) from a coast and natural hazards perspective and use this to inform the statutory review of the AUP and future plan changes.

**Action C3. Enable and empower all Aucklanders to have a say in climate decisions and to act**

- Communicate and engage with Aucklanders to improve understanding of the implications of climate change. Improve and tailor resources for Aucklanders of different ages and ethnicities to take action at a local level.
- Enhance whanaungatanga connections with mana whenua and mataawaka.
- Form an intergenerational, rangatahi-led collective, as a channel between the council and stakeholders, to support climate action.

**Action C4. Unlock barriers and support community-based initiatives that reduce emissions and build resilience in a fair way**

- Support community-led climate action by setting up a climate action fund, enabling community and rangatahi activators, and establishing community spaces (hubs) as spaces for community support, and learning.
- Provide communication and tools to support sustainable lifestyles through behaviour change.
- Provide low carbon living demonstration sites, guidance and advice to reduce consumer emissions.
- Enable mana whenua and mataawaka to reduce emissions and build resilience.
- Grow capacity and capability of schools’ staff, students and educators to reduce emissions, increase resilience and enable future leaders.

**Action C5. Plan for climate-related migration.**

- Assess potential impacts of climate change scenarios on Auckland’s population, and establish targeted programmes for affected communities and individuals, to support climate migrants and the current needs of our growing population.

**Note:** Further Māori well-being actions in development linking to Te Puāwaitanga o Te Tātai
Roles in delivery

Supporting Aucklanders to reduce their carbon footprint and become more resilient is a collaborative effort.

Our coast is of intangible value to all Aucklanders for many reasons. Some organisations are already working and will need to continue to work together with Aucklanders to see the change we need.

Auckland Council, iwi, central government agencies, community groups and organisations, schools and early childhood educators, infrastructure providers, businesses, social agencies, not for profit organisations, district health boards, Crown-owned research institutes and universities will all need to be involved in the delivery of these key actions.

Related links:
Read about the Coastal Management Framework
Read about a Fair transition
How can I find out more?
### L1: Food

#### Our goal

*A low-carbon, resilient, local food system that provides all Aucklanders with access to fresh and healthy food.*

#### Why this is a priority

<table>
<thead>
<tr>
<th>Placeholders for relevant whakatauki</th>
</tr>
</thead>
<tbody>
<tr>
<td>English translation</td>
</tr>
</tbody>
</table>

Our region benefits from a temperate climate and high proportion of arable land, that enables year-round food production.

However, recent events have demonstrated the importance of food security with imports, exports and domestic supply chains directly impacted by the COVID-19 pandemic, and price fluctuations.

#### Food consumption emissions

Our food system makes up 18 per cent of our consumption emissions in Auckland. Consumption emissions come from food production, transport, processing, and disposal to landfill.

According to the World Resources Institute, globally, food loss and waste generates more than four times annual greenhouse gas emissions than aviation. This is comparable to emissions from road transport.

#### Climate change affects food production

Climate change will affect food production with:

- longer periods of drought
- more intense storms and flooding
- increasing number of pests and diseases.

This is already happening around the world, affecting availability and affordability of imports.

A low-carbon, climate resilient local food system is based on a regenerative, circular economic model.

This approach:

- minimises or avoids synthetic fertilisers and pesticides
- eliminates food waste from landfills
- makes the most of surplus food to feed people, plants, and animals.

As identified by our rangatahi, we need to reconnect people of all ages to where our sustenance comes from - how it grows and how we can be more resilient when we understand this.
Importance of local food production

Local, sustainable food production can secure our food supply and reduce emissions. We need to restore, rejuvenate, and replenish mahinga kai - our soils and ecological systems that support the production and gathering of food.

Our ability to meet future demand faces many pressures. In addition to climate impacts, we are seeing rapid population growth and a loss of productive soils from unsustainable farming methods and land development.

Preserving productive soil

Only one per cent of Auckland’s soils are considered Class 1 (elite) and suitable for vegetable production. These are mostly in the Pukekohe hub, which is under pressure from urban development.

Soils play a critical role in meeting our emissions targets as carbon is stored in soils. The more soil we lose, the less chance we have of meeting our emissions targets.

Indicators

These indicators will be designed into an infographic

- Percentage of domestic food waste as proportion of total domestic waste going to landfill.
- Tonnes of domestic food waste going to landfill.
- Percentage of commercial food waste as proportion of total commercial waste going to landfill.
- Tonnes of commercial food waste going to landfill.
- Percentage of urban Aucklanders within 1km of a source of fresh seasonal produce.
- Percentage of highly productive land protected.
- Percentage change in domestic plant-based diet consumption.
- Soil health indicators (e.g. nutrient levels).
- Number of jobs relating to the sustainable food economy.
- Number of marae and Māori led programmes connecting people with mātauranga Māori to grow food.
- Percentage of Auckland Council land managed with regenerative practices.
- Number of approved developments that incorporate hua rakau, hua whenua, native trees and green spaces.
- Number of green spaces, mahinga kai, Maara kai and hua whenua incorporated in urban design projects.

Our food priority action areas

Our actions to deliver this priority are guided by the values and principles in Te Ora ā Tāmaki Makaurau Well-being Framework.

Action F1. Support primary industries and small businesses to increase food security, reduce emissions and build economic and climate resilience

- Understand the impacts of climate change on food production in the region.
- Identify and share practices, technologies, and business opportunities to support the primary sector in environmental and economic sustainability.
- Support development of a sustainable food economy, working with industry partners to conduct research, implement pilots, promote examples of best practice and support start-ups.
Action F2. Protect our productive soils and move toward regenerative practices to increase food security and carbon sequestration

- Advocate for and implement regulation that protects Auckland’s productive soils for growing food and supports a change to more regenerative growing of food.
- Advocate for the proposed National Policy Statement for Highly Productive Land.
- Collaborate with community groups and industry to promote regenerative food growing, demonstrate and promote best practice and provide education and mentoring opportunities.

Action F3. Prevent and reduce waste and maximise the value of surplus food

- Deliver education and behaviour change programmes to prevent food waste.
- Support redistribution of food through food rescue initiatives.
- Encourage home and community composting where possible, including local composting initiatives.
- Collect remaining food waste with a kerbside collection of food scraps in urban areas of Auckland.
- Lead by example in council facilities and drive zero waste events.
- Advocate for government policies and funding to drive waste reduction.

Action F4. Increase supply and demand for local, seasonal, and low carbon food

- Work with communities, food growers and retailers to ensure that all Aucklanders have access to fresh, affordable, and low carbon food and that this is an easy first choice for consumers.
- Support people to grow their own food; improve access to low carbon food growers or retailers, deliver behaviour change programmes and shift procurement policy to prioritise sustainably produced, low carbon food.

Action F5. Provide strategic direction and governance for Auckland’s food system

- Develop a food charter for Auckland, establish a Food Policy Council and advocate to government to develop a national food resilience policy.

Note: Further Māori well-being actions in development linking to Te Puawaiwanga o Te Tātai

Roles in delivery

Transition to a low-carbon, resilient local food system will require all individuals and sectors of Auckland to play their part. Individuals can influence change through their food choices from eating more plant-based meals to choosing foods that are locally and sustainably produced and making use of a backyard compost bin or worm farm.

Communities can take local action such as getting involved in community garden and compost projects and advocating for fruit trees in public spaces.

Businesses can divert their food scraps from landfill, influence their supply chains and promote healthy, local food choices in the workplace. Food retailers can identify opportunities to reduce waste through reviewing labelling and promotions.

Auckland Council will need to lead by example and work across stakeholders to influence supply chains, empower communities and support business.

Central government has a role in establishing policies and setting the direction for a resilient food system.
L1: Te puawaitanga ō Te Tātai

Our goal

Intergenerational whakapapa relationships of tāiao (nature), whenua (land) and tangata (people) are flourishing. The potential and value of Māori is fully realised. Māori communities are resilient, self-sustaining and prosperous.

Why this is a priority

Ko te hau o te whenua, ko te hau o te tangata.

The essence of the land, the vitality of the people.

Māori, the indigenous people of Aotearoa New Zealand have lived in Tāmaki Makaurau for over 1000 years. Te Tiriti o Waitangi recognises the rangatiratanga of Auckland’s mana whenua and their inseparable bond between Tāmaki Makaurau the people and Tāmaki Makaurau the place.

Tāmaki Makaurau embraces its uniqueness sourced in the cosmological traditions and guardianship of mana whenua. The establishment of Auckland is founded on Te Tiriti o Waitangi and is shaped by its Māori history and presence. Today, the population of Māori in Tāmaki Makaurau is diverse and dynamic. Māori comprise nearly 12 per cent of Auckland’s population, and number around 160,000 people. Over half are under 25 years and nearly a third under 15 years.

Our tūpuna (ancestors) have provided rich legacies of knowledge and practices that nurture whakapapa (genealogy) and reaffirm Māori ways of collective action. These can guide our responses today. Learning from these intergenerational relationships and practices allows us to plan for what our unique places and communities will face over the next few generations and beyond, not just what they need today.

Mana whenua play a significant role in sustaining the region and the region’s identity. The responsibilities and obligations as inherent kaitiaki (caretakers) to manaaki (show generosity to) those communities that reside within their tribal domains must be upheld.

Mataawaka make a significant contribution to the well-being of the region and add to the economic, cultural and social richness.

The strengths and contributions Māori bring to Auckland will advance cultural, social, economic and environmental well-being for all Aucklanders.
Indicators

These indicators will be designed into an infographic

- Māori communities are culturally vibrant across Tāmaki Makaurau
  - The use and significance of marae
  - Accessibility to Māori culture
- Māori communities are connected and safe
  - Access to transport and public facilities
  - Safe and connected whānau and communities
  - Participation in communities
- Māori have the skills to realise economic opportunities
  - Māori in tertiary study
  - Māori workforce capability
- The environment is able to support people for generations to come
  - Mahinga kai and wāhi rongoā
  - Wāhi tapu and wāhi taonga

Our Te Puawaitanga o Te Tātai priority action areas

Manaakitanga

Actively manaaki (care for) and protect whānau and communities in a way that enhances mana and well-being, especially during periods of change or stress. Ensure tamariki (children), rangatahi (youth) and pakeke (elderly) are valued and cared for.

Ngā Mahi a Te Ora/Well-being Activities:
1. Develop marae community resilience plans.
2. Enable Oranga Ma Te Marae/Well-being through the marae.

Kaitiakitanga

Restore, maintain and protect mana whenua whakapapa connections to kaitiaki (people), whenua (place), and ātua (primal ancestors). Enable active kaitiakitanga (guardianship) of whakapapa connections in current management and planning practices, but also future innovations and processes of change.

Ngā Mahi a Te Ora/Well-being Activities:
3. Establish a mana whenua climate office/think tank.
4. Co-design kaitiakitanga and stewardship framework between mana whenua and the council.
5. Restore, rejuvenate and replenish our repō (wetlands) (e.g. using whole of catchment system for decision-making including land use change).
6. Restore and rejuvenate our moana (seas and harbours).
7. Restore, rejuvenate and replenish our puna wai (freshwater springs).
8. Restore, rejuvenate and replenish our mahinga kai (food production).

Whānaungatanga

Strengthen whakapapa-centred relationships across Te Moana-nui-a-Kiwa (Pacific Ocean) and our tāngata pasifika whānaunga (Pasifika relatives).

Ngā Mahi a Te Ora/ Well-being Activities:
9. Develop regional network of Māori cultural, arts and learning centres focused on specific bodies of knowledge and practice, anchored in place and nature.
10. Grow and connect rangatahi networks, voice behaviour change.
11. Foster tangata whenua (Māori) and tangata pasifika (Pacific peoples) relationships as tangata moana (people of Moana-nui-a-Kiwa).

Rangatiratanga

Actively protect Māori rights and interests in accordance with Te Tiriti o Waitangi / Treaty of Waitangi. Empower rangatahi to be facilitators of whakaaro (ideas) from te ao Māori (Māori world) perspectives. Increase Māori participation and representation in public and private sector governance.

Ngā Mahi a Te Ora/ Well-being Activities:
12. Establish Mana Whenua supported rangatahi leadership forum/platform.
13. Establish Rangatahi role in governance and monitoring. (build capacity to participate in decision-making).

Mātauranga

Develop a mātauranga Māori framework to safeguard taonga knowledge and achieve a balance between western science and indigenous narratives of our changing climate.

Ngā Mahi a Te Ora/ Well-being Activities:
14. Prepare and educate Māori communities, businesses and landowners for change.
15. Establish an online Māori knowledge and information portal

Ōritetanga

Enable and support wāhine, tamariki, Rangatahi and kaumātua resilience, safety and well-being.

Ngā Mahi a Te Ora/ Well-being Activities:
17. Rangatahi to become facilitators of Te Ao Māori whakairo.
18. Measure the state of Māori wellbeing of Tāmaki Makaurau.

Tōnuitanga

Enable sustainable circular Māori economic development and grow and Māori business ecosystems. Lift Māori whānau from poverty.
Ngā Mahi a Te Ora/ Well-being Activities:
22. Use our dual knowledge systems to determine what it could look like for Tāmaki Makaurau.
23. Invest in opportunities for innovation and green technology (e.g. how we think about waste, energy, land use and transport).
24. Enable whānau to prosper, be resilient and strong as we transition away from carbon dependence.
25. Education and training programmes for a regenerative economy.
26. Rangatahi creating innovative pathways for sustainable behaviour change.

Roles in delivery
Te Ao Māori centred solutions hold the key to responding to the well-being needs and aspirations of Māori. Focusing delivery of whakapapa centred, Māori focused initiatives through mana whenua iwi, Māori organisations, Marae, Māori businesses and rangatahi are critical to achieving greater gains and well-being outcomes for Māori.

The council, the Crown, and the wider business and community sector can play an important role in partnering, supporting and investing in Te Ao Māori anchored and centred initiatives that enable Māori ecological, social, cultural and economic regeneration.

Related information
To be completed.
L1: Energy and Industry

Our goal

A clean energy system that supports and provides for a resilient, low carbon Auckland.

Why this is a priority

In 2016, stationary energy produced 26.6 per cent of Auckland’s total emissions, and industrial processes produced 20.2 per cent. Reducing emissions within energy and industry is therefore critical to meeting our climate goals.

Addressing supply and demand

There are two aspects of the energy system that need to be addressed - demand and supply. It is important to first optimise processes and ensure they are as efficient as possible. This reduces the energy demand but has limited ability to reduce emissions.

Addressing supply includes actions such as fuel switching (e.g. from coal to biomass), which can deliver significant emissions reductions but can be expensive and requires commercially available technology. Moving away from fossil fuels can also reduce the volatility of price and supply from overseas sources.

Auckland has an advantage that approximately 84 per cent of New Zealand’s electricity supply is generated from renewable sources. However, energy is not just electricity. In fact, 66 per cent of Auckland’s energy emissions are from primary fuel combustion within the region, from fuels such as natural gas, coal and liquid petroleum gas (LPG).

Auckland’s industrial processes and product use emissions

The Auckland region has a large amount of industry, from primary metal manufacturers to food processors. Most industrial processes and commercial buildings use process heat, which is energy in the form of steam, hot water or hot gases, and are often produced through the combustion of natural gas.

Industrial processing plants also emit non-energy related greenhouse gases. In Auckland, these emissions are generated from the production of steel, from iron sand and from scrap metal and the use of soda ash and limestone in glass making.

In addition to energy demand and supply, there are emissions associated with industrial product use. These emissions are mainly from the use of hydrofluorocarbons (HFCs), which are common refrigerants in our cooling systems, such as air conditioning units and refrigerators. HFCs are powerful greenhouse gases, with global warming potentials 1430 – 4000 times higher than CO2. Cooling units can leak these gases.

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refrigerants, and even a small volume has impacts. It is important that the refrigerants are safely disposed of at the end of a cooling unit’s lifespan.

Decarbonised and resilient electricity supply

It is important that as we electrify our transport fleet and industry processes, that the electricity supply to meet this demand is not generated from fossil fuels. Currently emissions from the electricity grid contribute to 7.6 per cent of Auckland’s total emissions and this will only increase with higher electricity demand. It is important that the grid is decarbonised, there is an increase in the uptake of decentralised, resilient energy generation within the Auckland region and demand is reduced. Decentralised energy systems can improve the resilience of Auckland’s network and reduce reliance on the centralised grid, which could be impacted by a natural hazard and increased storm events. It also enables communities to share and generate their own electricity and could help reduce energy poverty.

There are multiple co-benefits in moving towards a decarbonised energy system. Electrification of transport vehicles and process heat will improve Auckland’s air quality. The distributed energy generation model can increase community participation in the energy system and reduce energy poverty.

Other priorities relevant to Energy and industry

There is strong overlap with actions in this priority area and other priorities. Transport-related emissions are addressed in Transport and the resilience of the energy network and infrastructure is covered in the Built Environment.

Indicators

These indicators will be designed into an infographic

- Percentage change in emissions from electricity consumption.
- Percentage change in emissions from stationary fuel combustion (e.g. process heat).
- Percentage change in emissions from industrial processes.
- Percentage of grid electricity from renewable sources.
- Installed generation capacity of local and regional decentralised renewable energy solutions.
- Percentage change in total stationary energy use.
- Percentage change in total electricity use.
- Percentage change in peak electricity use.

Our energy and industry priority action areas

Our actions to deliver this priority are guided by the values and principles in Te Ora o Tāmaki Makaurau Well-being Framework.

Action EN1. Reduce process heat and industrial process emissions in the Auckland region

- Collaborate and partner with central government and industry to decarbonise process heat.
- Provide support and guidance on the available low carbon technologies for low to medium process heat; and enable access to available funding opportunities to adopt these technologies.
- Advocate for investment into research, development, and implementation of high temperature process heat solutions.
Attachment A

Item 8

- Address barriers in Auckland Council’s processes to the uptake of low carbon technologies.
- Lead by example by decarbonising process heat on Auckland Council’s and CCO’s assets by phasing out natural gas boilers.

**Action EN2. Investigate and support the role of alternative, low carbon fuels in Auckland**

- Support and build on opportunities to decarbonise heavy vehicles and process heat, learning from the Ports of Auckland’s first green hydrogen fuel production plant.
- Advocate for central government to develop standards for hydrogen production and storage facilities and ensure these are reflected in the Auckland Unitary Plan (AUP).
- Determine Auckland’s role in the generation, storage and export of low carbon fuels.

**Action EN3. Reduce emissions from the electricity grid**

- Advocate to central government to implement renewable energy infrastructure to increase proportion of renewable electricity supply in the grid.
- Support the installation of renewable energy generation in the Auckland region.

**Action EN4. Reduce emissions from industrial product use, such as hydrofluorocarbon (HFC) refrigerants**

- Advocate for alignment with the requirements of the [Kigali Amendment to the Montreal Protocol](#).
- Advocate for product stewardship for HFCs in New Zealand, and partner with refrigerant and air conditioning manufacturers in the Auckland region to identify and promote the safe use of low global warming potential (GWP) refrigerants.
- Educate and raise awareness of the GWP impacts of refrigerants and the products that contain them.
- Advocate for mandatory emissions labelling for products that contain refrigerants, to increase transparency.

**Action EN5. Develop, deliver and support local and regional decentralised, renewable energy solutions**

- Use Auckland Council and CCO properties to test, trial and showcase innovative energy generation solutions. Support the growth of innovative energy generation through public procurement.
- Support businesses and community groups with the uptake of renewable energy solutions.
- Support community-led initiatives to implement sustainable energy solutions.
- Provide an online community power hub to enable access to required skills and expertise.
- Develop energy sector partnerships to deliver regional energy efficiency opportunities at scale.
- Assess and remove barriers in Auckland Council processes to the uptake of decentralised renewable energy solutions.

**Action EN6: Support energy demand management technologies, tools and techniques to address Auckland’s energy use, including peak loads.**

- Use and support smart technologies to decrease peak energy usage and investigate incentives to change behaviours.
- Optimise building management systems and use other initiatives on Auckland Council’s and CCO’s facilities to reduce energy consumption.

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• Address energy poverty by providing targeted support for high energy household users in low socio-economic circumstances.
• Deliver community energy efficiency and generation schemes through energy sector partnerships.

Note: Further Māori well-being actions in development linking to Te Puawaitanga o Te Tātai

Roles in delivery

Delivering this priority will need active participation from industry and central government. It is important that industry, businesses, the public sector, and Auckland’s communities work together in partnership to address the challenges of decarbonising the energy sector and support the transition.

Related information

To be completed
L1: Implementing Te Tāruke-ā-Tāwhiri: Auckland’s Climate Plan

The context in which the plan and our climate commitments need to be delivered is dynamic. Technology is evolving. System interdependencies and environmental tipping points are becoming clearer. Major shocks such as the COVID-19 pandemic and increasingly frequent extreme weather events, have highlighted key risks that need to be addressed and potential opportunities that can be realised.

While the overarching objectives and key priorities within Te Tāruke-ā-Tāwhiri have been developed to set a long-term pathway; flexibility and adaptability is critical to its successful implementation year-to-year.

This implementation section will be regularly updated so that any changes to context, advances in knowledge, and lessons learned through implementation, can be reviewed and integrated within the plan.

This section provides more information on:

- climate action post-COVID-19
- implementation action table
- roles and partnerships
- funding and financing
- indicators,

Post-COVID-19

Implementation plan

Funding and financing

Roles and partnerships

Indicators

Glossary
L2: Climate action post-COVID 19

Although COVID-19 has caused significant disruption across businesses, communities and economies, it is important to recognise that the risks and impacts of climate change have not gone away. We cannot return to business as usual and the pathway towards a 3.5 degree Celsius rise.

Clearly the impacts and implications of COVID-19, particularly on the most vulnerable, have been stark and we must take action to support all Aucklanders in an equitable recovery.

However, what has also been demonstrated is how, when united in a common goal, we can deliver major system changes across the region, the country and globally.

How the post-COVID recovery is shaped and driven will either accelerate our climate action response or make the task of preparing for climate change even more difficult.

There will be less money available in the short term and this will directly impact on the delivery of climate actions. For example, Auckland Council has put in place an Emergency Budget for 2020/21 to address the significant financial issues being faced.

However, addressing climate change and meeting our climate goals remains a priority as we continue to deliver and develop actions to support the plan.

Prioritisation in delivery of the plan focusses on five key areas in the immediate term to keep us on track to meet our climate goals:

- maximising and supporting the system shifts we are already seeing from the experiences of the pandemic, with a focus on Te Ora o Tāmaki Makaurau, the wellbeing of Tāmaki Makaurau
- ensuring we maintain and accelerate action, particularly where any short-term delay would result in an exceedance of our climate budget
- avoiding decisions that lock-in to high emissions and low climate resilience, and ensuring the right policy and strategy levers are in place to support good decision making
- focussing on the resilience of our communities and our businesses, underpinned by a healthy natural environment
- establishing partnerships to co-deliver our climate goals.

Our implementation table sets out initial thinking on when actions should be delivered but this will be kept under regular review as we address the implications of COVID-19.

It is important to be clear however, to meet our climate goals, all actions will need to be delivered in the medium-term.

The collaborative approach to developing the plan provided the foundation for its co-delivery and clarifies responsibilities. However, further discussion with key partners will be needed over the coming months to ensure the changes we are seeing as a result of COVID-19, are appropriately considered.
L1 Implementation table

This document provides an overview of the actions within the plan, roles and timelines. This is our pathway to meet our climate goals and on-going discussions are underway across partners in the region to support its delivery. The table will be reviewed regularly to reflect new evidence, learning, policy and technologies. This is particularly important in the short term post-COVID-19 global pandemic, which has a direct impact on timing, funding and delivery of actions identified.

Council has a role to play across delivery of the plan and so three types of role of Council are identified:

- **Direct Control**: Lead by example, delivery of services, delivery of infrastructure and facilities
- **Lever**: Plan, monitor, review, regulate, research
- **Advocate**: Advocate, inform, influence

Council has committed to cost its contribution to delivering on the region’s climate commitments for consideration within its [Long-Term Plan](#), which will be consulted on in 2021.
### Key

**Degree to which action will reduce greenhouse gas emissions and address climate risks:**
- Major potential
- Moderate potential
- Enabling or accelerating effect

It is not possible to model all actions for potential emissions reduction through CLUR, but indicative targets are incorporated here where available. It is important to note that enabling actions, although not modelled, will directly impact our ability in delivering emissions reductions and building resilience and so are a key component of meeting our climate goals. More information on our decarbonisation pathway and assumptions is available in the Decarbonisation Pathway section of the plan.

Key risks to the Auckland region have been identified and the potential impact of actions to address one or more of these risks is highlighted below. More information is available in the Auckland’s Climate Risks section of the plan.

### Table

<table>
<thead>
<tr>
<th>Priority</th>
<th>Action</th>
<th>Sub-action</th>
<th>Lead</th>
<th>Role of Council</th>
<th>GHG reduction</th>
<th>Additional Benefits</th>
<th>Address climate risks</th>
<th>Indicators</th>
<th>When does this need to be delivered?</th>
<th>Resource Need</th>
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<tbody>
<tr>
<td>Natural Environment</td>
<td>Action N1: Build the resilience of Auckland’s biodiversity, habitats, and ecosystems to the impacts of climate change</td>
<td>Increase understanding of potential climate change risks to Auckland’s indigenous ecosystems and species; and ensure that these are integrated into planning and policy consideration.</td>
<td>Auckland Council</td>
<td>Lever</td>
<td>Academia Central Government</td>
<td>Plant 88% of 19,350 hectares of new forest (15,480 hectares)</td>
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<td>X</td>
<td>Extent of terrestrial, freshwater and marine environments formally protected (as a percentage of total area)</td>
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<td>Increase our level of commitment to control key pests and weeds that are expected to benefit from climate change across the full range of Auckland’s indigenous ecosystems.</td>
<td>Auckland Council</td>
<td>Direct Control</td>
<td>Mana Whanau / Māori Central Government (DOC / MPI) Community Private Landowners Land Managers Voluntary Sector</td>
<td>Canopy cover at 30 per cent across Auckland’s urban area, and at least 15 per cent in every local board area</td>
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<td>X X X</td>
<td>Per cent decrease in the area infested by invasive species</td>
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<td>Expand habitat protection, restoration and enhancement programmes to increase the viability, geographical extent and connectivity of</td>
<td>Auckland Council</td>
<td>Direct Control</td>
<td>Mana Whanau / Māori Central Government (DOC / MPI) Private Landowners Community</td>
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<td>X X X</td>
<td>Percentage of threatened plants and animals under active management</td>
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<td>Priority</td>
<td>Action</td>
<td>Sub-action</td>
<td>Lead</td>
<td>Role of Council</td>
<td>Partners</td>
<td>GHG reduction</td>
<td>Indicative target aligned to decarbonisation pathway (where modelled)</td>
<td>Address climate risks</td>
<td>Additional Benefits</td>
<td>When does this need to be delivered?</td>
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**Attachment A**

**Item 8**

**Te Tāruke-ā-Tawhiri: Auckland’s Climate Plan**

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<th>Priority</th>
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<td>Use research and technology in partnership with iwi and communities to identify priority areas for future planting that achieves multiple outcomes.</td>
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<td>Provide support, guidance and advice for landowners to undertake planting on private land and establish mechanisms to track these.</td>
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<td>Mana Whenua / Māori Community Voluntary Sector</td>
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<td>Build the capacity and capability of existing marae and community nurseries and conservation / planting groups through assistance, advice, and training programmes.</td>
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<td>Protect important trees through improved planning regulations and ensure publicly managed trees are not removed without clear justification.</td>
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<td>Increase uptake of nature-based solutions within council family projects.</td>
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<td>Private Landowners / Developers Panuku</td>
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<td>supporting tools for decision making where these are not currently available.</td>
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<td>Provide new and promote existing regulatory, planning and educational tools to support nature-based solutions and maintain habitat corridors on private land and developments.</td>
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<td>Incorporate protection, managed retreat and restoration of indigenous coastal ecosystems into planning for sea level change.</td>
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<td>Establish a monitoring framework to understand the benefits and broader value of nature-based solutions projects.</td>
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<td>Panuku Mana Whanau / Māori</td>
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<td>Empower and partner with community groups and the public to encourage community-led projects.</td>
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<td>Enhance, extend and connect Auckland’s blue-green networks to protect and</td>
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**Action N4:**
Maximise carbon capture potential of terrestrial and marine ecosystems
- Enhance ecosystem function and species viability.
- Central Government (Kanga One), Community, Voluntary Sector, Private Landowners
- Support research and pilot projects that measure the biological sequestration of our region’s terrestrial, freshwater, and marine ecosystems.
- Academia, Lever, Auckland Council
- Improve understanding of soil sequestration potential of different land management practices.
- Academia, Lever, Rural Landowners, Land Managers
- Identify opportunities for businesses and individuals to contribute to sequestration schemes in the region that support their emissions reduction goals and wider social and environmental outcomes.
- Auckland Council, Lever, Business

**Action N5:**
Ensure land use practices deliver healthy, resilient
- Manage land in a way that enhances meadows, contributes to biodiversity and waterway health, and grows resilience to climate change.
- Rural Landowners, Lever, Influence, Auckland Council, Land Managers
- Carbon sequestered by trees/vegetation, soils and marine ecosystems
- Investment in sequestration schemes by sector
- Marine and freshwater quality indicators (e.g., nutrients, sediment, temperature)
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<td>soils, waterways and ecosystems</td>
<td>Auckland Council</td>
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<td>Establish land management actions that will create ‘green infrastructure’ (e.g. planting trees, riparian fencing and planting, restoring or creating wetlands)</td>
<td>Auckland Council</td>
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<td>Rural Landowners Land Managers</td>
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<td>Trial soil quality enhancement practices to enhance plant growth and carbon sequestration</td>
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<td>Built Environment</td>
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<td>Review provisions in the Auckland Unitary Plan (AUP) from a climate and natural hazards perspective and use this to inform the statutory review of the AUP and future plan changes</td>
<td>Auckland Council</td>
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<td>Planning &amp; Development Sector</td>
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<td>Action B1:</td>
<td>Ensure our approach to planning and growth aligns with low carbon, resilient outcomes</td>
<td>Auckland Council</td>
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<td>Maintain and uphold a quality compact urban form as outlined in the</td>
<td>Auckland Council</td>
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<td>Development Strategy.</td>
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<td>Develop masterplans that demonstrate and promote the opportunity for zero carbon, transit-oriented development that builds climate resilience.</td>
<td>Auckland Council</td>
<td>Mana Whanau Planning &amp; Development Sector</td>
<td>Replace 50% of gas water heaters in existing residential and commercial buildings with electric heat water heaters</td>
<td>Replace 100% of gas water heaters in existing residential and commercial buildings with electric heat water heaters</td>
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<td>Develop Auckland Council requirements and guidance for development with known natural hazard risks and formalise the approach to consenting and vesting of at-risk assets (NHMAP Action 11) (NHMAP Action 18).</td>
<td>Auckland Council</td>
<td>Direct Control</td>
<td>Wood waste reduced by 30% and 50% of the remaining waste incinerated to produce energy</td>
<td>Wood waste reduced by 50% and 100% of the remaining waste incinerated to produce energy</td>
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<td>Investigate mechanisms to improve consenting for projects that reduce and manage natural hazards (NHMAP Action 14) and develop a natural hazard management toolbox for regulatory staff (NHMAP Action 13).</td>
<td>Auckland Council</td>
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**Item 8**

**Action B2:**

Ensure new infrastructure is planned and designed to minimise climate risks and lifecycle emissions.

- Collaborate to ensure climate change mitigation and adaptation is a priority in national planning legislation.
  - Central Government Advocate
  - Auckland Council Planning & Development Sector

- Undertake climate change impact assessment for all new developments and infrastructure, starting at the business case stage, to identify to what degree a proposal supports or conflicts with our climate goals over its lifecycle.
  - Auckland Council Lever
  - Planning & Development Sector

- Embed a Dynamic Adaptive Policy Pathways approach to decision making, ensuring infrastructure is resilient.
  - Auckland Council Direct Control
  - Lifelines Group

- Assess and support pathways to decrease construction of new infrastructure in known hazard zones.
  - Auckland Council Direct Control
  - Planning & Development Sector

- Ensure that long term resiliency and natural hazard planning are embedded in new infrastructure developments.
  - Auckland Council Direct Control
  - Planning & Development Sector

- Deliver stormwater solutions and water sensitive urban design to enable
  - Auckland Council Direct Control
  - Planning & Development Sector

- Percentage of major development and infrastructure proposals that complete a climate change impact assessment, starting at the business case stage.

- Number of buildings consented in flood plains and flood prone areas per annum.

- New infrastructure consented in known hazard zones.

- The number of flooding events that occur and the associated number of habitable floors affected per 1000 properties connected to Auckland Council's stormwater network.
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**Attachment A**

**Item 8**

**Action B3:**

Ensure the management of existing infrastructure increases climate resilience and reduces emissions.

- **Resilient development and build community resilience.**
  - Reduce infrastructure carbon for water and wastewater assets and build their resilience in line with the latest climate projections.
  - Watercare Direct, Control Planning & Development Sector

- **Address natural hazard and climate risks in asset management plans, applying natural hazard risk criteria and methods, such as Dynamic Adaptive Policy Pathways.**
  - Auckland Council Direct, Control

- **Improve understanding of the economic impacts of natural hazards on Auckland Council and Council Controlled Organisation assets.**
  - Auckland Council Direct, Control

- **Understand where critical infrastructure may be vulnerable to the impacts of climate change and identify interdependencies.**
  - Auckland Lifelines Group Direct, Control

- **Address climate change issues relating to Auckland's closed landfills, including exposure to climate.**
  - Auckland Council Direct, Control
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<th>Priority</th>
<th>Action</th>
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<th>Lead</th>
<th>Role of Council</th>
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<th>GHG reduction</th>
<th>Indicative target aligned to decarbonisation pathway (where modelled)</th>
<th>Address climate risks</th>
<th>Additional Benefits</th>
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<th>When does this need to be delivered?</th>
<th>Resource Need</th>
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<td></td>
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<td>risks and GHG emissions.</td>
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<td>Ports of Auckland</td>
<td>Lever</td>
<td>Shipping Freight Sector</td>
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<td>Water sources for the region</td>
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<td>Years 1-3</td>
<td>Years 3-10 (by 2050)</td>
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<td>Reduce emissions from Ports of Auckland to zero.</td>
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<td>Investigate alternative water sources that consider the impacts of climate change while ensuring the protection and enhancement of te mana o te wai.</td>
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<td>Investigate energy and emissions requirements for possible new water supply options (including desalination and wastewater reuse) and ensure this is part of decision making.</td>
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<td>Monitor and model climate impacts on the water system to understand the resilience of the network.</td>
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<td>Identify low-lying water and wastewater assets that are within projected sea level rise over the next 100 years and use methods, such as Dynamic Adaptive Policy Pathways, to</td>
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**Action 85:**
Accelerate the uptake of sustainable design and construction for new buildings

- **Progressively update the Building Code on a regular basis with all new buildings required to operate at net zero carbon by 2050.**
  - Lead: Central Government
  - Partners: Advocate Property & Construction Sector / New Zealand Green Building Council
  - GHG reduction: 
  - Address climate risks: 
  - Additional Benefits: Percentage of new buildings built to a sustainable design standard per annum
    - Number of buildings located in a hazard zone
    - Percentage of buildings exposed to flood hazards
    - The number of flooding events that occur and the associated number of habitable floors affected per 1000 properties connected to Auckland Council’s stormwater network
  - When does this need to be delivered? Years 1-3
  - Resource Need: L

- **Unlock barriers to the uptake of sustainable design and construction, including council processes and other mechanisms, such as incentivisation and upskilling.**
  - Lead: Property & Construction Sector / New Zealand Green Building Council
  - Partners: Auckland Council
  - GHG reduction: 
  - Address climate risks: X X X
  - Additional Benefits: 
    - X X X
  - When does this need to be delivered? Years 1-3
  - Resource Need: L

- **Document, share and promote processes and lessons learned on the delivery of net zero energy buildings, such as Te Kōpua, to enable easier, cheaper and faster uptake.**
  - Lead: Property & Construction Sector / New Zealand Green Building Council
  - Partners: Auckland Council
  - GHG reduction: 
  - Address climate risks: X X X
  - Additional Benefits: 
    - X X X
  - When does this need to be delivered? Years 1-3
  - Resource Need: L

- **Promote and incentivise the certification of new apartment properties to performance standards that meet the requirements of the Healthy Homes Act (e.g. Passive House).**
  - Lead: Property & Construction Sector / New Zealand Green Building Council
  - Partners: Auckland Council
  - GHG reduction: 
  - Address climate risks: X X X
  - Additional Benefits: 
    - X X X
  - When does this need to be delivered? Years 1-3
  - Resource Need: L

- **Deliver on Auckland Council’s Sustainable Asset.**
  - Lead: Auckland Council
  - Partners: Direct Central Property & Construction Sector
  - GHG reduction: 
  - Address climate risks: X X X
  - Additional Benefits: 
    - X X X
  - When does this need to be delivered? Years 1-3
  - Resource Need: L

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**Attachment A**

**Item 8**

**Action 86:** Deliver and support retrofit programmes to transition to low-carbon, resilient, healthy buildings

- Standard for all Community Facilities projects and use third party green building and sustainable infrastructure rating tools to measure and reduce council asset’s environmental impact.

- Deliver a residential retrofit programme to improve the health and efficiency of Auckland’s residential buildings, including the installation of insulation, double glazing, efficient heating and lighting, and renewable energy generation.

- Establish a commercial building retrofit programme, to improve the performance and resilience of Auckland’s commercial building sector and promote and enable fuel switching from natural gas to electricity.

- Establish a programme for installing climate resilience measures at a building and
### Attachment A

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<td>area scale to address climate risks</td>
<td>Council owned assets</td>
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<td>Support uptake of productive roofs in Auckland. Showcase opportunities through pilots on public assets. Address current barriers to uptake and investigate incentivisation mechanisms</td>
<td>Auckland Council - Lever</td>
<td>Property &amp; Construction Sector / New Zealand Green Building Council</td>
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<td>Update the Building Code to consider waste and climate impacts for full lifecycle (including deconstruction) considerations to be required alongside the lodging of consents</td>
<td>Central Government - Advocate</td>
<td>Construction Sector / New Zealand Green Building Council</td>
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<td>Continue to roll out the &quot;Building Waste&quot; tools and guidelines to educate the wider construction industry, and support and integrate community and social enterprises into construction and demolition initiatives</td>
<td>Auckland Council - Lever</td>
<td>Community Social Enterprises</td>
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<td>Develop a deconstruction hub that provides infrastructure for industry to exchange key</td>
<td>Auckland Council - Direct / Central Lever</td>
<td>Construction Sector</td>
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**Action B7:** Develop and support initiatives to minimise construction and demolition waste

| Item 8 |
### Attachment A

#### Item 8

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#### Action B8:

- **Embed circular economic principles to address construction and demolition waste.** Use demonstration projects and continue to research optimisation of recovered materials to help drive demand.
  - Lead: Construction Sector
  - Partners: Academia, Central Government, Auckland Council

- **Embed climate change mitigation and adaptation measures in all park plans for the region.**
  - Lead: Auckland Council
  - Partners: Direct, Central Government (DOE)

- **Ensure public spaces can meet growing demands from an increasing population and urban intensification through identifying and optimising multi-functionality.**
  - Lead: Auckland Council
  - Partners: Direct, Central Government

- **Prioritise the use of green infrastructure to provide multiple benefits with a low carbon footprint and include lifecycle analysis requirements at the business case stage.**
  - Lead: Auckland Council
  - Partners: Direct, Central Government

- **Explore initiatives to reduce travel need and increase**
  - Lead: Auckland Council
  - Partners: Community and Sporting Groups
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<td>Action B9: Establish and rapidly scale low carbon, resilient precincts across Auckland</td>
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<td>Transport</td>
<td>Support a shift to public transport use, walking and micro-mobility devices, rather than driving.</td>
<td>Community Business</td>
<td>Lever Influence</td>
<td>Auckland Council Auckland Transport Central Government (NZTA, MoT, MIE, MBIE) Other government sector and Non-For-Profit Partners</td>
<td>Vehicle kilometres travelled by private vehicles reduced by 1.2% as a result of avoided motorised vehicle travel through actions such as remote working and reduced trip lengths</td>
<td>Vehicle kilometres travelled by private vehicles reduced by 1.2% as a result of avoided motorised vehicle travel through actions such as remote working and reduced trip lengths</td>
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<td>All transport indicators</td>
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<td>Use motor vehicles much more efficiently, including for business purposes, shorten trips, and fulfill several travel needs at once.</td>
<td>Community Business</td>
<td>Lever Influence</td>
<td>Auckland Council Auckland Transport Central Government (NZTA, MoT, MIE, MBIE) Other government sector and Non-For-Profit Partners</td>
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<td>Public transport mode share to increase from 7.8% to 24.5%</td>
<td>Public transport mode share to increase from 7.8% to 24.5%</td>
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<td>Choose lower-emissions options when purchasing, sharing or leasing a vehicle</td>
<td>Community Business</td>
<td>Lever Influence</td>
<td>Auckland Council Auckland Transport Central Government (NZTA, MoT, MIE, MBIE) Other government sector and Non-For-Profit Partners</td>
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<td>Walking mode share to increase from 4.1% to 8%</td>
<td>100% of Auckland’s bus fleet to be zero emission</td>
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<td>Apply pricing and parking measures to reduce private motorised travel and facilitate shifts to alternative modes</td>
<td>Auckland Council Auckland Transport Central Government (MoT)</td>
<td>Lever Influence Direct Control</td>
<td>Central Government (NZTA, MoT, MIE, MBIE) Business Other government</td>
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<td>40% of passenger and light commercial vehicles to be electric or zero emission</td>
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### Action T2:
**Make travel by public transport more appealing than using personal vehicles**

- **Priority:**
- **Action:**
- **Sub-action:**
- **Role of Council:**
- **Partners:**
- **GHG reduction:**
- **Indicative target aligned to decarbonisation pathway (where modelled):**
  - 2030: 
  - 2050: 
- **Address climate risks:**
- **Additional Benefits:**
- **Indicators:**
- **When does this need to be delivered?:**
- **Resource Need:**

#### Action T3:
**Rapidly increase access to bicycles, micro-mobility devices and the safe, connected, and dedicated infrastructure that supports their use**

- **Priority:**
- **Action:**
- **Sub-action:**
- **Role of Council:**
- **Partners:**
- **GHG reduction:**
- **Indicative target aligned to decarbonisation pathway (where modelled):**
  - 2030: 
  - 2050: 
- **Address climate risks:**
- **Additional Benefits:**
- **Indicators:**
- **When does this need to be delivered?:**
- **Resource Need:**

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**Note:**
- $H$ indicates high priority.
- $M$ indicates medium priority.
- $L$ indicates low priority.
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<td>Enhance the resilience of our transport network</td>
<td>Central Government (NZTA)</td>
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<td>Auckland Transport Central Government (NZTA)</td>
<td>Kaipara</td>
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<td>Ensure resilience of future asset design and construction, informed by these analyses.</td>
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<td>Investgate the applicability of new economic tools and frameworks, such as the City Doughnut tool, to inform Auckland’s economic transition.</td>
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<td>ATEDD Central Government</td>
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<td>Accelerate and enable business capability and pathways to resilient and regenerative business models.</td>
<td>Central Government</td>
<td>Lever</td>
<td>Business ATEDD Mana Whenua / Māori Central Government</td>
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<td>Carry out a climate change risk assessment to identify the climate-related risks to Auckland’s economy and develop targeted programmes to support those sectors most impacted</td>
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<td>Lever</td>
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<td>Accelerate the shift to a more resilient and sustainable finance system through a focus on</td>
<td>Finance Sector, through the Asset Resilience Circle Sustainable Finance Forum</td>
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### Action 8:
**Accelerate the uptake of innovation that supports the delivery of a resilient, climate proof and regenerative economy**

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<th>Partners</th>
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<td>Provide a platform in the form of a climate innovation hub that enables Aucklanders to introduce climate compatible solutions to the market.</td>
<td>Mana Whenua &amp; Auckland Council, Te Whanau O Tāmaki</td>
<td>Business Community</td>
<td>Mana Whenua / Māori</td>
<td>Central Government</td>
<td>Acclimatisation</td>
<td>Auckland businesses (SNZ)</td>
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<td>Investment in climate innovation by Auckland businesses (SNZ)</td>
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**Objectives:**
- Redirecting capital flows towards sustainability outcomes, better pricing of social and environmental impacts and raising the awareness and capability of financial system participants.
- Establish a voluntary ecosystem marketplace to generate funding for natural climate solutions.

**Lever:**
Define what a regenerative economy looks like for Auckland, aligning with Te Ora O Tamaki Māutahau and in collaboration with Mana Whenua, iwi, business and community.

**Indicators:**
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<td>Decarbonise operations, supply chain and products and services.</td>
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<td>Enable alternative and remote ways of working for Aucklanders.</td>
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<td>Where applicable, disclose on climate-related financial risks.</td>
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<td>Action E4:</td>
<td>Collaborate with business, community, academia and Māori to develop a regional just transition plan for Auckland.</td>
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<td>Community</td>
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<td>Build low-carbon and climate-resilient skills into New Zealand’s education system.</td>
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<td>Provide employees with the necessary training needed to support the delivery of a low-carbon economy.</td>
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<td>Central (for own employees)</td>
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<td>Auckland Council</td>
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<td>Leverage public sector and large business procurement to deliver climate</td>
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<td>Work with large businesses and suppliers to reduce emissions and climate risk throughout supply chains.</td>
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<td>Encourage the adoption of innovation, green</td>
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<td>outcomes for Auckland</td>
<td>technology and circular solutions, and support suppliers as they transition to a lower carbon economy.</td>
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<td>Action E6:</td>
<td>Manage our resources to deliver a zero waste, circular economy</td>
<td>Implement the Auckland Waste Management and Minimisation Plan including establishing the Resource Recovery Network across Auckland</td>
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<td>Percentage change in total solid waste generation per annum</td>
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<td>Undertake research and feasibility studies to inform investigations into onshore processing solutions for plastics and paper/cardboard from kerbside collections.</td>
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<td>Percentage change in domestic kerbside refuse per capita per annum</td>
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**Communities and Coast**

**Action C1:** Work together to strengthen the resilience of our communities, people and places

- Establish a coordinated and targeted programme of support for communities and individuals known to be impacted the most.
  - Auckland Council
  - Direct
  - Central Government
  - Community Schools and Early Childhood Educators
  - Social Agencies
  - Not-for-Profit Organisations
  - District Health Boards

- Undertake widespread engagement to foster community and industry awareness of current and future climate risks and consequences of hazards.
  - Auckland Council
  - Direct
  - Central

- Identify how mana whenua communities and their places can be more resilient.
  - Auckland Council
  - Direct
  - Auckland Council
  - Academia
  - Central
  - Government

**Action C2:** Address the implications of climate change on our coastline

- Establish long-term management approaches for our changing coastline, working with mana whenua communities in delivery of Coastal Management Plans.
  - Auckland Council
  - Direct
  - Central
  - Mana Whenua / Māori
  - Central
  - Government
  - Community Infrastructure Providers
  - Business

- Undertake a regional coastal erosion study and a coastal hazard vulnerability assessment and work with and prepare
  - Auckland Council
  - Direct
  - Mana Whenua / Māori
  - Central
  - Government
  - Community Infrastructure Providers

Percentage of Aucklanders that feel connected to their local communities and empowered to take action together
Number of households identified as disproportionately impacted by climate change
Number of Coastal Compartment Management Plans delivered

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**Attachment A**

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<td>Number of Community Climate Action Plans delivered</td>
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<td>Provide communications and tools to embed behaviour change and support sustainable lifestyles.</td>
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<td>Provide low carbon living demonstration sites, guidance and advisory services to enable a reduction in consumer emissions.</td>
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<td>Central Government Community Schools and Early Childhood Educators Social Agencies Not-for-Profit Organisations</td>
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<td>Enable mana whenua and matawhaka to reduce emissions and build resilience.</td>
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<td>Grow capacity and capability of schools, staff and students to reduce emissions, increase resilience and enable future leaders.</td>
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<td>Not-for-Profit Organisations Schools and Early Childhood Educators</td>
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<td>Promote, progress and fund current and emerging initiatives, programmes and groups who are actively committed to the restoration, sustainability and protection of interaction between</td>
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<td>Rangatahi Community</td>
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### Attachment A

#### Item 8

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#### Food

### Action F1:
Support primary industries and small businesses to increase food security, reduce emissions and build economic and climate resilience

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<td>Action F2:</td>
<td>Protect our productive soils and move toward regenerative practices to increase food security and carbon sequestration</td>
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<td>Auckland Council</td>
<td>Central Government (Māori)</td>
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<td>Mana Whenua / Māori Primary Industries Sector</td>
<td>30% reduction in GHG emissions sources on land e.g. from fertiliser use and liming</td>
<td>80% reduction in GHG emissions sources on land e.g. from fertiliser use and liming</td>
<td>Our food system makes up 18% of our consumption emissions in Auckland. Our modelling however can only address production emissions and so targets cannot be identified in the same way. For more information on consumption emissions visit the Reducing our Emissions section of the plan.</td>
<td>Percentage of productive soils protected</td>
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<td>Action F3:</td>
<td>Reduce wastage, starting with prevention, and maximise the value of surplus food</td>
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<td>Create national policies and funding mechanisms that drive food waste reduction</td>
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<td>Support people to grow their own food, improving access to low carbon food grown by local, seasonal and low carbon food</td>
<td>Auckland Council</td>
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<td>Action 5: Provide strategic direction and governance for</td>
<td>Develop a food charter for Auckland, establish a Food Policy Council and advocate to government to</td>
<td>Auckland Council Advocate</td>
<td>Food System Actors Central Government</td>
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Note: The table continues with columns detailing specific actions and their corresponding indicators and years for delivery.
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**Auckland’s food system**

Establish a national food resilience policy.

**Te Puawaitanga o Te Tātai: Actions being confirmed – will be completed end June**

**Energy & Industry**

**Action EN1: Reduce process heat and industrial process emissions in the Auckland region**

- Collaborate and partner with central government and industry to decarbonise process heat.
- Provide support and guidance on the available low carbon technologies for low to medium process heat and enable access to available funding opportunities to adopt these technologies.
- Advocate for research, development and implementation of high temperature process heat solutions.
- Address barriers in Auckland Council processes to the uptake of low carbon technologies.
- 22% reduction in GHG emissions from industrial processes as a result of efficiency gains, innovation and introducing biochar into the steel making process.
- 42% reduction in process heat emissions.
- 50% reduction in process heat emissions as a result of waste heat recovery, high temperature heat pumps, best practice technology and switching from gas to biofuels.
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<td>Investigate and support the role of alternative, low carbon fuels in Auckland</td>
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<td>Action EN4: Reduce emissions from industrial product use, specifically the use of hydrofluorocarbon (HFC) refrigerants</td>
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<td>Advocate for product stewardship for HFCs in New Zealand, and partner with refrigerant and air conditioning manufacturers in the Auckland region to identify and promote the safe use of low Global Warming Potential (GWP) refrigerants.</td>
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<td>Develop an educational awareness programme on the GWP impacts of refrigerants and the products that contain them</td>
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<td>Use Auckland Council and Council Controlled Organisations assets to test, trial and showcase innovative energy generation. Enable markets to grow through investment from public procurement.</td>
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<td>Support businesses with the uptake of</td>
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<td>renewable energy solutions and remove barriers in Auckland Council processes</td>
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<td>Provide support for community-led initiatives to implement sustainable energy solutions. Provide an online community power hub to enable access to required skills and expertise.</td>
<td>Auckland Council</td>
<td>Lever</td>
<td>Community Energy sector</td>
<td>Central Government</td>
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<td>Utilise and support smart technologies and incentives to decrease peak energy usage.</td>
<td>Energy Sector</td>
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<td>EN6: Support energy demand management technologies, tools, and techniques to address Auckland’s peak energy use</td>
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<td>Provide targeted support for high energy household users in low socio-economic circumstances, through community capacity building and improving</td>
<td>Auckland Council</td>
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<td>Energy Sector</td>
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<td>Access to required knowledge and services.</td>
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<td>Explore energy retailer partnerships to increase household energy efficiency</td>
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<td>Reduce energy consumption on Auckland Council and Council Controlled Organisations assets through mechanisms such as building management system optimisation.</td>
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<td>Cross-Cutting</td>
<td>Uphold Te Tiriti o Waitangi and treaty partnerships in decision making</td>
<td>Identify approaches, such as co-governance and ongoing assessments of climate decision making, to ensure that treaty roles are upheld.</td>
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<td>Auckland Council</td>
<td>Partnership</td>
<td>Independent Māori Statutory Board, Mana Whenua Karakia Forum</td>
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<td>Secure long-term commitment and leadership from across mana whenua and public private and voluntary sectors</td>
<td>Establishment of a leadership programme and governance with representation across sectors. Ensure that rangatahi are supported to be part of decision making.</td>
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<td>Auckland Council</td>
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<td>Business Mana Whenua Karakia Forum, Rangatahi Central Government Community District Health Boards</td>
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<td>Regularly review and update climate plan</td>
<td>Establish an on-going climate research programme.</td>
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<td>Academia Schools Business</td>
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<td>change evidence to inform decisions</td>
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<td>Be transparent and provide data and information to enable citizen science, innovation and research and enabling people to be informed</td>
<td>Share climate-related data and information in an accessible way and identify research challenges and opportunities to address.</td>
<td>Auckland Council Partnership Academia Central Government (MkibE) National Science Challenges</td>
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<td>Support, endorse and resource the establishment of a rangatahi roopu that enables us to put the rangatahi indigenous framework into action</td>
<td>Form an intergenerational collective, that is rangatahi-led, to act as a channel between council and stakeholders.</td>
<td>Auckland Council Partnership Rangatahi</td>
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Te Tāruke-a-Tawhirī: Auckland’s Climate Plan
L1 – Funding and financing climate action

The successful delivery of this regional climate plan is dependent on ensuring finance flows are consistent with the plan’s low-emission, climate-resilient goals, and action areas. The challenge is not simply finding new capital but funneling existing capital into climate positive and sustainable outcomes.

For Auckland Council, this means ensuring that the primary funding mechanisms and approaches outlined within our Long Term Plans and Annual Plans are aligned with the action areas set out within the climate action plan.

However, ensuring financial capital is directed towards meeting our climate ambitions requires action across the whole finance sector, from funders and investors through to regulators and financial intermediaries. Work to shift the finance system in Aotearoa New Zealand is currently underway through the Aotearoa Circle Sustainable Finance Forum (https://www.theaotearacircle.nz/sustainablefinance).

The cross-sector nature of the climate plan means that a broad range of funding and financing instruments are available and will need to be used. Innovation in these areas will be critical to delivering our climate objectives.

Greening of existing instruments, such as sustainability-linked loans and green bonds, will need to be delivered and concepts such as blended finance, where private and public capital are combined to broaden funding risks and leverage different financial sources, will need to be integrated within funding and financing options.

One new instrument we will be exploring through the delivery of the plan is the potential for a voluntary ecosystem marketplace to generate funding for natural climate solutions.

People and businesses want ways to feel like they are contributing to climate mitigation. They are increasingly investing in natural climate solutions via voluntary carbon markets to achieve net GHG reductions, that they can’t otherwise eliminate until they can transition to new technologies.

To help with this, we envisage an accessible mechanism for the average person/small business to contribute to climate-positive projects and will take appropriate steps to investigate and develop a voluntary ecosystem marketplace for Auckland.
L2 - Moving toward a more resilient, regenerative, and distributive economy

As highlighted in our Economy priority, our current economic model and the pursuit of growth at the expense of our natural environment and societal wellbeing is being increasingly challenged around the world. To deliver our climate goals there is a need for a more resilient economy that is regenerative, distributive, and enables Aucklanders to thrive.

The Aotearoa Circle Sustainable Finance Roadmap is a partnership of public and private sector leaders, committed to sustainable prosperity for Aotearoa New Zealand.

The Sustainable Finance Forum (SFF) is the first project launched by The Aotearoa Circle. It recognises the critical role of finance to achieve and accelerate the transition to a sustainable economy, and the need for a financial system that is fit for that purpose.

The aim of the project is to produce a ‘Roadmap for Action’ on how to shift New Zealand to a sustainable financial system – from one which focuses primarily on (often short term) financial wealth creation, to one that supports long-term social, environmental, and economic wellbeing.

The Interim Report from the SFF identified several key areas of focus, grouped into three themes:

- changing the mindset
- aligning the financial system
- mobilising capital.

The ongoing work of the SFF to shift the New Zealand finance system will play a key role in supporting the delivery of this climate action plan. As a founding partner of the Aotearoa Circle and a member of the SFF technical working group, Auckland Council will be supporting and enabling this transition.

[insert pdf of The Aotearoa Circle Sustainable Finance Roadmap]
**L1: Roles and partnerships**

As facilitator of the plan, any changes to the plan’s overarching focus, direction and targets will require endorsement by the relevant Auckland Council committee. However, governance of, and accountability for, the plan’s implementation and the actions that sit within the plan, needs to involve multiple parties. This is critical to ensure accountability and ownership and to provide the flexibility and adaptability to respond to the changing nature of our climate challenge.

We need a partnership structure for the plan’s implementation that brings together the diverse groups that are critical to delivering on the plan and gives voice to those who often are not heard. This includes representatives from rangatahi, mana whenua, mataawaka, small and large businesses, health professionals, NGOs, community groups, central government, council and the Council Controlled Organisations (CCOs).

The foundation of this partnership has been established through the plan's collaborative development process and we will be working with leaders across the region to establish the best model for reviewing and further informing the plan’s progress over the coming year.

This section also provides more information on what different sectors can do to address climate change and support delivery of the plan:

As **Auckland Council**

As **central government**

As **mana whenua**

As **an individual**

As **a community**

As **a business**

As **rangatahi**
L2: Role of Auckland Council

Auckland Council has a range of roles in delivery of the plan, some areas require direct control whereas others require leadership, advocacy and influence.

Advocacy
The Auckland Council group advocates to central government on a range of policies and issues to ensure the most benefit to Aucklanders. Many of these issues deal directly or indirectly with climate change. Council’s advocacy to government helps ensure that the policy settings, frameworks, and funding are aligned and give effect to our needs related to climate change. Without strong alignment, the delivery of this plan and its ambitious targets, will be difficult if not impossible.

Leadership
Auckland Council influences others and affects change beyond its direct roles and responsibilities by leading by example. This is visible in the buildings and facilities we operate, the materials and services we procure, and the public spaces that we shape and build.

Planning, Funding and Delivery
The Auckland Council group plays a major role in planning for and delivering transport, infrastructure, and urban regeneration. The group also delivers programmes and projects for pest control, revegetation and supporting biodiversity. Ensuring these are fit for purpose in a changing climate, as well as deliver and facilitate emissions reductions, is a focus of this plan. These are addressed in the priorities on natural and built environments, and transport.

Regulation
Auckland Council plays a key role in regulation to ensure the health, safety and wellbeing of current and future Aucklanders. Many regulatory functions relate directly or indirectly to climate change, such as coastal management, pest management, and building control. Regulation also needs to anticipate the implications of actions and manage the risks to ensure equity across the region.

Partnership
The complexity of climate change requires action from all sectors. Partnerships are one way to bring sectors and actions together to make greater impact. The Auckland Council group will need to continue to partner with a range of organisations and businesses to achieve our climate goals.

Support and enable
Auckland Council provides targeted resources to support important community outcomes, including climate action. Support from council helps build on local talents and expertise to benefit communities across Auckland, for example through our community grant programmes and working with rangatahi.
L2: Role of Central Government

The government’s main framework for action on climate change is the Climate Change Response Act 2002. It sets long-term, national targets for emissions reduction and a framework for improving climate resilience, with direct implications for Auckland and Auckland Council.

The Climate Change Response (Zero Carbon) Amendment Act 2019 (‘Zero Carbon Amendment Act’) provides a framework for New Zealand to develop climate policies that contribute to global efforts to limit average temperature increase, and to allow for the preparation and adaptation to the effects of climate change.

The Zero Carbon Amendment Act set up new domestic greenhouse gas emissions targets, established a Climate Change Commission and requires government to develop and implement policies for climate mitigation and adaptation. The Ministry for the Environment is leading the coordination and development of the National Climate Change Risk Assessment and the National Adaptation Plan, in response to this Amendment Act.

Beyond these, there is other supporting and related legislation, policy and investment that have implications on climate actions in Auckland.

Some examples include:

Legislation and regulation

- The New Zealand Emissions Trading Scheme is a market-based tool that puts a price on emissions to help incentivise emissions reduction. It is administered through the Climate Change Response Act 2002. It has been ineffective at reducing our emissions. Given new international obligations under the Paris Agreement, improvements have and will continue to be made to update the Scheme.
- The Resource Management Act 1991 (‘RMA 1991’) guides the sustainable management of resource use and environmental impacts of activities. While climate change is recognised as principle in the RMA, its current focus is adapting to the impacts of climate change, rather than emissions reduction. A package of resource management reforms is being considered and this may result in a greater emphasis on both climate mitigation and adaptation. It is hoped the reforms will build consistency with the Zero Carbon Amendment Act 2019.
- The Local Government Act 2002 sets out the general framework and powers under which local authorities must operate. Under this Act, Auckland Council must promote the social, economic, environmental and cultural well-being of communities in the present, and into the future. This includes climate related matters such as water provision, sanitation and infrastructure, transport, public facilities, financial investment etc.
- The Building Act 2004 regulates building work; which includes building construction, building materials and altering, maintaining or demolishing buildings. It works alongside other legislation for health, safety, consumer protection and land use. All building work must meet performance standards set out in the Building Code. The Building Act and the Building Code are important in supporting sustainable building – i.e. energy efficiency, waste reduction, building material etc. However, some standards in the Building Code can go against delivery of our climate goals. Council’s long-standing position is that changes are needed in the Building Code to better progress climate mitigation and adaptation.

3 https://www.mfe.govt.nz/node/16380
- The Waste Minimisation Act 2008 encourages the reduction in the amount of waste we generate and dispose of in New Zealand as well as to reduce the environmental harm of waste.

**Policy**

- National Policy Statements are instruments of the Resource Management Act 1991 that set out broad policy direction on topics of national significance. National Policy Statements can guide and direct local authorities on matters of climate mitigation and adaptation. National Policy Statements currently in effect include:
  - National Policy Statement on Urban Development Capacity
  - National Policy Statement for Freshwater Management
  - National Policy Statement for Renewable Electricity Generation
  - National Policy Statement for Electricity Transmission
  - New Zealand’s Coastal Policy Statement.

- National Environmental Standards are regulations under the Resource Management Act 1991. These regulations prescribe technical and non-technical standards, methods or other requirements that local authorities must adhere to. National Environmental Standards currently in effect include:
  - National Environmental Standards for Air Quality
  - National Environmental Standards for Sources of Drinking Water
  - National Environmental Standards for Telecommunication Facilities
  - National Environmental Standards for Electricity Transmission Activities
  - National Environmental Standards for Assessing and Managing Contaminated Soil to Protect Human Health
  - National Environmental Standards for Plantation Forestry.

- There are other national policies that relate to climate change matters that are set under other pieces of legislation. The National Policy Direction on Pest Management sets out requirements for developing pest management plans and programmes under the Biosecurity Act 1993.

- A Government Policy Statement (GPS) on Land Transport identifies funding priorities under the National Land Transport Fund over 10 years.

**Investment**

- The New Zealand Wellbeing Budget is the overarching investment framework for all programmes, services and infrastructure. The current budget references climate change as a complex problem requiring new ways of thinking more broadly about budgets and integrated outcomes. The budget allocates funding for research on agricultural emissions and development of new energy technologies to support the low emissions transition, among other things.

- The $100 million Green Investment Fund (GIF) was launched as part of Budget 2018. Independent from government, it operates as a company in order to be flexible and responsive to the market. The GIF aims to accelerate investment to reduce emissions.

- The National Science Challenges (NSC) were launched in 2014 to tackle significant national issues. Top scientists across disciplines and cross-sector collaborators compete for over $680 million in funding over the 10-year term of the NSC. Climate change is related to most challenges. Auckland Council has had direct involvement with the following national challenges:
  - Our Land and Water
  - Resilience of Nature’s Challenges
  - The Deep South National Science Challenge

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It is vitally important that central and local governments work together, and as Treaty partners with Māori, in order to progress climate mitigation and adaptation.

Related links

L2: Role of mana whenua

The content for this section is in development with the Mana Whenua Kaitiaki Forum.

L2: Role of business

Delivering on Auckland’s climate commitments will require the involvement of all businesses. Many businesses are already making the move towards a more efficient and sustainable way of working. However, it is critical that all businesses – small, medium and large – transition to lower carbon, more climate resilient operating models.

Over 115 New Zealand businesses have signed up to New Zealand’s Climate Leaders Coalition, with members committing to:

- contribute towards carbon neutrality by 2050
- disclose their climate risks
- support their suppliers and people to reduce their emissions.

Movements like this are gaining momentum across New Zealand, with an increasing number of businesses choosing to respond to climate change as a long-term business investment. As new technologies emerge and economic shifts occur, more than ever, business will need to ensure they are prepared for a zero-carbon future.

Although the economy priority provides a focus for business action on climate, it is critical that businesses also recognise their role across the other climate priority areas, including:

- transport: through organisational fleets, staff travel and freight movements
- built environment: as owners and tenants of commercial, industrial and retail property
- food: both as producers and consumers within the food system
- energy and industry: considering industrial emissions, process heat and broader energy use.

There are also several broad areas where all businesses can take action to support the plan’s delivery:

- measuring and reducing operational carbon emissions
- managing climate risks
- embedding regenerative and distributive approaches
- enabling staff.

Measuring and Reducing Operational Carbon Emissions

Unless businesses take action, we cannot meet our climate goals. Businesses can support by measuring their greenhouse gas (GHG) emissions and setting reduction targets that support our goal of a 50% reduction in emissions by 2030 and net zero emissions by 2050. Business should consider direct emissions as well as supply chain emissions. Check out EECA’s tool to find out more and learn more about Auckland’s climate mitigation goals.
Managing Climate Risks

Business should begin to understand their own climate risks to effectively prepare for the transition to a zero-carbon, climate resilient future. Business need to put in place the right tools, processes, and governance to effectively mitigate climate risk, as well as consider future climate scenarios in supply chain, operational and financial planning. Check out the 1.5°C playbook and the TCFD Framework for more information on climate risk preparedness for businesses. In developing this plan, we commissioned NIWA to produce climate projections for the Auckland region to identify potential risks. Businesses can also use this to identify their climate risks.

Embedding Regenerative and Distributive Approaches

Our current economic model creates waste, inequity and puts a strain on our natural resources. In order to address our climate challenges, we need to move away from today’s dominant economic model to one that is regenerative, distributive and thriving. Business can accelerate this shift by embedding circular and regenerative approaches to their business. Creating products and services that are circular by design and maximise the lifecycle of materials means business can benefit from a reduction in resource and cost.

Check out how your business can access the opportunities arising from a regenerative approach here or go to [Economy] for more information.

Enabling Staff

There are many ways businesses can support their employees in the transition to zero-carbon lifestyles—such as through flexible working options, family-friendly policies, and access to training. Businesses will be well served by engaging their workforce as they plan for a zero-carbon future. Working with their workforce helps ensure a just transition. A just transition recognises the need to create decent work and quality jobs while taking measures to mitigate and adapt to climate change. Early action on a just transition can minimise negative impacts and maximise opportunities. Check out B-Team’s Just Transition Guide for Business and ATEED’s future ready Auckland for more information.

L2: Role of Individuals

Together Aucklanders’ daily decisions and actions along with new policy, infrastructure, products, services and technology can help move us towards a more sustainable future.

Taking personal action to decrease emissions, as well as making your whānau more resilient to climate impacts will increase wellbeing and mean a better future for all.

The average Aucklander must reduce their carbon footprint for Auckland to meet its emission targets. This means we all need to take action now. We must change how each of us live and the choices we all make including how we travel, the energy we use, what we buy, the waste we create, and how we eat. Rethinking our lifestyles now by using low carbon services, infrastructure and products that are already available will help us transition to low carbon lifestyles. The sooner we transition to a carbon neutral Auckland, the easier it is and the more equitable it will be.

Aucklanders also need to ready themselves for adverse climate impacts—such as more storms, flooding and heatwaves. Transitioning to a carbon neutral Auckland can help buffer against these adverse climate impacts and make us resilient.

Our actions also signal to other Aucklanders, decision makers and businesses that we take climate change seriously and we all need to invest in both mitigating and preparing for climate change. Our [Community]
and coast priority has the actions we will collectively undertake to help Aucklanders become reduce their carbon footprint and become more resilient.

**L2 - Role of Communities**

Together Aucklanders’ collective actions along with new policy, infrastructure, services and technology can move us towards a sustainable future. This means we need to work together to strengthen and support community-based initiatives that reduce emissions and build community resilience in a fair way. Community agencies, groups, neighbours, schools, marae, local boards and workplaces can all drive individual and systemic changes we need to achieve a resilient, low carbon future for all.

Organising local meetings, workshops, marches; creating local climate action and resilience plans; and starting local projects to reduce emissions and strengthen community connection are good examples of the active role communities can play. The Community and Coast priority of this plan outlines the actions we will collectively undertake to help Aucklanders reduce their carbon footprint and prepare for the changes we face into the future.

Auckland Council, communities, schools and workplaces are already starting to take climate action. From local community-led initiatives, local environment and recycling centres, to self-help home audit tools and community grants, there is momentum we can build upon. Check out examples of climate action and resilience initiatives underway below.

**Building resilience in our communities:**

- Environment Centres - EcoMatters and Kaipatiki
- Community Resilience Plans
- Community-led Emergency Centres
- Emergency preparedness in diverse languages (Samoan, Tongan, Hindi, Chinese)
- Watercare water for life
- Kotahi “strength in Unity” emergency preparedness community workshops

**School programmes**

- Enviroschools
- Experiential Learning Centres

**Reducing household emissions:**

- Live Lightly – tips to save money, live well and care for the planet
- FutureFit - find out your impact on the planet and choose actions to reduce it
- Retrofit your Home
- Eco Design Advisory Service
- Home Energy Audit toolkits
- Homefit

**Local Board Climate Action Plans:**

- Waitakere
- Whau
- Puketapapa

**Waste reduction:**

- Make the most of waste
- Community recycling centres
- Compost Collective
- Para Kore ki Tamaki
**L1: Indicators**

We will report on progress of actions contained within the plan annually. In addition, we have identified a series of indicators which we will use to measure success in delivery against our climate goals. The trends in these indicators will be reported on in this section of the digital plan. Indicators will be reviewed, and further ones identified as we implement the plan.

The indicators are listed by priority area.

<table>
<thead>
<tr>
<th>Post COVID-19</th>
<th>Implementation</th>
<th>Funding and financing</th>
<th>Roles and partnerships</th>
<th>Indicators</th>
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</thead>
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## Indicators by Priority Area

<table>
<thead>
<tr>
<th>Area</th>
<th>Indicator</th>
<th>Source</th>
<th>Frequency of reporting</th>
<th>Current direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-cutting</td>
<td>Emissions by sector</td>
<td>Auckland’s GHG inventory</td>
<td>Annual</td>
<td>Increasing</td>
</tr>
<tr>
<td></td>
<td>Net emissions per capita</td>
<td>Auckland’s GHG inventory</td>
<td>Annual</td>
<td>Decreasing</td>
</tr>
<tr>
<td></td>
<td>Gross emissions per capita</td>
<td>Auckland’s GHG inventory</td>
<td>Annual</td>
<td>Decreasing</td>
</tr>
<tr>
<td></td>
<td>Consumption based emissions</td>
<td>Not currently measured, proposed future indicator</td>
<td></td>
<td>Unknown</td>
</tr>
<tr>
<td></td>
<td>Impacts and costs of severe weather events</td>
<td>New system needed</td>
<td></td>
<td>Unknown</td>
</tr>
<tr>
<td></td>
<td>The New Zealand Health Survey (NZHS): Auckland data</td>
<td>Ministry of Health</td>
<td>Annual</td>
<td>Unknown</td>
</tr>
<tr>
<td></td>
<td>Index of Multiple Deprivation (IMD)</td>
<td>University of Auckland</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>National wellbeing Indicators (in development)</td>
<td>Statistics NZ (in development)</td>
<td></td>
<td>Unknown</td>
</tr>
<tr>
<td>Natural Environment</td>
<td>Carbon sequestered by trees/vegetation, soils and marine ecosystems</td>
<td>Sequestration by harvested wood measured nationally (MFE/Stats NZ Environmental Economic Account) Regional sequestration not currently monitored – working towards inclusion in Auckland’s GHG inventory</td>
<td>Annual</td>
<td>Overall increase in carbon pool in forests nationally.</td>
</tr>
<tr>
<td></td>
<td>State and quality of locally, regionally and nationally significant environments</td>
<td>Auckland Plan 2050, but composite</td>
<td>Annual snapshot / 3-yearly</td>
<td>Recorded as no significant change but measure still</td>
</tr>
<tr>
<td>Area</td>
<td>Indicator</td>
<td>Source</td>
<td>Frequency of reporting</td>
<td>Current direction</td>
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</tr>
<tr>
<td></td>
<td>Tree canopy cover, regionally and by Local Board area</td>
<td>RIMU state and change analysis (LiDAR data)</td>
<td>3 – 5 years</td>
<td>Static</td>
</tr>
<tr>
<td></td>
<td>Marine and freshwater quality indicators (e.g. nutrients, sediment,</td>
<td>State of the Environment Report</td>
<td>5 years</td>
<td>2015 report showed overall decline in freshwater quality and stable but low marine water quality. New report due 2020.</td>
</tr>
<tr>
<td></td>
<td>temperature)</td>
<td></td>
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<tr>
<td></td>
<td>Soil health indicators (e.g. nutrient levels)</td>
<td>State of the Environment Report</td>
<td>5 years</td>
<td>2015 report showed increasing fertiliser and soil compaction (declining soil quality) but insignificant change in soil pollution. New report due 2020.</td>
</tr>
<tr>
<td></td>
<td>Number of approved developments that</td>
<td>To be developed</td>
<td>-</td>
<td>Unknown</td>
</tr>
<tr>
<td>Area</td>
<td>Indicator</td>
<td>Source</td>
<td>Frequency of reporting</td>
<td>Current direction</td>
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</tr>
<tr>
<td>Built Environment</td>
<td>incorporate hua rakau, hua whenua, native trees and green spaces</td>
<td>Statistics NZ / MFE Environmental Indicators</td>
<td>3 years? (national trends)</td>
<td>Trends not recently reported</td>
</tr>
<tr>
<td>Built Environment</td>
<td>Extent of terrestrial, freshwater and marine environments formally (as a percentage of total area)</td>
<td>Not captured regionally</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Built Environment</td>
<td>Percentage of annual dwelling consents within 1,000m of a train or busway station (rapid transit network stations)</td>
<td>Auckland Monthly Housing Update (RIMU)</td>
<td>6 months</td>
<td>Increasing</td>
</tr>
<tr>
<td>Built Environment</td>
<td>Percentage of major development and infrastructure proposals that complete a climate change impact assessment, starting at the business case stage</td>
<td>Not currently monitored</td>
<td>-</td>
<td>Unknown</td>
</tr>
<tr>
<td>Built Environment</td>
<td>Quantity and value of infrastructure exposed to climate risks</td>
<td>Climate Change Risk Assessment</td>
<td>CCRA - TBC</td>
<td>Increasing (anticipated)</td>
</tr>
<tr>
<td>Built Environment</td>
<td>Percentage of residential and commercial buildings retrofitted to a high standard of energy efficiency</td>
<td>Not currently monitored</td>
<td>-</td>
<td>Unknown</td>
</tr>
<tr>
<td>Built Environment</td>
<td>Percentage of new buildings built to a sustainable design standard per annum</td>
<td>LIM data - Auckland Council</td>
<td>Annual</td>
<td>Unknown</td>
</tr>
<tr>
<td>Built Environment</td>
<td>Number of buildings located in a hazard zone</td>
<td>Auckland Emergency Management</td>
<td>Annual</td>
<td>Unknown</td>
</tr>
<tr>
<td>Built Environment</td>
<td>Percentage of buildings exposed to flood hazards</td>
<td>Climate Change Risk Assessment</td>
<td>CCRA - TBC</td>
<td>Increasing (anticipated)</td>
</tr>
<tr>
<td>Built Environment</td>
<td>Number of buildings consented in flood plains and flood prone areas per annum</td>
<td>Regulatory Services</td>
<td>Annual</td>
<td>Unknown</td>
</tr>
<tr>
<td>Built Environment</td>
<td>Tonnes of construction and demolition waste per year</td>
<td>Waste Solutions</td>
<td>Annual</td>
<td>Increasing</td>
</tr>
<tr>
<td>Area</td>
<td>Indicator</td>
<td>Source</td>
<td>Frequency of reporting</td>
<td>Current direction</td>
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<tr>
<td></td>
<td>and percentage sent to landfill</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of low carbon precincts delivered</td>
<td>Not currently monitored</td>
<td>Unknown</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Average consumption of drinking water per day per resident (in litres)</td>
<td>Watercare</td>
<td>Annually</td>
<td>Increasing</td>
</tr>
<tr>
<td>Transport</td>
<td>Petrol and diesel sales for land transport, per annum</td>
<td>Auckland Transport</td>
<td>Annual</td>
<td>Relatively stable (shorter-term decrease)</td>
</tr>
<tr>
<td></td>
<td>Percentage and number of internal combustion engine (ICE) light and heavy vehicles in fleet</td>
<td>Ministry of Transport</td>
<td>Monthly</td>
<td>Increasing total number</td>
</tr>
<tr>
<td></td>
<td>Percentage and number of electric vehicles and hybrid light and heavy vehicles in fleet</td>
<td>Ministry of Transport</td>
<td>Monthly</td>
<td>Increasing total number and share of all vehicles</td>
</tr>
<tr>
<td></td>
<td>Average fuel consumption/km of ICE and hybrid light and heavy vehicles in fleet</td>
<td>Ministry of Transport</td>
<td>Annual</td>
<td>Decreasing based on official values for new fleet entries</td>
</tr>
<tr>
<td></td>
<td>Average vehicle kilometres travelled per ICE light and heavy vehicles in fleet</td>
<td>Ministry of Transport</td>
<td>Annual</td>
<td>Relatively stable</td>
</tr>
<tr>
<td></td>
<td>Average vehicle kilometres travelled per electric vehicles and hybrid light and heavy vehicles in fleet</td>
<td>Ministry of Transport</td>
<td>Annual</td>
<td>Increasing (limited dataset)</td>
</tr>
<tr>
<td></td>
<td>Freight tonne kilometres moved by rail, coastal shipping and road</td>
<td>Ministry of Transport</td>
<td>Annual</td>
<td>Increasing (anticipated)</td>
</tr>
<tr>
<td></td>
<td>Public transport boardings total and per capita</td>
<td>Auckland Transport</td>
<td>Weekly</td>
<td>Increasing*</td>
</tr>
<tr>
<td></td>
<td>Cycle counts at selected sites.</td>
<td>Auckland Transport</td>
<td>Monthly</td>
<td>Increasing</td>
</tr>
<tr>
<td>Area</td>
<td>Indicator</td>
<td>Source</td>
<td>Frequency of reporting</td>
<td>Current direction</td>
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</tr>
<tr>
<td>Cycling mode share</td>
<td>National Household Travel Survey</td>
<td>Periodic</td>
<td>Unclear</td>
<td></td>
</tr>
<tr>
<td>Walking mode share</td>
<td>National Household Travel Survey</td>
<td>Periodic</td>
<td>Unclear</td>
<td></td>
</tr>
<tr>
<td><strong>Economy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percentage change in total solid waste generation per annum</td>
<td>Waste Solutions</td>
<td>Annual</td>
<td>Increasing</td>
<td></td>
</tr>
<tr>
<td>Percentage change in domestic kerbside refuse per capita per annum</td>
<td>Waste Solutions</td>
<td>Quarterly</td>
<td>Decreasing</td>
<td></td>
</tr>
<tr>
<td>Business innovation in Auckland ($NZ)</td>
<td>ATEED</td>
<td>Annual</td>
<td>Static</td>
<td></td>
</tr>
<tr>
<td>Number of Auckland businesses disclosing their climate risks and/or greenhouse gas emissions in their annual plan</td>
<td>Not currently monitored</td>
<td>-</td>
<td>Unknown</td>
<td></td>
</tr>
<tr>
<td>Value of sustainable finance instruments pursued by Auckland businesses ($NZ)</td>
<td>Not currently monitored</td>
<td>-</td>
<td>Unknown</td>
<td></td>
</tr>
<tr>
<td>Number of jobs created for the green economy (or percentage of employment in the green economy)</td>
<td>The number of jobs per industry is monitored by council but the number of green jobs isn’t currently monitored</td>
<td>-</td>
<td>Unknown</td>
<td></td>
</tr>
<tr>
<td>Percentage change in the average wage in Auckland</td>
<td>ATEED</td>
<td>Annual</td>
<td>Increase</td>
<td></td>
</tr>
<tr>
<td>Number of businesses adopting regenerative business models</td>
<td>Not currently monitored</td>
<td></td>
<td>Unknown</td>
<td></td>
</tr>
<tr>
<td>Percentage of Auckland Council Group supplier contracts with carbon reduction KPI’s</td>
<td>Not currently monitored but can be by</td>
<td>Annual</td>
<td>Unknown</td>
<td></td>
</tr>
</tbody>
</table>

*Further work required to regionalise some vehicle and trip data.
*Trend prior to COVID-19. Presently, industry is recovering.*
<table>
<thead>
<tr>
<th>Area</th>
<th>Indicator</th>
<th>Source</th>
<th>Frequency of reporting</th>
<th>Current direction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Environmental impact and social cost of economic production and consumption</td>
<td>Auckland Council Group</td>
<td>-</td>
<td>Increasing</td>
</tr>
<tr>
<td></td>
<td>Percentage change in tCO2e per million NZ GDP</td>
<td>Auckland’s GHG inventory</td>
<td>Annual</td>
<td>Decreasing</td>
</tr>
<tr>
<td>Communities and Coast</td>
<td>Percentage of Aucklanders that are aware of and concerned about climate change</td>
<td>Public Perceptions Survey</td>
<td>TBC</td>
<td>Unknown</td>
</tr>
<tr>
<td></td>
<td>Percentage of Aucklanders that are willing to change their lifestyle to ensure we meet our climate commitments</td>
<td>Public Perceptions Survey</td>
<td>TBC</td>
<td>Unknown</td>
</tr>
<tr>
<td></td>
<td>Number of Aucklanders engaged in living a low carbon lifestyle</td>
<td>Education and Community Climate Action</td>
<td>Annual</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Percentage of Aucklanders that feel connected to their local communities and empowered to take action together</td>
<td>Auckland Emergency Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of Coastal Compartment Management Plans delivered</td>
<td>Coastal Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of Community Climate Action Plans delivered</td>
<td>Education and Community Climate Action</td>
<td>Annual</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of households, schools and organisations adopting and utilising climate-resilient strategies</td>
<td>Not currently monitored</td>
<td>Every 5 years from 2023 (suggested)</td>
<td>Unknown</td>
</tr>
<tr>
<td></td>
<td>Number of schools engaged in sustainability education</td>
<td>Education and Community Climate Action</td>
<td>Annual</td>
<td>Increasing</td>
</tr>
<tr>
<td>Food</td>
<td>Percentage of domestic food waste as proportion of total domestic waste going to landfill</td>
<td>Solid Waste Analysis Protocol</td>
<td>Annual</td>
<td>Decreasing</td>
</tr>
<tr>
<td>Area</td>
<td>Indicator</td>
<td>Source</td>
<td>Frequency of reporting</td>
<td>Current direction</td>
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<td>---------------------------------------------------------------------------</td>
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</tr>
<tr>
<td></td>
<td>Tonnes of domestic food waste going to landfill</td>
<td>Solid Waste Analysis Protocol</td>
<td>3-yearly</td>
<td>Increasing</td>
</tr>
<tr>
<td></td>
<td>Percentage of commercial food waste as proportion of total commercial waste going to landfill</td>
<td>Solid Waste Analysis Protocol</td>
<td>Annual - from the time NPS-HPL is defined for Auckland</td>
<td>Decreasing</td>
</tr>
<tr>
<td></td>
<td>Tonnes of commercial food waste going to landfill</td>
<td>Solid Waste Analysis Protocol</td>
<td>2-yearly</td>
<td>Increasing</td>
</tr>
<tr>
<td></td>
<td>Percentage of urban Aucklanders within 1km of a source of fresh seasonal produce</td>
<td>Not currently monitored</td>
<td>-</td>
<td>Unknown</td>
</tr>
<tr>
<td></td>
<td>Percentage of Highly Productive Land protected</td>
<td>Plans and Places</td>
<td></td>
<td>Decreasing</td>
</tr>
<tr>
<td></td>
<td>Percentage change in domestic plant-based diet consumption</td>
<td>People’s perceptions survey</td>
<td>Annual</td>
<td>Increasing</td>
</tr>
<tr>
<td></td>
<td>Soil health indicators (e.g. nutrient levels)</td>
<td>State of the Environment Report</td>
<td>Annual</td>
<td>Decreasing</td>
</tr>
<tr>
<td></td>
<td>Number of jobs relating to a sustainable food economy</td>
<td>Not currently monitored</td>
<td>Annual</td>
<td>Increasing</td>
</tr>
<tr>
<td></td>
<td>Number of marae and Māori led programmes connecting people with Mātauranga Māori to grow food</td>
<td>Not currently monitored</td>
<td>Annual</td>
<td>Increasing</td>
</tr>
<tr>
<td></td>
<td>Percentage of Auckland Council land being managed with regenerative practices</td>
<td>Community Facilities - Farm Business &amp; Operations</td>
<td>Annual</td>
<td>Static</td>
</tr>
<tr>
<td></td>
<td>Number of approved developments that incorporate hua rakau, hua whenua, native trees and green spaces</td>
<td>IMSB measure</td>
<td>3-yearly</td>
<td>Unknown</td>
</tr>
<tr>
<td></td>
<td>Number of green spaces, mahinga kai, Maara kai and hua whenua incorporated in urban design projects</td>
<td>IMSB measure</td>
<td>Annual - from the time NPS-HPL is defined for Auckland</td>
<td>Unknown</td>
</tr>
<tr>
<td>Area</td>
<td>Indicator</td>
<td>Source</td>
<td>Frequency of reporting</td>
<td>Current direction</td>
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<td>---------------------------------------------------------------------------</td>
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<td>-------------------</td>
</tr>
<tr>
<td>Energy and Industry</td>
<td>Percentage change in emissions from electricity consumption</td>
<td>Auckland’s GHG inventory</td>
<td>Annually</td>
<td>Decreasing</td>
</tr>
<tr>
<td></td>
<td>Percentage change in emissions from stationary fuel combustion (e.g. process heat)</td>
<td>Auckland’s GHG inventory</td>
<td>Annually</td>
<td>Decreasing</td>
</tr>
<tr>
<td></td>
<td>Percentage change in emissions from industrial processes</td>
<td>Auckland’s GHG inventory</td>
<td>Annually</td>
<td>Increasing</td>
</tr>
<tr>
<td></td>
<td>Percentage change in emissions from industrial product use</td>
<td>Auckland’s GHG inventory</td>
<td>Annually</td>
<td>Increasing</td>
</tr>
<tr>
<td></td>
<td>Percentage of grid electricity generated from renewable sources</td>
<td>MBIE</td>
<td>Annually</td>
<td>Increasing</td>
</tr>
<tr>
<td></td>
<td>Installed generation capacity of local and regional decentralised renewable energy solutions</td>
<td>Electricity Authority</td>
<td>3 – 4 years</td>
<td>Increasing</td>
</tr>
<tr>
<td></td>
<td>Percentage change in total stationary energy use</td>
<td>Auckland’s GHG inventory</td>
<td>Annually</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Percentage change in total electricity use</td>
<td>MBIE</td>
<td>Annually</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Percentage change in peak electricity use</td>
<td>Electricity Authority</td>
<td>Monthly</td>
<td></td>
</tr>
</tbody>
</table>
## Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active modes</td>
<td>Walking and cycling.</td>
</tr>
<tr>
<td>Active transport</td>
<td>Relates to physical activity undertaken as a means of transport and not purely as a form of recreation.</td>
</tr>
<tr>
<td>Adaptation</td>
<td>Actions taken to help communities and ecosystems cope with changing climate condition (United Nations Framework Convention on Climate Change) OR Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities (IPCC).</td>
</tr>
<tr>
<td>Asset</td>
<td>An item of value owned by a person or company.</td>
</tr>
<tr>
<td>Atua</td>
<td>Translation to be confirmed</td>
</tr>
<tr>
<td>Awhi</td>
<td>The Māori word for surround or embrace. (translation to be confirmed)</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>The natural environment and encompasses native plants and animals (flora and fauna), ecology, natural heritage, ecological restoration and revegetation, landforms, geology.</td>
</tr>
<tr>
<td>Blue-green economy</td>
<td>This concept ensures the maintenance of biodiversity and its values in relation to economic and social development.</td>
</tr>
<tr>
<td>Canopy cover</td>
<td>The percentage of urban land covered by a layer of trees or vegetation (3m or taller) when viewed from above.</td>
</tr>
<tr>
<td>Carbon budgets</td>
<td>A tolerable quantity of greenhouse gas emissions that is emitted in total over a specified time. The budget needs to be in line with what is scientifically required to keep global warming within our target and thus climate change “tolerable.”</td>
</tr>
<tr>
<td>Carbon footprint</td>
<td>The amount of carbon dioxide released into the atmosphere by the activities of a people, organisations and communities.</td>
</tr>
<tr>
<td>Carbon sequestration</td>
<td>A natural or artificial process by which carbon dioxide is removed from the atmosphere and held in solid or liquid form.</td>
</tr>
<tr>
<td>Circular economy</td>
<td>A circular economy is characterised as one which is regenerative by design. It aims to retain as much value as possible of products, parts and materials. This should create a system that allows for the long life, optimal reuse, refurbishment, remanufacturing and recycling of products and materials.</td>
</tr>
<tr>
<td>Circular principles</td>
<td>The three key principles of circular economy are:</td>
</tr>
<tr>
<td>Climate impacts</td>
<td>A marked effect or influence of climate change.</td>
</tr>
<tr>
<td>Climate migrant</td>
<td>Persons displaced in the context of disasters and climate change.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Climate resilience</td>
<td>The ability of a system and its component parts to anticipate, absorb, accommodate, or recover from the effects of a hazardous event in timely and efficient manner. This includes ensuring the preservation, restoration, or improvement of its essential basic structures and functions.</td>
</tr>
<tr>
<td>Climate risks</td>
<td>The exposure to climate related danger, harm or loss.</td>
</tr>
<tr>
<td>Climate-compatible development</td>
<td>A form of building that integrates climate risk management, adaptation and mitigation.</td>
</tr>
<tr>
<td>Climate-proof</td>
<td>The ability of a system and its component parts to anticipate, absorb, accommodate, or recover from the effects of a hazardous event in timely and efficient manner, including through ensuring the preservation, restoration, or improvement of its essential basic structures and functions.</td>
</tr>
<tr>
<td>Coastal and marine ecosystems</td>
<td>The natural environment, habitats and species located in open ocean areas, nearshore coastal areas, areas where freshwater and saltwater mix, and certain terrestrial ecosystems near the coast, such as sand dunes (United Nations Environment Programme).</td>
</tr>
<tr>
<td>Coastal erosion</td>
<td>The loss of coastal lands due to the net removal of sediments or bedrock from the shoreline.</td>
</tr>
<tr>
<td>Decarbonise</td>
<td>Reduce the amount of gaseous carbon compounds released in or as a result of (an environment or process).</td>
</tr>
<tr>
<td>Decentralised energy</td>
<td>Energy generated off the main grid, including micro-renewables, heating and cooling.</td>
</tr>
<tr>
<td>Ecosystem</td>
<td>A community of plants, animals and other organisms that function together as a unit along with their environment.</td>
</tr>
<tr>
<td>Electric and zero emissions vehicles</td>
<td>Transportation options that do not result in any harmful emissions (have a negative impact on the environment or human health) during vehicle operation.</td>
</tr>
<tr>
<td>Electrification</td>
<td>The process of making something operate using electricity where it did not before, e.g. converting the current train tracks so that electric trains can operate on them.</td>
</tr>
<tr>
<td>Emissions</td>
<td>The production and discharge of something e.g. the production and discharge of greenhouse gases into the atmosphere.</td>
</tr>
<tr>
<td>Emissions modelling</td>
<td>An annual estimate of emission for a wide range of important pollutants, including air quality pollutants and greenhouse gases.</td>
</tr>
<tr>
<td>Equitable</td>
<td>Actions and decisions that are fair and just.</td>
</tr>
<tr>
<td>Equity</td>
<td>The quality of being fair.</td>
</tr>
<tr>
<td>Flood risk</td>
<td>Storms were in the past generally modelled as 2, 5 and 100-year events to give an idea of the magnitude of each. These are now called 50 per cent, 20 per cent and 1 per cent respectively. They refer to the likelihood of the storm happening in any one year.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Food security</td>
<td>A situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.</td>
</tr>
<tr>
<td>Freight systems</td>
<td>The network of goods transported by truck, train, ship or plane.</td>
</tr>
<tr>
<td>Geothermal energy</td>
<td>Clean and sustainable energy sourced from beneath the earth's surface.</td>
</tr>
<tr>
<td>Green space</td>
<td>An area of undeveloped land, partly or completely covered with grass, trees or vegetation.</td>
</tr>
<tr>
<td>Greenhouse gas emissions (GHG)</td>
<td>Gases emitted to the atmosphere which contribute to the greenhouse gas effect where more than the normal amount of atmospheric heat is retained in the atmosphere. These emissions include water vapour, carbon dioxide, nitrous oxide, methane, ozone, halocarbons and other chlorine and bromine-containing substances.</td>
</tr>
<tr>
<td>Gross Domestic Product (GDP)</td>
<td>The monetary value of all goods and services produced within a nation’s geographic borders over a specified period of time.</td>
</tr>
<tr>
<td>Gross emissions</td>
<td>The total discharges of greenhouse gases from human activity into the atmosphere (e.g. from energy, industrial processes, agriculture, and waste activities) and is usually expressed as CO2 equivalence per year.</td>
</tr>
<tr>
<td>Hapū</td>
<td>A number of whānau sharing descent from a common ancestor; kinship group, sub-tribe. (translation to be confirmed)</td>
</tr>
<tr>
<td>Hinemoana</td>
<td>The female ancestor with continuing influence over the sea. (translation to be confirmed)</td>
</tr>
<tr>
<td>Hui</td>
<td>Social gathering or meeting. (translation to be confirmed)</td>
</tr>
<tr>
<td>Indigenous biodiversity</td>
<td>Biodiversity is short for biological diversity. It describes the variability among living organisms, and the ecological complexes of which they are a part, including diversity within species, between species, and of ecosystems. Indigenous biodiversity includes individual birds, plants, fish, insects and other species that are specific and/or native to New Zealand. There are many examples, such as kiwi, tui, inanga (whitebait), weta, and ti Kouka (cabbage tree).</td>
</tr>
<tr>
<td>Indigenous ecosystems</td>
<td>A biological system comprising a community of living organisms and its associated non-living environment, interacting as an ecological unit that occur naturally in New Zealand, including self-introduced species, but not human-introduced ones.</td>
</tr>
<tr>
<td>Inequitable</td>
<td>Unfair or unjust.</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>The structures, systems and facilities that support daily life such as water supply, roads and communications, including social infrastructure.</td>
</tr>
<tr>
<td>Intergenerational</td>
<td>Relating to, involving, or affecting several generations.</td>
</tr>
<tr>
<td>Intergenerational equity</td>
<td>Ensuring that future generations are not unfairly disadvantaged (or burdened) with the impacts and costs of previous decision making</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
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</tr>
<tr>
<td>Invasive species</td>
<td>An introduced species that is believed to spread and cause damage to the environment, human economy or human health.</td>
</tr>
<tr>
<td>Iwī</td>
<td>A number of hapū (section of a tribe) related through a common ancestor. (translation to be confirmed)</td>
</tr>
<tr>
<td>Just Transition</td>
<td>Place-based set of principles, processes, and practices used to secure workers’ jobs and livelihoods when economies are shifting to sustainable production.</td>
</tr>
<tr>
<td>Kai</td>
<td>Sustenance such as food or water. (translation to be confirmed)</td>
</tr>
<tr>
<td>Kaitiaki</td>
<td>Trustee, custodian, guardian. (translation to be confirmed)</td>
</tr>
<tr>
<td>Kaitiakitanga</td>
<td>Guardianship, including stewardship; the processes and practices of looking after the environment. (translation to be confirmed)</td>
</tr>
<tr>
<td>Karauna</td>
<td>The Crown</td>
</tr>
<tr>
<td>Kaunihera</td>
<td>Council</td>
</tr>
<tr>
<td>Kaupapa</td>
<td>Translation to be confirmed</td>
</tr>
<tr>
<td>Low carbon food</td>
<td>Low carbon food refers to foods that produce less carbon emissions during production, processing, distribution, preparation and disposal. Includes foods produced using low carbon farming technologies and organic fertilisers, food that is locally produced and therefore has lower food miles, and food with intrinsically lower biological emissions such as plants.</td>
</tr>
<tr>
<td>Low emissions zones</td>
<td>A defined area where access by some polluting vehicles is restricted or deterred with the aim of improving the air quality.</td>
</tr>
<tr>
<td>Low impact lifestyles</td>
<td>Having less impact on the environment and society by reducing an individual’s carbon footprint.</td>
</tr>
<tr>
<td>Mahinga kai</td>
<td>Translation to be confirmed</td>
</tr>
<tr>
<td>Mana</td>
<td>Authority, status, prestige</td>
</tr>
<tr>
<td>Mana Whenua</td>
<td>Hapū and iwī with ancestral relationships to certain areas in Tāmaki Makaurau where they exercise customary authority. (translation to be confirmed)</td>
</tr>
<tr>
<td>Manaaki</td>
<td>Generosity; support, provide hospitality and care of others. (translation to be confirmed)</td>
</tr>
<tr>
<td>Manaakitanga</td>
<td>The process of showing respect, hospitality, generosity and care for others. (translation to be confirmed)</td>
</tr>
<tr>
<td>Marae</td>
<td>The enclosed space in front of a wharenuī (meeting house) where people gather. (translation to be confirmed)</td>
</tr>
<tr>
<td>Maramataka</td>
<td>Māori lunar calendar</td>
</tr>
<tr>
<td>Marine ecosystems</td>
<td>Living organisms and non-living structures in the ocean environment, and their complex relationships to each other.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>----------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Mataawaka</td>
<td>Māori who live in Auckland and are not within a Mana Whenua group. (translation to be confirmed)</td>
</tr>
<tr>
<td>Mātauranga</td>
<td>Māori knowledge and expertise. (translation to be confirmed)</td>
</tr>
<tr>
<td>Matauranga Māori</td>
<td>Māori knowledge – sciences. (translation to be confirmed)</td>
</tr>
<tr>
<td>Maunga</td>
<td>Mountain, mount or peak. Also refers to volcanic cones. (translation to be confirmed)</td>
</tr>
<tr>
<td>Mauri</td>
<td>Life principle, life force, vital essence. The essential quality and vitality of a being or entity. (translation to be confirmed)</td>
</tr>
<tr>
<td>Mega-tonnes</td>
<td>A million tons.</td>
</tr>
<tr>
<td>Mitigation</td>
<td>The action of reducing the severity, harm and seriousness of climate change through emissions reduction.</td>
</tr>
<tr>
<td>Moana</td>
<td>Sea, ocean</td>
</tr>
<tr>
<td>Natural asset</td>
<td>Things of value in the natural environment including land and water areas with their ecosystems, subsoil assets and air.</td>
</tr>
<tr>
<td>Natural carbon assets</td>
<td>Natural features, e.g. wetlands and shrublands, that actively remove carbon dioxide from the atmosphere through photosynthesis, a process called carbon sequestration.</td>
</tr>
<tr>
<td>Net emissions</td>
<td>1. Net- The expression 'net of' represents the exclusion of something. Emissions- The production and discharge of something, especially gas or radiation.</td>
</tr>
<tr>
<td></td>
<td>2. &quot;Net emissions&quot; means gross emissions (including all industrial activities, mostly fossil fuel combustion) minus carbon sinks from forestry activities and agricultural soils. The emissions may include carbon dioxide, methane, nitrous oxide, sulphur hexafluoride, hydrofluorocarbons, and perfluorocarbons.</td>
</tr>
<tr>
<td></td>
<td>3. Net emissions include emissions and removals from land-use change and forestry (LUCEF).</td>
</tr>
<tr>
<td>Net positive energy</td>
<td>More energy is produced than consumed. A net positive energy building produces more energy, over a calendar year, than needed for the building to operate.</td>
</tr>
<tr>
<td>Net zero</td>
<td>Net-zero emissions describes a situation whereby the amount of greenhouse gases emitted into the atmosphere is equal to the amount sequestered or offset (e.g. by forestry).</td>
</tr>
<tr>
<td>Net zero emissions</td>
<td>The total of a country's/city's emissions across all sources, minus offsets from land use, land-use change and forestry.</td>
</tr>
<tr>
<td>Ngahere</td>
<td>Forest</td>
</tr>
<tr>
<td>Ocean acidification</td>
<td>The absorption of carbon dioxide by seawater ultimately reducing its pH.</td>
</tr>
<tr>
<td><strong>Papatūanuku</strong></td>
<td>Mother Earth</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------</td>
</tr>
<tr>
<td><strong>Pou</strong></td>
<td>Pillars (Translation to be confirmed)</td>
</tr>
<tr>
<td><strong>Pre-industrial levels</strong></td>
<td>The global average CO2 levels before the Industrial Revolution (1750).</td>
</tr>
<tr>
<td><strong>Primary industries</strong></td>
<td>A mix of businesses who produce, process and move goods around New Zealand and export to countries around the world. Primary industries of importance to New Zealand include agriculture, forestry, horticulture and seafood.</td>
</tr>
<tr>
<td><strong>Process emissions</strong></td>
<td>The greenhouse gas emissions produced from a variety of industrial activities which are not related to energy.</td>
</tr>
<tr>
<td><strong>Process heat emissions</strong></td>
<td>Greenhouse gas emissions from systems to produce thermal energy, in the form of steam, hot water and direct heat systems, that is used in organisations.</td>
</tr>
<tr>
<td><strong>Prosperity</strong></td>
<td>Being successful or thriving, particularly referring to economic and cultural wellbeing.</td>
</tr>
<tr>
<td><strong>Puna wai</strong></td>
<td>Freshwater springs (Translation to be confirmed)</td>
</tr>
<tr>
<td><strong>Pūrākau</strong></td>
<td>Traditional stories, history and narratives. (translation to be confirmed)</td>
</tr>
<tr>
<td><strong>Quality compact urban form</strong></td>
<td>Future development that is focused in existing and new urban areas within Auckland’s urban footprint, limiting expansion into the rural hinterland. This future development maximises efficient use of land and delivers necessary infrastructure.</td>
</tr>
<tr>
<td><strong>Rangatahi</strong></td>
<td>Youth, younger generation. (translation to be confirmed)</td>
</tr>
<tr>
<td><strong>Renewable energy</strong></td>
<td>Renewable energy comes from sources that are naturally replenished in a relatively short timeframe. Sunlight, wind, water and geothermal heat are all renewable energy sources.</td>
</tr>
<tr>
<td><strong>Repō</strong></td>
<td>Wetlands. (translation to be confirmed)</td>
</tr>
<tr>
<td><strong>Resilience</strong></td>
<td>The ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management.</td>
</tr>
<tr>
<td><strong>Retrofit</strong></td>
<td>Add components or accessories to something that did not have it when first made.</td>
</tr>
<tr>
<td><strong>Retrofitting</strong></td>
<td>The action of retrofit.</td>
</tr>
<tr>
<td><strong>Riparian fencing</strong></td>
<td>Fencing of waterways to improve aquatic habitat for fish and other species, improve water quality through reduced input of faecal nutrients and sediments and increase bank stability, by excluding stock and creating a buffer between the water and the land.</td>
</tr>
<tr>
<td><strong>Riparian planting</strong></td>
<td>Planting along the edge of streambanks, wetlands, buffer zones and estuary margins rivers/streams to help improve water flows, prevent land erosion,</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Road pricing schemes</td>
<td>An arrangement to introduce a price to enter one particular part of the city during the day.</td>
</tr>
<tr>
<td>Roopu</td>
<td>Group, party of people. (translation to be confirmed)</td>
</tr>
<tr>
<td>Sequestration</td>
<td>The net removal and storage of carbon from the atmosphere in ‘carbon sinks’ (e.g. plants, oceans, soils).</td>
</tr>
<tr>
<td>Storm surges</td>
<td>An abnormal rise in seawater level during a storm caused by winds pushing water onshore.</td>
</tr>
<tr>
<td>Supply chains</td>
<td>The sequence of processes involved in the production and distribution of a commodity.</td>
</tr>
<tr>
<td>Sustainable design</td>
<td>Sustainable design seeks to reduce negative impacts on the environment, and the health of communities, thereby improving product performance. The basic objectives of sustainability are to reduce consumption of non-renewable resources, minimize waste, and create healthy, productive environments.</td>
</tr>
<tr>
<td>Taiao</td>
<td>Natural resources. (translation to be confirmed)</td>
</tr>
<tr>
<td>Tāmaki Makaurau</td>
<td>The Māori name for Auckland. Translates to Tāmaki desired by many. (translation to be confirmed)</td>
</tr>
<tr>
<td>Tangata pasifika whānaunga</td>
<td>Pasifika relatives. (translation to be confirmed)</td>
</tr>
<tr>
<td>Taonga</td>
<td>A treasured item, tangible or intangible. (translation to be confirmed)</td>
</tr>
<tr>
<td>Te ao Māori</td>
<td>The Māori world, or the Māori world view. (translation to be confirmed)</td>
</tr>
<tr>
<td>Te Moana-nui-a-Kiwa</td>
<td>Pacific Ocean. (translation to be confirmed)</td>
</tr>
<tr>
<td>Te Tiriti o Waitangi</td>
<td>The Treaty of Waitangi which is the document upon which the British and Māori agreed to found a nation state and build a government. (translation to be confirmed)</td>
</tr>
<tr>
<td>Teina</td>
<td>(translation to be confirmed)</td>
</tr>
<tr>
<td>Tohu</td>
<td>Sign. (translation to be confirmed)</td>
</tr>
<tr>
<td>Transit-oriented development</td>
<td>A type of development that maximises the amount of residential, business and leisure space within walking distance of public transport.</td>
</tr>
<tr>
<td>Tūpuna</td>
<td>Ancestors or grandparents. Alternative - tipuna. Singular - tupuna. (translation to be confirmed)</td>
</tr>
<tr>
<td>Tupuna ātua</td>
<td>(translation to be confirmed)</td>
</tr>
<tr>
<td>Tūrangawaewae</td>
<td>Ancestral standing place. (translation to be confirmed)</td>
</tr>
<tr>
<td>Urban Ngahere</td>
<td>Urban forest, consists of the network of all trees and other vegetation – both native and introduced – in existing and future urban areas. (translation to be confirmed)</td>
</tr>
<tr>
<td>--------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Urupā</td>
<td>Burial ground, cemetery, graveyard. (translation to be confirmed)</td>
</tr>
<tr>
<td>Viable soils</td>
<td>Soils that are fertile.</td>
</tr>
<tr>
<td>Waahi tapu</td>
<td>A place, site or object which is sacred to Māori in the traditional, spiritual, religious, ritual or mythological sense. (translation to be confirmed)</td>
</tr>
<tr>
<td>Wai</td>
<td>Water.</td>
</tr>
<tr>
<td>Wānanga</td>
<td>(translation to be confirmed)</td>
</tr>
<tr>
<td>Whakamana Te Tiriti</td>
<td>(translation to be confirmed)</td>
</tr>
<tr>
<td>Whakapapa</td>
<td>Genealogy that links Māori to their ancestors. (translation to be confirmed)</td>
</tr>
<tr>
<td>Whānau</td>
<td>Extended family, family group, a familiar term of address to a number of people. Also the primary economic unit of traditional Māori society. (translation to be confirmed)</td>
</tr>
<tr>
<td>Whanaungatanga</td>
<td>Relationship, kinship, sense of family connection. A relationship through shared experiences and working together which provides people with a sense of belonging. (translation to be confirmed)</td>
</tr>
<tr>
<td>Whare</td>
<td>Dwelling, shelter. (translation to be confirmed)</td>
</tr>
<tr>
<td>Whenua</td>
<td>Land, country, earth or ground. (translation to be confirmed)</td>
</tr>
<tr>
<td>Zero and low emissions vehicles</td>
<td>Vehicles that emit no emissions or relatively low emissions. For example, electric vehicles and hydrogen-fuelled vehicles.</td>
</tr>
<tr>
<td>Zero carbon</td>
<td>Not releasing carbon dioxide into the atmosphere or removing the same amount of carbon dioxide from the atmosphere as produced e.g. by an activity, building or organisation.</td>
</tr>
<tr>
<td>Zero emissions vehicles</td>
<td>A vehicle that emits no chemical substances into the atmosphere from the onboard source of power.</td>
</tr>
</tbody>
</table>
Level 3 further information: Notes to reviewer

‘Level 3’ text is more detailed further information intended for technical experts and those with more granular interest in the plan.

All Level 3 information is collated here for ease of review. These sections are linked throughout the plan. They are listed here in the order they appear in the plan.

L3: Responding to our climate emergency

We are seeing millions of people around the world take strike action, led by youth calling for a safe climate future. People across Aotearoa / New Zealand have called for decisions and action to protect our regions – and our planet – from the impacts of climate change.

In June 2019, Auckland Council responded to this call and the irrefutable evidence of climate change by declaring that a climate emergency is facing our region.

By declaring a climate emergency, the council is committing to:

- continue to robustly and visibly incorporate climate change considerations into work programmes and decisions
- continue to provide strong local government leadership in the face of climate change, including working with local and Central Government partners to ensure a collaborative response
- continue to advocate strongly for greater Central Government leadership and action on climate change
- continue to increase the visibility of our climate change work
- continue to lead by example in monitoring and reducing the council’s greenhouse gas emissions
- include climate change impact statements on all council committee reports.

Responding to the climate emergency will require rapid and transformational change in how we live, work and travel. Our eight priorities identify the actions we need to take in our emergency response.

L3: Impacts of climate change for Māori

Indigenous peoples constitute less than five per cent of the world’s population, but they safeguard 80 per cent of the world’s biodiversity. The global response to climate change requires applying all the best knowledge available, including the perspectives of indigenous peoples. Indigenous peoples are not only among the most vulnerable to the impacts of climate change, they also hold many of the solutions to adapting to it.

Te ao Māori (the Māori world) calls for the protection and preservation of all that is culturally significant, to protect and preserve our taonga (resources). The legacy of our ancestors that we in turn leave for future generations, lies in the balance.

The impacts of climate change on the cultural, social, environmental, and economic wellbeing of Māori are potentially profound. Māori communities are already vulnerable and many marae, wāhi tapu and papakāinga are located in rural coastal communities.

These implications include:
• Being predominantly coastal people, mana whenua relationships to ancestral taonga, cultural knowledge and practices are at risk. Sea rise is compromising wāhi tapu (sacred sites), Māori land holdings, marae and other significant sites.
• There will also be potential socio-economic impacts on whanau (families). Proposed responses to climate may present a further disadvantage for Māori.
• Whānau Māori (Māori families) who are already in a precarious financial position, have less access to resources to respond to rapidly worsening conditions.
• Marae, urupā (burial grounds) and wāhi tapu (sacred sites) will be exposed to inundation and flooding.
• The indigenous flora and fauna are under threat from a changing environment, particularly where those changes are so fast or significant that species cannot adapt or are overrun by exotic invasive species that can.

Those climate migrants within Tāmaki Makaurau and our Pacific island whānau will require additional support.

L3: Mana Whenua Kaitiaki Forum

The Mana Whenua Kaitiaki Forum is a governance forum of the 19 hapū and iwi authorities of Tāmaki Makaurau. The vision of the forum is for mana whenua and mataawaka to be thriving and leading in Tāmaki Makaurau. Their mission is to partner on all collective decisions that shape Tāmaki Makaurau. Their partnership approach is guided by five pou (pillars):

• Governance: Te Tiriti partner
• Culture and identity: Seen, heard, felt and celebrated
• Natural environment: Te tāiao, te wai, te hau are thriving and cared for
• Wellbeing: Whānau are happy, healthy, thriving, and achieving
• Economic: Economic force at the whānau, hapū and iwi levels

L3: Mana whenua and council partnership for climate change

Te ao Māori (the Māori world) acknowledges the interrelationship of all living and non-living things and the interconnectedness of tāiao (the natural environment) and tangata (people). A te ao Māori perspective can help us identify ways to adapt and prepare for climate change, and to change our practices to reduce the impacts of climate change.

In the Tāmaki Makaurau context, a te ao Māori perspective guided by mana whenua is fundamental to navigate and develop Auckland’s approach to taking action on climate change. The council has understood and honoured this, partnering with mana whenua iwi of Tāmaki Makaurau in the development of the plan.

In the very early stages of planning, all mana whenua iwi of Tāmaki Makaurau were invited to participate in workshop hui to input into scoping the action areas for the public consultation document. These and other early interactions with mana whenua iwi shaped the action areas in the initial consultation document, now referred to as priorities, and also set the foundation for how the plan has developed with input from mana whenua and other rōpū Māori (Māori groups).

The Mana Whenua Kaitiaki Forum, a collective of the 19 hapū and iwi authorities of Tāmaki Makaurau, worked closely with the council throughout the development of the plan. The forum set up a working group with representatives from the forum, the council and Māori subject matter experts to focus on supporting the development of climate actions for Tāmaki Makaurau. This partnership has been
instrumental in ensuring the incorporation of kaupapa Māori (Māori approach) and mātauranga-a-īwi (tribal knowledge and its relationship to its land base) values and principles into the plan from the outset.

The council and forum partnership also supported the contribution of a Māori subject matter expert rōpū (group) and rangatahi Māori rōpū (Māori youth collectives) to contribute and participate in the development of the plan.

During the consultation phase of the plan, mana whenua and the council piloted a parallel engagement approach to support and activate Māori communities on climate change issues. With direction from the Mana Whenua Kaitiaki Forum, an intergenerational whakapapa centred approach was undertaken to support whānau to reconnect with the atua and ultimately, their responsibility to care for taiao.

The shared objectives of this partnership approach were to:

- share mana whenua and Māori narratives of climate change
- provide Māori communities with a greater understanding of climate change
- provide Māori communities with places to share their whakaaro (thoughts and opinions) of climate change
- increase Māori engagement and feedback on the draft plan during the council’s consultation period
- seek out and secure opportunities for collective activations in the short and long term.

To seed the kōrero (discussion) of climate change action with Māori in a way that was meaningful and accessible for Māori, mana whenua ā iwī were given the opportunity to lead wānanga, hui and other community activations in their rohe (tribal area). These activations included:

- local and sub-regional events at marae, hosted by mana whenua and community partners
- rangatahi-led activations
- social media, radio and online campaigns
- linking up with existing events, such as Hikoi te kōrero (Māori language week marches) and Poukai.

Feedback from these activations helped the council to make some immediate improvements to the formal consultation process, including the development of different consultation submission forms that acknowledge the needs of different Māori communities and audiences.

The breadth and depth of engagement with Māori and Māori communities that was achieved as a result of this partnership approach was a council first, setting a new benchmark of 25 per cent Māori consultation response through formal submissions.

In summary, during the consultation and targeted engagement phase of the plan, mana whenua and the council were able to deliver:

- 27% formal submissions from Māori via consultation submission forms (3 different forms were developed to acknowledge the needs of different Māori communities/audiences)
- 9+ activations with over >350 attendees
- Social media engagement and coverage:
  - Te Tāruke-ā-Tawhiri website and Facebook page: < 33.8k views
  - Te Karere coverage of Hapai Te Hauora activation: 3.6k views via facebook (https://www.facebook.com/tekareremaorinews/videos/1187829651409319/)
- Radio Waatea coverage:
  - Climate panel video: Haylee Koroi, Matua Rereata Makiha, Mason Ngawhika - total views 7.1k (https://www.facebook.com/waateanews/videos/437154876918514/)

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L3: Development of Auckland Climate Plan

A successful and relevant plan needs collaboration and commitment across the region and these principles underpinned the development of Te Tāruke-ā-Tāwhiri: Auckland’s Climate Plan. Auckland Council took the lead in bringing together private sector organisations, climate change experts, central government, mana whenua, central government, public sector organisations, young people and community members.

We have worked together to develop this plan and will continue to work together to deliver this plan.

Our process took a number of steps:

- Identifying and prioritising actions
- Testing
- Refining
- Consulting and finalising

Identifying and prioritising

We spent a year collaborating to identify our priorities.

We designed and trialled a new pilot web platform, ClimateAkl.nz, to crowdsource climate action ideas from all Aucklanders and give people an opportunity to engage with the draft framework. We also reviewed previous work and worked with partner cities from the C40 Cities group to gather data, ideas and world best practice. Cross industry experts and communities also informed and prioritised actions.
Testing
We tested our ideas with a cross-sector group of experts. A group of seven experts also assessed and challenged the work. They brought technical expertise ranging from climate adaptation and energy systems, to climate finance, to how climate change affects Māori. All 170 elected members from Auckland Council have been involved in developing the plan. We also used new research to inform and test actions modelling what net zero emissions means for the region and improve our understanding of key climate risks.

Refining
We continued to collaborate with stakeholders and partners as we refined actions. We developed a set 11 key moves to deliver on emissions reduction, resilience and other outcomes and developed five scenarios to showcase what collaborative and near-term climate action looks like.

These were refined over three days at the Auckland Climate Symposium in March 2019, with participation from over 600 delegates from all sectors. A month later, the rangatahi/youth-led Conscious Climates event led to the development of actions and themes that are integrated into this framework.

Consulting and finalising
Consultation on the draft framework took place from June to September 2019 we consultation on our draft framework. We received nearly 3,000 responses from individuals through to NGOs, academia and major industry. Feedback supported the direction we were taking but asked for greater urgency and clarity of how our actions will deliver emissions reduction and prepare us for the changes we will face into the future. Our plan has reflected this feedback.

L3: C40’s Global Green New Deal
At the C40 World Mayors Summit in Copenhagen, Chair-Elect of C40 Cities and Mayor of Los Angeles Eric Garcetti, alongside the mayors of cities worldwide including Copenhagen, Paris, Rio de Janeiro, Sydney and Tokyo, announced their support for a Global Green New Deal and recognized a global climate emergency. A broad coalition – including youth climate activists, and representatives from labour, business and civil society – also announced their support. This call for a Global Green New Deal comes in response to intergovernmental action being blocked by a small number of very powerful, science-denying governments, representing the interests of the fossil-fuel industry.

Through the Global Green New Deal, cities have reaffirmed their commitment to protecting our environment, strengthening our economy, and building a more equitable future by cutting emissions from the sectors most responsible for the climate crisis – transportation, buildings, industry, and waste – to keep global heating below the 1.5°C goal of the Paris Agreement.

This includes putting inclusive climate action at the centre of all urban decision-making to secure a just transition for those working in high-carbon industries and correct long-running environmental injustices for those disproportionately impacted by the climate crisis – people living in the Global South generally, and the poorest communities everywhere.

Read about C40’s Global Green New Deal: https://www.c40.org/other/the-global-green-new-deal
L3: Rangatahi Strategic Actions

Strategic Action 1: Support, endorse and resource the establishment of a roopu that enables us to put the indigenous framework into action

What this means in practice – form an intergenerational collective, that is rangatahi-led, to act as a channel between council and stakeholders. The purpose of the collective is to manage activities to support climate action and resilience.

- Phase One: Establish trust and rapport through a series of wānanga that facilitates collective consciousness and a common agenda.
- Phase Two: Develop an indigenous measurement tool to support management, prioritisation, and measurement of the state of progress against the indigenous framework.
- Phase Three: Using a collective impact model, establish a terms of reference for working between the intergenerational collective, council and stakeholders
- Phase Four: Establish rangatahi ropu (group) to create a collective impact movement for change (that supports bringing climate justice and resilience actions to life).
  - Members represent key atua maori that are most impacted by climate change.

Strategic Action 2: Support, endorse and resource the restoration of ‘te mauri o te wai’ in accordance with our indigenous measurement tool

What this means in practice – enabling capability and capacity for ancient knowledge sharing, transformational education approaches and action that rejuvenates and regenerates our natural water systems within the Tāmaki Makaurau region.

Sub Actions:

1. ‘Ka noho’ - wairua and ngākau: Assist mana whenua to re-educate themselves, regenerate and recapture local pū rākau, waiata, mōteatea, haka and other narrative stories through various media.

2. ‘Teina’ - hinengaro: Re-educate communities and organisations across Tāmaki Makaurau, and abroad, by developing materials and providing permanent platforms and opportunities for local narratives to be shared.

3. ‘Te tangata’ - tinana: Promote, progress and fund current and emerging initiatives, programmes and groups who are actively committed to the restoration, sustainability and protection of water systems within their communities.

Strategic Action 3: Support, endorse and resource the relationship between tangata (people) and whenua (place) in accordance with our indigenous measurement tool

What this means in practice – actively partnering with hapū, iwi and recognised organisations to co-design and implement reconnection programmes for rangatahi and their whānau.

Sub Actions:

1. ‘Ka noho’ - wairua and ngākau: Assist rangatahi and their whānau to reconnect with their own pepeha and the pepeha of Tāmaki Makaurau
2. ‘Teina’ - hinengaro: prioritise ancient wisdom and cultural perspectives in co-designed programmes that address climate change issues and inspire climate action.

3. ‘Te tangata’ - tinana: Promote, progress and fund current and emerging initiatives, programmes and groups who are actively committed to the restoration, sustainability and protection of interaction between tangata and whenua systems within their communities.

**Strategic Action 4:** Support, endorse and resource food sovereignty in accordance with our indigenous measurement tool

**What this means in practice** – reconnecting people of all ages to where our sustenance comes from - how it grows and how we can be more resilient when we understand this.

**Sub Actions:**

1. ‘Ka noho’ - wairua and ngākau: Assist rangatahi to reconnect with mātauranga Māori to nurture skills and awareness around what it means to be self sufficient.

2. ‘Teina’ - hinengaro: Enable educational programmes focused on reviving ancient Māori food practices as a way to help rangatahi and their whānau understand self sovereignty beginning with food sovereignty.

3. ‘Te tangata’ - tinana: Promote, progress and fund current and emerging initiatives, programmes and groups who are actively committed to the restoration, sustainability and protection of food sovereignty systems within their communities.

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**L3: Te Tiriti o Waitangi**

**Treaty principles and Auckland Council**

Auckland Council is a delegate of the Crown exercising powers of local government in Auckland. It has statutory obligations to Māori in order to recognise and respect the Crown’s responsibility to take appropriate account of the principles of the Treaty.

The Treaty is articulated in law through an evolving set of principles.

Treaty principles have been expressed and recognised through a range of courts and the Waitangi Tribunal. They are not exhaustive, and it is recognised that other principles may be developed with time.

They must be considered holistically rather than separately due to the overlaps and synergies between them.

The following principles are relevant to local government:

- partnership
- active protection
- rangatiratanga
- reciprocity
- mutual benefit
- options
Item 8

- right of development
- redress
- informed decision making.

Te Tiriti/the Treaty is a guide for how Auckland Council fosters more positive and productive relationships with Auckland’s Māori.

(diagram below needs to be pdf)

Whiria Te Muka Tangata is Auckland Council’s Māori Responsiveness Framework. It brings together the council’s commitments and obligations to Māori. This enables Auckland Council to ensure that it considers how its policies and actions recognise and protect Māori rights and interests and contribute to Māori needs and aspirations.

The Independent Māori Statutory Board was established in Auckland and has specific responsibilities and powers under the Local Government (Auckland Council) Amendment Act 2010.

The Board’s mission is to advance the interests of Māori in Tāmaki Makaurau by:

- Helping Auckland Council to make decisions, perform functions and exercise powers that improve outcomes for Māori
- Promoting cultural, economic, environmental and social issues of significance to Māori

The Board also ensures that Auckland Council acts in accordance with statutory provisions relating to Te Tiriti o Waitangi.

If you would like to find out more about the Treaty visit the New Zealand History website.

**L3: International, national and regional commitments**

Auckland’s climate response is also directed by several international, national and regional commitments and legislative instruments.

We continue to update our climate response as these commitments evolve.
International commitments

L3: United Nations Framework Convention for Climate Change and the Paris Agreement

The United Nations Framework Convention for Climate Change (‘UNFCCC’) was adopted by over 185 countries, including New Zealand at the Rio Earth Summit in 1992.

It entered into force on 21 March 1994 and now has near-universal membership with 197 Parties to the Convention.

The UNFCCC enabled countries to collectively consider how to mitigate climate change and cope with its impacts and did several significant things:

- It recognised there was a problem
- It set a specific goal to stabilize greenhouse gas concentrations “at a level that would prevent dangerous anthropogenic (human induced) interference with the climate system”
- It put the onus on developed countries to lead the way
- It directed new funds to climate change activities in developing countries
- It set up a process to monitor the issue and actions being taken to deal with it
- It charted the beginning of a path to strike a balance between economic development and mitigating climate change
- It began formal consideration of adaptation to climate change.

The Paris Agreement is one of the most recognised agreements within the UNFCCC. It was the result of negotiations at the 21st Conference of the Parties (COP) to the UNFCCC in 2015.

The Paris Agreement entered into force on 4 November 2016, thirty days after the date on which at least 55 Parties to the UNFCCC accounting in total for at least an estimated 55 per cent of the total global greenhouse gas emissions, had ratified the Agreement.

One of the central components of the Paris Agreement was to reaffirm the long-term goal of “holding the increase in the global average temperature to well below 2 degrees Celsius above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 degrees. This has formed the basis of commitments that Auckland Council has made as members of C40 Cities and the Climate Leaders Coalition.

To deliver on the Paris Agreement, each Party to the Agreement is required to prepare, communicate and maintain successive Nationally Determined Contributions (NDCs) that it intends to achieve. New Zealand’s NDC is to reduce greenhouse gas emissions by 30 per cent below 2005 levels by 2030.

To read more about New Zealand’s commitments under the UNFCCC visit:


L3: The Sustainable Development Goals

The Sustainable Development Goals (SDGs) are a collection of 17 goals designed to be a “blueprint to achieve a better and more sustainable future for all” (https://www.un.org/sustainabledevelopment/sustainable-development-goals/). The SDGs were adopted by all UN Member States in 2015, as part of the 2030 Agenda for Sustainable Development (https://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E) which set out a 15-year plan to achieve the Goals.
Whilst the SDGs acknowledged that UNFCCC is the primary international, intergovernmental forum for negotiating the global response to climate change [https://www.un.org/sustainabledevelopment/climate-change/], SDG 13 Climate Action and SDG 11 (Sustainable Cities and Communities) includes targets and action areas focused on addressing climate change mitigation and adaptation.

Auckland Council has reviewed the Auckland Plan, Auckland’s overarching spatial strategy, against the specific goals and targets set out within the SDG framework. This has shown a strong link between the Auckland Plan and the direction that it sets out for Auckland with the achievement of the SDGs [see figure]. Delivering the Auckland Plan and supporting strategies such as this climate plan therefore plays a key part in Auckland’s response to the SDGs.

L3: C40 Cities

The C40 Cities Climate Leadership Group (C40, https://www.c40.org/) is a group of over 90 global cities that are committed to taking bold climate action, leading the way towards a healthier and more sustainable future.

Auckland has been recognized as an Innovator City within the C40 network since 2015 and has endorsed a range of C40 commitments, including:

- the Green and Healthy Streets Declaration (formerly the Fossil Fuel Free Streets Declaration, https://www.c40.org/other/green-and-healthy-streets)
- the Advancing towards Zero Waste Declaration (https://www.c40.org/other/zero-waste-declaration)
- the Global Green New Deal [https://www.c40.org/other/the-global-green-new-deal].

As a member of C40 cities, Auckland is also committed to adopting a climate action plan that will deliver action consistent with the objectives of the Paris Agreement – an integrated and inclusive plan that addresses the need to reduce greenhouse gas emissions, adapt to the impacts of climate change, and deliver wider social, environmental and economic benefits [https://resourcecentre.c40.org/]. This climate action plan delivers on that commitment.
National commitments

L3: Climate Change Response Act 2002 and the Zero Carbon Amendment Act 2019

The Climate Change Response Act 2002 is the legal framework that enables New Zealand to:

- develop clear and stable policies to limit global warming to 1.5° Celsius above pre-industrial levels; and
- allow New Zealand to prepare and adapt to the effects of climate change
- meet its international obligations under the United Nations Framework Convention on Climate Change (UNCCC) and the Kyoto Protocol.

To meet its obligations under the Kyoto Protocol, the Act empowers the Minister of Finance to manage New Zealand’s holdings of units that represent New Zealand’s target allocation for greenhouse gas emissions under the Protocol. It enables the Minister to trade those units on the international market. It establishes a registry to record holdings and transfers of units. The Act also establishes a national inventory agency to record and report information relating to greenhouse gas emissions in accordance with international requirements. Thereby, the Act underpins the New Zealand’s Emissions Trading Scheme.

In 2019, the Act was amended by the Climate Change Response (Zero Carbon) Amendment Act.

The 2019 Amendment Act expanded the purpose of the Climate Change Response Act 2002, to:

- recognise the outcomes of the Paris Agreement (i.e. a global effort under the Paris Agreement to limit the global average temperature increase to 1.5 degrees Celsius above pre-industrial levels) and
- allow New Zealand to prepare for, and adapt to, the effects of climate change.

The amendments resulted in four key things:

- set up a new domestic greenhouse gas emissions reduction target
- establish a system of emissions budgets that contribute towards the long-term target set out in the Paris Agreement
- require the Government to develop and implement policies for climate change adaptation mitigation - which is the basis for the National Climate Change Risk Assessment
- establish a new Climate Change Commission to provide expert advice and monitoring to meet long term targets.

L3: New Zealand Climate Leaders Coalition

The New Zealand Climate Leaders Coalition was launched in July 2018 to promote business leadership and collective action on the issue of climate change.

Over 110 New Zealand organisations have joined the Coalition, including Air New Zealand, Westpac, the Warehouse Group, Ports of Auckland, Auckland Airport, Counties Manukau District Health Board and Sky City Entertainment Group.

To mark its first anniversary, the Coalition launched a second higher ambition pledge in July 2019 ([https://www.climateleaderscoalition.org.nz/about/2019-statement](https://www.climateleaderscoalition.org.nz/about/2019-statement)). The revised pledge reflected the need to limit global warming to 1.5 degrees and aligned with the Government’s zero carbon ambitions.
Auckland Council, Auckland Transport, Watercare and Panuku have been members of the Climate Leaders Coalition since September 2018 and have set measures to mitigate operational greenhouse gas emissions whilst also delivering on the Coalition’s broader commitments.

**Regional commitments**

**L3: The Auckland Plan 2050**

The [Auckland Plan 2050](#) is our long-term spatial plan to ensure Auckland grows in a way that will meet the opportunities and challenges of the future. It is required by legislation to contribute to Auckland’s social, economic, environmental and cultural well-being. The plan outlines the big issues facing Auckland and recommends the way in which Aucklanders and others involved in the future of Auckland can best respond to them. The Development Strategy and six outcomes set Auckland’s strategy to 2050. They consider how we will address the key challenges of high population growth and environmental degradation, and how we can ensure shared prosperity for all Aucklanders.

Within the Auckland Plan 2050, climate change is one of the three [key challenges](#) facing Auckland. Further detail is provided in the [Environment and Cultural Heritage Outcome](#).

It is however clear that action on the priorities detailed within Auckland’s Climate Plan will deliver opportunities and benefits across each of the Auckland Plan 2050 outcomes, not just Environment and Cultural Heritage. Action within the Transport priority for example supports the directions and focus areas outlined in the Transport and Access outcome of the Auckland Plan 2050, whilst the Built Environment priority has strong links to both the Homes and Places outcome and the broader Development Strategy.

**L3: The Māori Plan**

The [Māori Plan](#) for Tāmaki Makaurau / Auckland was developed by the Independent Māori Statutory Board as a record of what Māori in the region said was important to them. The Māori Plan provides a framework for understanding Māori development aspirations and sets measures for monitoring progress towards desired cultural, economic, environmental and social outcomes for Māori.

The Māori Plan sets out five key directions that reflect the overarching goals or aspirations that Mana Whenua and Mataawaka want for their iwi:

- Developing Vibrant Communities;
- Enhancing Leadership and Participation;
- Improving Quality of Life;
- Promoting a Distinctive Māori Identity;
- Ensuring Sustainable Futures

There are also 49 focus areas within the plan that detail specific issues, for example papakāinga or marae development, which Mana Whenua and Mataawaka highlighted as being important to them. These focus areas contribute to the overall achievement of a set of high-level Māori outcomes that Māori are seeking (see figure below).
L3: Emissions modelling and the CURB Tool

The CURB Tool was used to model climate action, with additional bespoke modelling to address sectors not covered in CURB, such as industrial processes. CURB was developed by the World Bank in partnership with C40 Cities, the Global Covenant of Mayors and AECOM to enable cities to model climate action using city specific data.

CURB is customised to be city-specific through inputting local data, including city context data and emissions factors, to form a baseline, multisectoral representation of emissions generated by a city or region. The user then adjusts a range of variables to measure potential changes over time and against a projected business as usual scenario.

The projected business as usual emissions scenario modelled by CURB reflects estimated population growth and growth rate assumptions across sectors and activities. Auckland Council Research and Evaluation Unit, RIMU, has also developed a projected business as usual emissions scenario, both projections were reviewed by Arup, an independent consultancy firm, and found to be comparable.

CURB uses generic variables and estimation of outcomes rather than projecting the impacts of specific investments or policies such as construction of a rapid transit line or changes to land use policies.

As with any model, CURB is subject to limitations including application of generalised variables and default values based on average or proxy data. Its use projecting potential future emissions scenarios for Auckland is to provide guidance, only. The actions presented for each priority are not necessarily calibrated to CURB’s inputs and outputs.

Further information on the CURB Tool:


L3: What can I do to reduce greenhouse gas emissions and prepare for climate change?

Our actions directly contribute to reducing Auckland’s carbon emissions. You can personally make a difference even though climate change can sometimes feel overwhelming. By changing individual habits, taking small steps and some not so small, at home and in our community, Aucklanders’ collective actions help reduce carbon emissions, build resilience and support healthier lifestyles.

Several communities and local groups are beginning to develop their own plans in response to climate change. Check with your local board to see if there is a climate action plan and/or climate resilience plan for your community.

See below for everyday actions Aucklanders can take to reduce emissions and be prepared for the impacts of climate change.

Reduce the impacts of climate change...

Together Aucklanders’ daily decisions and actions can move us towards a sustainable future. By taking personal action we can decrease our consumer emissions that contribute to climate change and lessen our impact on the planet.

Find out your own carbon footprint and get customised tips to reduce it at FutureFit.
We’ve researched and narrowed down the many everyday choices Aucklanders face. We offer a range of easy and more challenging things you can do at home to make positive change with a big impact.

**EAT:** Reduce food waste, eat more plant-based meals and eat locally and seasonally

**SHOP:** Think before you buy to make your buying power count

**MOVE:** Use your car less and reduce the impact of your flights

**POWER:** Insulate your home and use hot water and appliances efficiently

**GROW:** Plant and garden at home and in your community

**TALK:** Start a conversation about your lifestyle choices and how you are taking climate action with your whanau, friends, neighbours and local politicians AND get involved in local events, marches, petitions and workshops.

It’s not about being perfect; it’s about being healthier, making savings and playing your part to make our shared effort count.

For more information, resources and stories of change visit [Live Lightly](https://www.aucklandcouncil.govt.nz/environment/looking-after-aucklands-water/flooding-blockages/Pages/check-flood-risks-before-buy-build.aspx)

**Be prepared for the impact of climate change...**

We need to be prepared for local impacts that we know are likely to happen in our area, as well as being resilient to our changing climate and how that might affect our lifestyle over the next 20yrs.

Making sure we know how our local climate changing and how it may impact us and our homes in the near future is important. We must check and plan for how things like flooding, hotter days, erosion, as well as water and power shortages will impact us.

Being prepared will mean we are less vulnerable to health issues, sickness or property damage in the future. It is important that we look out for the wellbeing of our families and homes.

**Related links**

- [https://www.aucklandemergencymanagement.org.nz/](https://www.aucklandemergencymanagement.org.nz/)

Find out more about natural hazards through the [Natural Hazards Viewer](https://www.aucklandcouncil.govt.nz/building-and-consents/Pages/natural-hazards.aspx)
L3: Natural hazards and climate change

Climate change and natural hazards are interlinked. We know that changes in our temperatures globally directly influences the frequency and severity of many natural hazards.

Increases of air and water temperatures lead to rising sea levels, supercharged storms and higher wind speeds, more intense and prolonged droughts and wildfire seasons, heavier precipitation and flooding.

We have been managing our natural hazards for many years. Planning for an increase in these is a key focus of this plan and the Natural Hazards Management Action Plan. Actions in these two plans support each other to deliver greater resilience for the region.

Find out more about natural hazards through the Natural Hazards Viewer.

L3: Water and climate change

Water/ Wai is life. It is a critical resource that we rely on for our survival, cultural and environmental health. Mana whenua of Tāmaki Mākaurau see strong links between water and their identity – water is their birthright and a taonga. Wai enables communities to be resilient and provide for their social, economic, environmental and cultural wellbeing, as well as the health of generations to come.

Water and climate change are inextricably linked. The impacts of a changing climate on water in Tāmaki Makaurau/Auckland is already apparent. Variability in rainfall patterns already reduces Auckland’s water supply and contributes to drought events. At the same time, increases in storm events contribute to more frequent flood and coastal inundation events.

As our climate changes, these events will increase in severity. Changes in the volume and location of rainfall will mean we have to rethink how we manage water and deal with issues from flooding and coastal inundation, to drought and scarcity.

Water quality will also be impacted by climate change. Higher temperatures and lower water flows have the potential to increase the growth of algae and other pest species within our water environments. Conversely, increased storm events could displace greater qualities of sediment and other contaminants from our waterways into the marine environment.

Australians have told us that they want the mauri (or life-supporting capacity) of water to be protected and enhanced. Auckland Council family has responded in numerous ways, including through the water quality targeted rate and through exploration of alternative supply options. However, it is important to recognise that the ability of these interventions to improve water outcomes for Aucklanders is significantly influenced by the projected impacts of climate change.

Our response needs to take an adaptive, holistic approach, while being grounded by the climate change effects that are projected for the region. We need to make better use of what we have and ensure that resilience is built into the region’s natural water cycle at every level. This will require enabling people to respond individually e.g. capturing and reusing water at a household scale, supporting and driving hapu, community and regional solutions e.g. a shift to a circular water system as well as restoring and building resilience within the natural environments, habitats and ecosystems that are critical to a healthy and thriving water system. Our water response also needs to recognise the potential opportunities for carbon capture within the natural environment. Watercare https://www.watercare.co.nz/ has a climate change strategy that sets out its future direction as it moves towards operating as a low carbon organisation that is resilient to climate impacts.
L3: Case study- Whakaoratangi i te Puhinui/ Puhinui Stream regeneration

This programme aims to regenerate Manukau’s blue (water) and green (land) networks by working together to restore the Puhinui Stream.

Manukau is an area of relatively high climate risk and the Puhinui Stream is the last remaining natural asset in the area and an important link to Manukau’s cultural and ecological heritage. A pilot project to restore the stream and connect the green spaces and neighbourhoods along its banks has the potential to be a model for climate resilience and ecological, social, cultural and economic regeneration.

A healthy Puhinui Stream would address climate-related stormwater risks and connect ecosystems, neighbourhoods and whānau from Tōtara Park to the Manukau Harbour. When the mauri of the stream is once again flourishing, it would provide climate resilience, biodiversity, economic opportunities and a sense of pride for local communities. Mana Whenua are key partners in leading and realising this vision.

Building on the existing Puhinui Regeneration project led by Panuku Development Auckland, a group including Kainga Ora, the University of Auckland, and the Auckland Council Group, are collaborating to ensure that lessons learnt in this pilot can help develop other climate-ready solutions that can be introduced across Auckland’s growth and regeneration areas.

This project has been developed to:

• Use growth as a lever to deliver improved climate resilience, with better environmental, social, cultural and economic outcomes.
• Understand and overcome the barriers to implementing blue-green networks in Auckland.
• Move away from a capital cost-based analysis for assessing development options, to measuring whole-of-life costs and benefits across environmental, social, economic, and Te Ao Māori value systems.
• Improve Aucklanders’ connection to, and kaitiakitanga over, their local natural environment.

L3: What is a Regenerative Economy?

Auckland’s current economy relies heavily on extracting resources to make and use products which are then thrown away at the end of their life. This is often called the ‘linear economy’ and means that our limited supplies of metals, fuels, water, soil and land are under pressure from over demand.

It also means that there is a continued accumulation of waste such as plastics in landfills and our oceans. Both the continued use of finite resources and the ongoing generation of waste is resulting in the degradation of our natural environmental and putting increasing pressure on our planetary boundaries[AT9].

This linear economy is also carbon intensive with 45% of global emissions coming from the way we produce goods, grow food and manage our resources. In addition to emissions, there is an increased risk to availability, supply and costs for these resources, resulting from global competition and disruptions to supply chains from severe weather events[6].

To address these issues a regenerative economy which is underpinned by renewable energy is needed. A regenerative economy is focused on ensuring that the degraded environments and natural resources that we are reliant on are rebuilt through our economic activities.

A key principle of a regenerative economy is that the Earth’s natural resources are extracted no faster than
they can regenerate and be replenished. When resources are used, a regenerative economy ensures that they are used in ways that give back to nature and harnesses the many sources of value through reuse and renewal.

Embedding ‘circularity’ is another core requirement of a regenerative economy and means that there is less of a need to extract further resources and waste is minimised. This approach can reduce emissions and enable carbon to be returned to the environment, removing it from Earth’s atmosphere.

Shifting Auckland’s economic model to one that restores and regenerates our natural systems and closes the gap on inequity will require collaborative effort from business, government, community and Māori.


L3: Our food system

Our food system is based on a linear take-make-waste model where soil nutrients and natural resources are often depleted during food production and processing (take-make) and nutrient rich food resources are discarded in landfills (waste).

It is heavily fossil fuel dependant from the production of inorganic fertilisers through to the processing and distribution of food.

Food may travel great distances, and many communities experience unhealthy food environments with good access to poor food and poor access to good food.

Low soil carbon and soil nutrient loss occur, particularly in Auckland’s intensive food growing areas. This has led to elevated levels of nutrients in ground and surface water.

Some farmers are moving toward regenerative farming practices that promote healthy soils that are more resilient to weather events, sequester carbon, minimise nutrient leaching, and increase biodiversity, food nutrition and crop yield.

Food waste produces emissions when landfilled, but also represents unnecessary upstream emissions and resource consumption that occurs during production, processing, and distribution of that food. While some food waste is prevented, redistributed or composted, much of it still ends up in landfill.

Aucklanders send 100,000 tonnes of food waste to landfill each year in household kerbside collection, while nationally cafés and restaurants are responsible for 24,000 tonnes and supermarkets for 14,000 tonnes annually.
L3: Whakapapa

Mai i te rangi, ki te whenua, ko tātou, te ira tangata kei waenga

From the heavens, to the earth, and then, there we are, the human element in the middle

We, the human element, te tangata inhabit the space between Rangi-nui (Sky Father, father of all things) and Papatūānuku (Earth Mother, mother of all things).

Our space was created by their children. They form the natural realms and the life-forms that inhabit them. These elements are connected by whakapapa (genealogical lineage) that weaves through their wairua (spirit). These connections and whakapapa surround, extend and give rise to tangata whenua, the human element, and our individual experience in the world.

Ira is the word representing these connections that link toward an element and the identity that comes into existence through this whakapapa. Ira tangata is the life principle of the human element, our genetic code, our genes and the spiritual flow of energy and matter from which our individual consciousness emerges.

Each of these connections and patterns are unique, they are the products of the place from which they emerge and remain closely connected. They become the people of the place and the connections that ground them to the whenua. These individuals act in a social, political, economic and spiritual environment, behaving in predictable ways. They have a personality and their character is known to others. However, individuals can also make decisions. They have space for free-will, to develop their own preferences and act upon them.

These decisions and actions are not always consistent with the whakapapa from which they are born, or their kaitiaki (guardian). As kaitiaki, the human element in the world is an active guardian. It is our obligation and whakapapa that we should nurture and protect the physical and spiritual wellbeing of the natural systems that gave birth to us and supports us.

We are charged with this responsibility until future generations can carry it forward. To care, nurture, connect and safeguard the natural world, the human element must understand our lineage from the natural world, our position within the natural world, and the relationships that weave us into it. This is a deliberate positioning of the human element as being interrelated with everything within the cosmos. It recognises that the human element has a role within the cosmos, but it is not beyond reproach.

The human element has a role as kaitiaki, but if we do not perform that role, the mauri (life essence) of the spiritual and physical relationships they were born to will dissipate along with its mana (authority). We are subject to the mauri and mana of our kaitakiritanga in the cosmos, and we are mortal. If our kaitiaki has insufficient mauri and mana, our role in the cosmos will fade and vanish. Our whakapapa will be broken and lost. The cosmos will continue and the relationships amongst the natural realms will adjust in our absence. Whakapapa connects all of us, tying us all together. It reminds us of our mortal position in the natural world and how its relationships constitute and sustain us. This reminder needs to be acted upon if we are to continue to have our tūrangawaewae (place to stand) and for humanity to thrive.

Our environmental and sustainability challenges in our ever-changing world, specifically climate change, tell how our behaviour is inconsistent with our kaitiaki responsibilities. The whakapapa and mauri that hold us and our shared ecology together is 60 being degraded. This risks our existence as we have known it. We must remember what is important and we must change our behaviour, or we and the world we know will be lost.

The tools to help us change our behaviour are where we left them. They are in our pūrākau (stories) and whakatauki (proverbs). The stories and legends about the relationships that bind us to the natural world, of our dependencies and vulnerabilities, our position and role as caretakers and kaitiaki. The language we use and what we tell ourselves and others is important. The stories and narratives we share with each other and the values and meanings they carry weigh on us and shape us. They shape who we are, what we value,
and the choices we make. This behaviour then influences the behaviour of those near to us, and those near to them.

These values ricochet about people, evolving and creating a culture and humanity that individuals identify with and feel they belong to. These are paradigms and epistemologies become mātauranga and become the whakapapa of a people. They are taonga. Importantly, how this ancestral knowledge becomes interpreted in each valley, coastline and community is specific to the whakapapa of that place.

Mana whenua share high-level whakapapa, but how this relates and connects to their own identity and place is unique and shared through their own pūrākau (stories) and whakataukī (proverb). This grounding is important as the connections and whakapapa that weave each community and whānau into the natural world are unique, and so must be their pūrākau.

Ira tangata offers modern humanity a paradigm through which it might rediscover itself, its position, its role and the relationships that weave it into the natural world. Ira tangata is ancient mātauranga and wisdom. It complements modern philosophies and evidence-based forms of knowing that have dominated the last few centuries of humanity’s industrialisation and its subsequent discovery of environmental disaster and the emergency of our rapidly changing global and local climates. Ira tangata is an important part of our change, but it needs governing support.

Our tikanga and whakataunga, our rules, regulations and legislation needs to support the framework. They need to facilitate its proliferation while consolidating the progress our people and culture make within it. As our kaitiaki strengthens, our rules need to ensure that this strength is the new normal and the benchmark from which further mauri is fostered.

There will be times when our leaders need to decide and act to protect and enhance mauri before everybody is ready. Actions to keep climate change below 1.5°C of warming and to adapt to its impacts may be one of these times.

**L3: Kaitiakitanga**

Kaitiakitanga for mana whenua is centred on the symbiotic whakapapa relationship with the natural environment. As tangata (people) our responsibilities to tupuna, atua and mokopuna as kaitiaki in the ira tangata context, we become the human voice to the atua through the tohu (signs).

Kaitiakitanga is the ethics and practice of protection and conservation of the natural environment and the resources within it, on which people depend. It is considered an obligation of mana whenua to care for their lands and waters to which they whakapapa (have a genealogical relationship). For this reason, kaitiakitanga is concerned with maintaining a natural and appropriate balance.

We need to understand the role of people in the world within the balanced framework of both ira atua (immortal element) and ira tangata (mankind) and the significance of the practice of kaitiakitanga for everyone. Stories, traditions, philosophies and values passed down from generation to generation underpin this ao Māori view.

Māori do not see themselves as separate from the natural world, rather that they are related through whakapapa, whereby all elements, living or otherwise descend from Papatūānuku (Earth Mother), Rangi-nui (Sky Father) and their children. Accordingly, the Māori worldview is distinct from a Western one, in which mankind has dominion over the world. For Māori, the use of natural resources is subject to kinship obligations and thus a symbiotic and reciprocal relationship exists.

**L3: Manaakitanga**

Reciprocal relationships include mana whenua, mataawaka and all people in the context of Tāmaki Makaurau. Whakapapa relations of ira atua, whakapapa rights of mana whenua, and customary rights to
Māori. The point of difference is the mana whenua relationship to the natural environment that gives mana whenua the obligation.

The Mana Whenua Kaitiaki Forum takes the view that our rapidly changing climate and its impacts tell us that we need to approach the issues in a fundamentally different way. The Forum calls for the acknowledgement of a worldview that places the environment before people, to coalesce in harmony, in and of service to one another.

The Forum recognises the danger and challenges of climate change and is committed to working with iwi, hapū and marae, central and local government, and other agencies and stakeholders to keep warming below 1.5 degrees. In particular, the Forum is concerned for:

- The responsibility of mana whenua to care for the large and growing population of Tāmaki Makaurau
- The specific policy focus that such a large population requires
- Rapid population growth
- The vulnerability of human and ecological systems as climate change impacts increase.

Alongside these concerns the Forum sees the opportunity for Māori to participate in the move to a blue-green economy and will actively pursue these opportunities.

**L3: Tōnuitanga**

Māori have had to bear the negative impacts of colonisation, westernisation and urbanisation for over 160 years within Tāmaki Makaurau. Any response to climate change needs to consider the impacts on Māori and, in particular, mana whenua.

Our collective response to climate change needs to enable sustainable circular Māori economic development and growth and encourage innovation across Māori business ecosystems. A key outcome is to focus on lifting whānau Māori (Māori populations) from poverty and transform the conditions of well-being with whānau.

**L3: Mātauranga Māori**

Mātauranga Māori – Māori knowledge systems and practices hold a key to climate change response. Mātauranga Māori is community-based and collective knowledge that offers valuable insights that complement western scientific data with chronological and landscape specific precision and detail. This is critical to verifying climate models and evaluating change scenarios.

Māori knowledge systems and practice provide a strong foundation for community-based adaption and mitigation actions. Mana whenua have been able to observe and interpret change through the environment within Tāmaki Makaurau over many generations.

**L3 - Our Soils Story**

Only one per cent of Auckland’s soils are considered Class 1 (elite) and suitable for vegetable production and these are mostly in the Pukekohe Hub. This land is under pressure from urban development. Soils play a critical role in meeting our emissions targets as carbon is stored in soils. The more soil we lose, the less chance we have of meeting our emissions targets.

Low soil carbon and soil nutrient loss are a concern, particularly in Auckland’s intensive food growing areas. This has led to elevated levels of nutrients in ground and surface water. Regenerative farming practices promote healthy soils that are more resilient to variable weather patterns, sequester carbon, minimise nutrient loss, and increase biodiversity, food nutrition and crop yield.
L3: Preserving the Pukekohe Hub

The Pukekohe Hub comprises 4,359 hectares of some of New Zealand’s most fertile and productive soils. The hub generates $327 million, which is 26 per cent of New Zealand’s total domestic value of vegetable production.

From 2002-2016, vegetable-growing land across New Zealand was reduced by 30 per cent. Land like the Pukekohe Hub faces increasing threats like urban sprawl.

The future of the hub is important for Auckland. Its temperate climate and proximity to essential transport routes makes it well-positioned to supply year-round vegetables to help feed Auckland’s growing demand for fresh food.
L3: Auckland Council Funding and Financing

Auckland Council’s 10-year budget (long term plan) sets out the activities, services, and investments for the next decade. Our annual budget focuses on key projects, service levels, financial policies and priorities for the next year. We publish a new 10-year budget every three years. In the intervening years, we publish an annual budget.

Ensuring that the investment priorities outlined in the 10-year budget, align with the actions that priorities set out within this plan, will be critical to the successful implementation of the plan. While it is acknowledged that any new investment set out within the 10-year budget needs to consider funding requirements for existing services such as parks, libraries and waste collection, it is important to recognise that each of these services will be impacted by climate change and will also have the potential to positively or negatively impact on our emissions reduction ambitions.

Reprioritisation of existing spend will be as important as identifying funding streams for new climate-specific activities.

In the 2018-2028 long term plan, climate change was recognised as one of the key challenges of the region. Since then, a climate emergency has been declared by Auckland Council and the actions within this plan have been assessed for Council’s contribution to its delivery.

In addition to ensuring that Auckland Council focuses its investment in low carbon, climate resilient assets, activities and services, it is also important to consider where our funds are sourced from and using those mechanisms to support the transition to a more sustainable and climate-focused financial system.

We fund our expenditure from different sources depending on the nature of the cost. Our best-known source of funding is general rates, charged to homes and businesses. However, more than half of our operating revenue comes from other sources such as water charges, public transport fares, consenting fees, Central Government subsidies and contributions from developers. We also borrow, when appropriate, for much of our investment in infrastructure roads, footpaths, pipes, and libraries. These are long life assets and by using borrowings, we spread the cost over the generations that use them.

We have already started to embed sustainability considerations into these funding streams. In 2017, we refreshed our Responsible Investment Policy and divested from investments associated with:

- the production of fossil fuels;
- the manufacturing or development of controversial weapons;
- the manufacturing of tobacco; and
- generating revenue from the operation of gambling.


L3 Post-COVID priorities

The economic circuit breaker

COVID-19 has caused widespread disruption to our economy. However, this economic circuit breaker also provides an opportunity to stimulate the transition to a more resilient economy, one that is more regenerative, distributive and low-emissions. Embedding principles such as equity, a just transition and focussing on retraining and upskilling individuals will help build economic resilience to the climate-impacted future that we face.

Different Ways of Working

COVID-19 has highlighted the opportunity of remote working and tested systems to support a new way of working. Many Aucklanders may not need to, or want to, stay at home every day of the week after the lockdown experience, but if Aucklanders can work remotely and live locally more often, this will still help to lower congestion, reduce transport emissions and create better places for living.

Community Resilience Building

COVID-19 has shown us the importance of strong social networks in times of crisis and transition. We can learn from our collective experiences to ensure Aucklanders are more resilient to the next shocks that hit our communities and our economy. Understanding the support networks, mechanisms and interventions that have been most successful in preparing and supporting our communities — and why — will help build greater community resilience to these shocks. COVID-19 has highlighted inequalities in the standard of Auckland’s built environment and Aucklanders’ access to a healthy, thriving natural environment which have been highlighted as critical drivers of our personal and community wellbeing.
## Attachment B: Local Board Feedback Summary

<table>
<thead>
<tr>
<th>Structural changes proposed</th>
<th>Formal resolutions from Local Boards</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Introducing three pillars representing the core drivers for climate action</td>
<td>20 support</td>
</tr>
<tr>
<td></td>
<td>1 no comment</td>
</tr>
<tr>
<td>2. Moving from eleven key moves to eight priorities</td>
<td>21 support</td>
</tr>
<tr>
<td>3. Changing the title from <em>Te Tāruke-ā-Tāwhiri: Auckland's Climate Action Framework</em> to <em>Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan</em></td>
<td>19 support</td>
</tr>
<tr>
<td></td>
<td>2 no comment</td>
</tr>
</tbody>
</table>

Further feedback was received from many Local Boards. This has been separated by priority area and integrated into updates to the plan as laid out below.

### Local Board Abbreviations

<table>
<thead>
<tr>
<th>AE</th>
<th>Albert-Eden</th>
<th>H</th>
<th>Howick</th>
<th>O</th>
<th>Orakei</th>
<th>UH</th>
<th>Upper Harbour</th>
</tr>
</thead>
<tbody>
<tr>
<td>GB</td>
<td>Aotea/Great Barrier</td>
<td>K</td>
<td>Kaipatiki</td>
<td>OP</td>
<td>Otara-Papatoetoe</td>
<td>W</td>
<td>Waiheke</td>
</tr>
<tr>
<td>DT</td>
<td>Devonport-Takapuna</td>
<td>MO</td>
<td>Mangere-Otahuhu</td>
<td>P</td>
<td>Papakura</td>
<td>Wh</td>
<td>Whau</td>
</tr>
<tr>
<td>F</td>
<td>Franklin</td>
<td>M</td>
<td>Manurewa</td>
<td>Pt</td>
<td>Puketapapa</td>
<td>WR</td>
<td>Waitakere Ranges</td>
</tr>
<tr>
<td>HM</td>
<td>Henderson-Massey</td>
<td>MT</td>
<td>Maungakiekie-Tamaki</td>
<td>R</td>
<td>Rodney</td>
<td>Wt</td>
<td>Waitemata</td>
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<tr>
<td>HB</td>
<td>Hibiscus and Bays</td>
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</table>

### Priority Area

1) Natural Environment

**General**

- Suggested inclusion of an additional 'Marine Environment' priority area (separate to Priority Area 1) which includes a goal to "implement marine protected areas which cover 30% of the area of the Hauraki Gulf over the next 10 years" (W).

- Maintained within natural environment priority but there is a greater focus on marine environment in this iteration of the plan.
| Recommendation to increase funding for community groups working on environmental protection and restoration (AE). | Actions within the plan to support community groups, both within the natural environment and community and coast priorities. |
| Support for a higher targeted rate in favour of greater measures to prevent Kauri dieback and protect local ecosystems (K). | Not included at the regional plan level, for exploration through implementation at local level. |
| Need for protection of established trees, native bush and wetlands on greenfield land identified as future urban areas (R). | Explore within implementation of Grow and protect our rural and urban ngahere/forest to maximise carbon capture and build resilience. |

**Water**

| Suggestion to explicitly mention 'water quality' within this priority in reference to the State of Gulf report 2020 as well as degrading quality of local beaches and waterways (DT). | Water quality now more explicitly referenced. |
| Suggestion to reference construction sediment entering waterways and how this is to be mitigated and regulated (DT). | Out of scope of this plan but addressed within council’s sedimentation programme. |
| Support for a water quality targeted rate (K). | Out of scope of this plan. |
| Articulation of water management and retention issues and to recognize these as a key part of climate change mitigation (WR). | Incorporated into the built environment priority. |

**Vegetation**

<p>| Suggested that tree canopy is explicitly mentioned as well as the lack of provision for trees in the AUP (DT, K). | Sub-action included within Action N2: Grow and protect our rural and urban ngahere/forest to maximise carbon capture and... |</p>
<table>
<thead>
<tr>
<th><strong>Greater tree protection is needed as well as increases to percentage baselines for canopy targets (K).</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Scheduling for notable trees to be made easier and better resourced and to consider financial incentives to protect trees including penalties, where appropriate, for their removal (WR).</td>
</tr>
<tr>
<td>• Council should advocate for a legislation change to reinstate blanket tree protection (AE).</td>
</tr>
<tr>
<td>• Need for additional resources from long-term budget in order to support increases in tree-canopy coverage in local board areas (MO).</td>
</tr>
<tr>
<td>• Suggestion to expand existing tree-planting programme and undertake a programme for the planting of street trees (AE).</td>
</tr>
</tbody>
</table>

**build resilience. Canopy target explicitly mentioned.**

- Can be explored further through implementation of Action N2: Grow and protect our rural and urban ngahere/forest to maximise carbon capture and build resilience.

- Can be explored further through implementation of Action N2: Grow and protect our rural and urban ngahere/forest to maximise carbon capture and build resilience.

- Can be explored further through implementation of Action N2: Grow and protect our rural and urban ngahere/forest to maximise carbon capture and build resilience.

**2) Built Environment**

- Suggested referencing to construction sediment entering waterways and how this is to be mitigated and regulated (DT).
- Suggested reference to minimization and regulation of construction waste (DT).
- Opportunity to renew and rebuild aging community facilities to be climate-compatible (K).
- Additional funding required for the implementation of a rural fast broadband initiative to enable sustainable alternatives, such as working from home, in rural areas

**Addressed within council’s sedimentation programme**

- Included within priority

- Included within priority

- To form part of LTP discussions
<table>
<thead>
<tr>
<th>(R).</th>
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</thead>
<tbody>
<tr>
<td>- Recommended that policy interventions for the built environment</td>
</tr>
<tr>
<td>focus on net positive outcomes as well as mitigation (Wt).</td>
</tr>
<tr>
<td>- Appropriate resourcing is necessary to ensure the built</td>
</tr>
<tr>
<td>environment is ‘climate-proof’, and to account for growth,</td>
</tr>
<tr>
<td>lifestyle changes and social wellbeing (K).</td>
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<tr>
<td>- Council to advocate for necessary changes to the RMA</td>
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<tr>
<td>and the Building Act to require green building design, less</td>
</tr>
<tr>
<td>carbon-intensive building practices and design which takes into</td>
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<tr>
<td>account the adaptations that will be required over the life of a</td>
</tr>
<tr>
<td>building (AE).</td>
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<tr>
<td>- Priority to be given to infrastructure projects which are</td>
</tr>
<tr>
<td>- Seems to be a lot of emphasis on new infrastructure while there</td>
</tr>
<tr>
<td>is still an urgent need to address weaknesses in existing</td>
</tr>
<tr>
<td>infrastructure. Greater enforcement needed for sustainable design</td>
</tr>
<tr>
<td>and construction as well as support from central government (and</td>
</tr>
<tr>
<td>Council regulations) to incentivize and reward the use of</td>
</tr>
<tr>
<td>sustainable methods in new builds (Wh).</td>
</tr>
<tr>
<td>➤ Included within priority</td>
</tr>
<tr>
<td>➤ To form part of LTP discussions and is included within priority</td>
</tr>
<tr>
<td>➤ Included within priority</td>
</tr>
<tr>
<td>➤ Included within priority and was part of ‘shovel ready’ project</td>
</tr>
<tr>
<td>discussions</td>
</tr>
<tr>
<td>➤ Existing infrastructure more clearly defined within built</td>
</tr>
<tr>
<td>environment priority with associated actions</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3) Transport</th>
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</thead>
<tbody>
<tr>
<td>- Consideration should be given to the rural location of some</td>
</tr>
<tr>
<td>local board’s and their continued reliance on roads and travel</td>
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<tr>
<td>via car in order to access key services. This includes</td>
</tr>
<tr>
<td>acknowledging that public transport is not available in all</td>
</tr>
<tr>
<td>areas (F).</td>
</tr>
<tr>
<td>- In leading by example, Council should transition its</td>
</tr>
<tr>
<td>vehicle fleet to low or zero-carbon vehicles and require</td>
</tr>
<tr>
<td>similar measures from CCOs as well as encouraging AT</td>
</tr>
<tr>
<td>➤ Equity of access is more explicitly discussed within priority</td>
</tr>
<tr>
<td>➤ Included in priority</td>
</tr>
<tr>
<td>Public and Active Transport</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| - Prioritise accessibility to cycling, walking and public transport infrastructure during the planning of new developments (AE). | Included in priority  
| - Greater public transport provision for new greenfield developments. Suggests need to identify when public transport will be supplied to new developments (R). | Included in priority  
| - Need for the fast-tracked delivery and upgrading of public transport infrastructure, particularly in fast-growth areas (HM, M, P). | Included in priority  
| - Support for the provision of more affordable and frequent all-weather ferry services (K). | Included in priority  
| - Emphasis on the delivery of infrastructure to support active transport modes. This includes shared paths and dedicated cycle lanes on local streets (HM, M, K, P, AE). | Included in priority  
| - Provision of additional bus shelters, particularly in South Auckland (M, P). | Not explicitly mentioned in priority, can be further explored with Local Boards in implementation  
| - Address public transport affordability, particularly for low income communities (HM, M, P). | Included in priority  
| - Support for the use of electric vehicles (K). | Included in priority  
| - Provide greater education about public transport (P). | Included in priority  
<p>| - Suggestion for all AT projects to include a climate impact statement prior to any case being brought to the local | Part of Climate Impact Statement programme and cross-cutting action within the plan |</p>
<table>
<thead>
<tr>
<th>4) Economy</th>
<th>included in built environment priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Encourage mixed-use development to support greater local activity (AE).</td>
<td></td>
</tr>
<tr>
<td>• Concern raised from LB’s who are particularly susceptible to inundation and flooding, either due to their coastal nature or low-lying land (K, R).</td>
<td></td>
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<tr>
<td>• Greater planning needed around the increased frequency of extreme weather events (R).</td>
<td></td>
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<tr>
<td>• Review planning regulations around rainwater collection tanks in response to recent and future droughts (R).</td>
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<tr>
<td>• Support for sustainable community-led initiatives (AE).</td>
<td></td>
</tr>
<tr>
<td>• Improved access to local business areas is needed to support residents shopping local (K).</td>
<td></td>
</tr>
<tr>
<td>• Incorporate into Key Move - undertake a widespread action and public awareness programme (Wh).</td>
<td></td>
</tr>
<tr>
<td>5) Community and Coast</td>
<td>included in priority</td>
</tr>
<tr>
<td>• Concern raised from LB’s who are particularly susceptible to inundation and flooding, either due to their coastal nature or low-lying land (K, R).</td>
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<tr>
<td>• Incorporate into Key Move - undertake a widespread action and public awareness programme (Wh).</td>
<td></td>
</tr>
<tr>
<td>6) Māori</td>
<td>to incorporate into implementation of the plan</td>
</tr>
<tr>
<td>• Support for priority given to Te Puawaitanga o Te Tangata and want greater board engagement in its development (WR).</td>
<td></td>
</tr>
<tr>
<td>• Support for the plan to uphold Te Tiriti o Waitangi as well as the principle of co-governance with mana whenua in the response to climate change (AE).</td>
<td></td>
</tr>
<tr>
<td>7) Energy</td>
<td>included in priority and implementation section</td>
</tr>
<tr>
<td>• Elaborate on the mandate, relationship, and resourcing for related actions since the priority is not the direct responsibility of Council (W).</td>
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<tr>
<td><strong>8) Food</strong></td>
<td><strong>Included in priority</strong></td>
</tr>
<tr>
<td>• Supports the curbside food scrap collection service as an action but suggests need for policy support and regional investment in local composting system (WR).</td>
<td><strong>Included in priority</strong></td>
</tr>
<tr>
<td>• Prohibit development on highly productive fertile soils, both within and outside of the Auckland region (AE).</td>
<td><strong>Included in priority</strong></td>
</tr>
<tr>
<td>• Partner with community groups and establish community gardens/food forests on suitable council-owned land (AE).</td>
<td><strong>Included in priority</strong></td>
</tr>
<tr>
<td>• Require AT to allow appropriate berm planting and support community groups to deliver training on the establishment of berm gardens (AE).</td>
<td><strong>Not explicitly mentioned, to be explored through implementation</strong></td>
</tr>
<tr>
<td>• Note that food waste pick-up schemes are supported but should be secondary to local composting (AE).</td>
<td><strong>Included in priority</strong></td>
</tr>
<tr>
<td>• Support community groups in the establishment of local composting schemes (AE).</td>
<td><strong>Included in priority</strong></td>
</tr>
<tr>
<td>• Support for business innovation in the food production sector as well as cross-board collaboration to achieved this (K).</td>
<td><strong>Included in priority</strong></td>
</tr>
<tr>
<td>• Request to review existing strategies in the context of the plan with particular regard given to Auckland as a self-sustaining region, strategies relating to the supply of</td>
<td><strong>Included in priority (water included in built environment priority)</strong></td>
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<tr>
<td>Tāmaki Response</td>
<td>Feedback and Recommendations</td>
</tr>
<tr>
<td>-----------------</td>
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</tr>
<tr>
<td>A place-based approach</td>
<td>- A place-based approach should consider local perspectives, including those in greenfield, remote and rural communities (F).</td>
</tr>
</tbody>
</table>
| Māori Principles and Practices | - Support for the interweaving of Māori principles (HM, M, P) and the involvement of Mana Whenua and Matawaka (MO).  
- Introduce a campaign which ensures there is a cultural (all cultures incl. Māori) lens on all mechanisms put in place to address climate change (Wh). | ➔ Agreed and part of implementation |
| Equity | - Funding provision is needed for each local board to ensure that climate action is equitable at a local level (DT).  
- Address public transport affordability in order to provide equitable access for lower income areas (HM).  
- Ensure equity of resources and tools provided to local boards with low income communities to ensure they can respond to climate change (HM, MO, M, P).  
- Greater emphasis on equity is needed within the plan to address how it impacts ability to adapt (OP). | ➔ To be explored through LTP  
- Included in transport priority  
- Included in Community and coast priority  
- Greater focus on equity now included throughout the plan  
- To be explored in implementation of the plan |
### Mitigation

<table>
<thead>
<tr>
<th>Feedback and Recommendations</th>
<th>Amendments to the plan (as appropriate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of a targeted rate for water quality must be equitable so that financial burden is not placed on vulnerable communities (OP).</td>
<td>➔ 50% reduction by 2030 included in the plan</td>
</tr>
<tr>
<td>Suggested inclusion of two additional goals for emissions reduction: 12.5% reduction by mid-2022 and 25% reduction by 2025 in alignment with 2050 reduction goal (GB).</td>
<td>➔ Plan targets already exceed these</td>
</tr>
<tr>
<td>Suggested inclusion of three additional goals for emissions reduction: 12.5% reduction by mid-2025, 25% reduction by 2030 and 50% reduction by 2040 – in support of a more urgent and aligned approach (W).</td>
<td>➔ Included in the plan</td>
</tr>
<tr>
<td>Need for a set of clear city-wide targets with clear reporting mechanisms to measures successes and failures (W).</td>
<td>➔ Proposed annually due to resourcing requirement of monitoring</td>
</tr>
<tr>
<td>Monitoring should take place on a six-monthly basis and be reported on at local board business meeting agendas, the local board chairs’ forum, Environment and Climate Committee agenda and in council publications and social media (W).</td>
<td></td>
</tr>
</tbody>
</table>

### Adaptation

<table>
<thead>
<tr>
<th>Feedback and Recommendations</th>
<th>Amendments to the plan (as appropriate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning for Change • Support for stronger action than a ‘precautionary’ approach in response to climate emergency (GB).</td>
<td>➔ Precautionary approach more clearly defined in the plan</td>
</tr>
</tbody>
</table>

<p>| Climate Change Risk Assessment • Recommendation that all local boards prepare a climate change risk assessment plan and a mitigation and adaptation plan. A regional-level plan should also be prepared in alignment with the LTP and the National Climate Change Risk Assessment Plan. These should be created with input from iwi, industry bodies, non- | ➔ This plan aligns with the LTP and National Climate Change Risk Assessment. Updates to the regional CCRA will be carried out on a three-yearly basis. Input has been sought across sectors and this will continue. |</p>
<table>
<thead>
<tr>
<th>Additional Themes</th>
<th>Feedback and Recommendations</th>
<th>Amendments to the plan (as appropriate)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Local Response and Funding</strong></td>
<td>• Necessity for funding provision in order to support local boards in their response to localised climate risks (DT, UH, K). Suggested dedicated funding stream for local boards to support climate-related projects (Wh).&lt;br&gt;• Include a review of local board funding levels in order to address how effectively local boards can respond to climate change (HM, M, P).&lt;br&gt;• Address investment disparities in South Auckland and other parts of the city (M, P).&lt;br&gt;• Emphasis on need for community cohesion (particularly following Covid-19). Need for local government to lead communities towards being more proactive (Wh).</td>
<td>➤ Out of scope of this plan, to form part of on-going implementation discussions.&lt;br&gt;➤ Out of scope of this plan, to form part of on-going implementation discussions.&lt;br&gt;➤ Out of scope of this plan, to form part of on-going implementation discussions.&lt;br&gt;➤ Considered in communities and coast priority</td>
</tr>
<tr>
<td><strong>Partnership</strong></td>
<td>• Emphasis on the need to collaborate with local and central government as well as local community groups (MO).&lt;br&gt;• Clear regulations need to be in place at central and local government levels to ensure effectiveness (Wh).&lt;br&gt;• Central and local government should encourage private sector businesses to provide clarity to the public</td>
<td>➤ Section on roles and responsibilities increased. On-going governance and partnerships in development&lt;br&gt;➤ Planning and regulation throughout priorities of the plan&lt;br&gt;➤ Considered within communities and coast priority of the plan and on-going policy development work</td>
</tr>
<tr>
<td>Council’s Role</td>
<td>• Emphasis placed on Council’s position as a leader in the response to climate change and the necessity to provide a transparent and measurable strategy (DT, MT, W).</td>
<td>➔ Increased focus on role of council and monitoring in this iteration of the plan</td>
</tr>
</tbody>
</table>
| Engagement | • General feedback on consultation for the plan was supportive, with many LB’s noting greater engagement from groups such as youth, Māori and Pacific people.  
• Greater engagement is needed with Pacific communities, particularly in LB areas with high populations of Pacific people (OP). |   |
| Goals and Structure | • Suggested use of the 17 Sustainable Development Goals set by the Paris Agreement in 2016 to base the campaign upon and use for evaluation and monitoring (Wh).  
• Suggests a review of the layout of key moves to remove implied priority order (Wh). | ➔ Greater alignment to the SDGs in the commitments section of the plan  
➢ Digital layout should remove implied prioritisation |
| Implementation | • Emphasis on the need for measurable strategies, and the implementation of strategies, that assist with reducing emissions causing climate change (Wh).  
• Work to reduce the negative impacts of climate change needs to be happening concurrently with emissions reduction and must be measurable (Wh). | ➔ Further detail provided within the implementation section of the plan |

**General Comments**

The following comments were generally expressed in the local board feedback:

• Accelerated action on key priorities is needed (DT).
Support for the plan in local board plans (F).

Emphasis on the different challenges faced by various local boards in their response to climate change and the need to address local issues. Some LB’s noted that their geographical location challenged their ability to respond to climate change.

Consensus that funding and resourcing is a major constraint for local boards in their response to climate change. Support for the provision of equitable funding to enable a local response to climate change mitigation and adaptation.
Implementing Auckland’s Urban Ngahere (forest) Strategy – progress update July 2020

Purpose of the report
1. To provide a progress update on the implementation of the Urban Ngahere (Forest) Strategy.
2. To support the preparation of a business case to accelerate implementation of the strategy.

Executive summary
3. In February 2018, Auckland’s Urban Ngahere (Forest) Strategy was approved (ENV/2018/12). The strategy document was published in March 2019.
4. The strategy aims to increase our understanding of Auckland’s urban ngahere and use that knowledge to protect, grow and maintain trees and other vegetation in Auckland’s existing and future urban areas.
5. Eighteen high level implementation actions were identified to achieve outcomes grouped under three themes ‘Knowing’, ‘Growing’ and ‘Protecting’.
6. The primary outcome of the strategy is to increase the regional tree canopy cover average from 18.3 per cent to 30 per cent.
7. Collaboration, funding, and partnerships are recognised as fundamental to successful implementation long term.
8. Staff were asked to provide the committee with a full update report on implementation of the strategy (Attachment A) and report back on the regional canopy cover data changes following assessment of the Light Detection and Ranging (LiDAR) survey.
9. To enable acceleration of the strategy’s implementation, this report seeks support for the preparation of a business case and a recommendation to the Finance and Performance Committee that it be considered through the Long-term Plan process.
10. Additional funding, if adopted through the Long-term Plan, would enable the strategy to be embedded in the organisation’s long-term response to climate change, further develop community empowerment and enhance the public green asset over the longer term.

Recommendations
That the Environment and Climate Change Committee:

a) receive the progress report on implementing Auckland’s Urban Ngahere (forest) Strategy (Attachment A to the agenda report).

b) support the preparation of a business case to consider options to accelerate implementation of the regional urban ngahere programme and recommend to the Finance and Performance Committee that it be considered for funding through the Long-term Plan.
Horopaki

Context

11. A well-managed, flourishing, and healthy urban ngahere has a wide range of evidence-based benefits and is increasingly essential in assisting our climate mitigation, adaptation and response work.

12. The ngahere plays a significant role in contributing to positive urban amenity and creating a healthy living environment with many social, cultural, economic, and environmental benefits.

13. The ngahere also helps to counteract the associated pressures of growth in urban Auckland.

14. Recognising these benefits, a strategy for Auckland’s urban ngahere was developed.

15. In February 2018, the Environment and Community Committee approved Auckland’s Urban Ngahere (Forest) Strategy.

16. The strategy was published on 27 March 2019 following approval by the Chair, Deputy Chair and an Independent Māori Statutory Board member of the Environment and Community Committee.

17. The strategy has three high level themes: ‘Knowing’, ‘Growing’ and ‘Protecting’. Each has high-level principles that use management and engagement with stakeholders to enable delivery.

18. The strategy includes actions to support the primary outcome to increase the regional tree canopy cover average from 18.3 per cent to 30 per cent.

19. Staff were asked to provide an update on the implementation of the strategy and a report on the regional canopy cover data changes following assessment of the LiDAR survey.

Tātaritanga me ngā tohutohu

Analysis and advice

Area-specific implementation through locally driven initiatives funding

20. The strategy identified the need for an area specific approach to implementation. This meant engaging with local boards, Treaty partners and key stakeholders to identify individual needs and drivers for growing and protecting urban ngahere.

21. In June 2018, locally-driven initiative (LDI) funding was secured from 13 local boards to support area-specific implementation of the strategy, amounting to a total of $185,000.

22. The aim of these initiatives was to ensure that decision-makers are well informed on the extent, scale, health and diversity of urban trees and other vegetation in each local board area to support an evidence-based, strategic approach for future decisions at a local level.

23. Twelve of these initiatives focused on increasing the knowledge base for local board areas in line with the ‘Knowing’ objective of the strategy. The results (local tree cover reports) provide guidance for future planting initiatives.

24. The Waitematā Local Board already had a good knowledge base for their local board area from previous work$. Their initiative was supported with $15,000 funding and enabled the identification of opportunities to grow trees and vegetation within the local board area over the longer term. The work concluded with ‘The Waitematā Urban Ngahere Action Plan’ in September 2019.

25. The plan aligns with the ‘Growing’ objective of the strategy and sets out a 10-year programme for the local board to consider annually, helping to guide where to plant trees that the community want, in areas where there is a need.

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$ Published in the following two reports:
1. The Urban Forest of Waitematā Local Board in 2013 (March 2017 report)
2. Tree Los in the Waitematā Local Board Over 10 Years, 2006-2016 (September 2018 report)
26. ‘Knowing’ reports for 10 local boards were finalised in September 2019. Two reports are in development for Henderson-Massey (the report is still in draft) and Whau (early draft but there is currently not enough funding to fully develop and finalise the report).

27. Eleven of the twelve local boards who developed a ‘knowing’ report provided further LDI funding in 2019/2020, totalling $120,000 to support the development of long term ‘Growing’ action plans.

28. ‘Growing’ action plans identify opportunities for planting new trees and vegetation on public land and applying strategy principles such as ‘the right tree in the right place’. These local board specific plans are expected to be completed in September 2020.

29. In 2019/2020 two additional local boards, Manurewa and Waiheke, indicated funding of $15,000 each to support implementation of the strategy within their local board areas.

30. Collectively this programme (prior to Covid-19) had a capital budget of $330,000 for tree planting across the 12 local boards. The intention is to continue this programme with guidance from the growing plans, pending Emergency Budget decision making.

31. Analysis of local tree coverage will inform and guide growing plans to direct and prioritise new tree planting efforts and respond to the needs of the local communities.

Changes in urban forest canopy cover between 2013 and 2016/2018

32. The focus of this workstream is to identify changes in urban ngahere canopy coverage between 2013 and 2016/2018 using data from region-wide LiDAR (Light Detection and Ranging) surveys.

33. Analysis of the 2016/2018 LiDAR data and comparison with the 2013 results has been completed with the results published in: ‘Auckland’s urban forest canopy cover: state and change (2013-2016/2018)’

34. The report outlines changes in the urban ngahere canopy cover across Auckland’s 16 mostly urban local boards and is the first in a series of publications that will look at aspects of state and changes in more detail.

35. Key findings of the report are as follows:

- 2016/2018 average urban ngahere canopy cover across Auckland was 18.4 per cent, similar to the 2013 average cover of 18.3 per cent, but well below the 30 per cent goal identified in the strategy. The 0.1 per cent net increase represents approximately 60 hectares which is the size of about 60 sports fields.
- for local boards the canopy cover ranged from 8 per cent to 31 per cent
- eleven of the 16 urban local boards met the minimum threshold of 15 per cent average canopy cover
- five southern local boards are below this threshold: Māngere-Ōtāhuhu, Manurewa, Maungakiekie-Tamaki, Ōtara-Papatoetoe and Papakura
- net changes (difference between losses and gains) between 2013 and 2016/2018 ranged from minus 8 per cent to positive 14 per cent
- the biggest net loss in terms of hectares was minus 125 hectares with the biggest net gain being positive 74 hectares.
- initial analysis indicate that losses are widespread, but locations experiencing more losses than gains are typically privately-owned land and/or rural areas
- the locations experiencing more gains are typically publicly owned park land and the road corridor, however these gains are not equally distributed
- findings appear to indicate that height distribution of the canopy surface (2016/2018) is skewed toward the lower height classes with 75 per cent of the canopy surface being less than 10m and less than 5 per cent 20m or above
• a direct comparison with 2013 is not presented in this report. As shown in the Urban Forest Strategy in 2013, 64 per cent of the urban ngahere canopy was less than 10m and 6 per cent 20 metres or larger. This indicates a loss of larger mature trees and well-established vegetation
• further work to clarify the structural size distribution and change is to be undertaken.

Key initiatives and progress made towards strategy outcomes
36. A detailed overview of key initiatives and progress is in Attachment A. The overview includes initiatives to:
• improve our understanding (Knowing) of Auckland’s urban ngahere
• increase urban ngahere canopy cover (Growing)
• preserve urban ngahere (Protecting)
37. The overview also includes a progress update on the 18 high-level actions identified in the strategy:
• incorporate three-yearly LiDAR surveys in council work programmes
• create database for existing tree-assets within two years
• integrate scientific knowledge of the urban ngahere with mātauranga Māori
• quantify values and benefits
• determine survival rates of new council plantings
• identify key pressures and risks in partnership with mana whenua and local boards
• increase canopy cover in road corridors, parks and open spaces
• identify and prioritise locations for future planting on public land
• use science and ongoing engagement to inform decisions in relation to types of planting
• increase the capacity of nursery programmes
• leverage partnerships established through existing initiatives
• complete a comprehensive review of tree protection under the Unitary Plan
• explore potential for new regulatory tools to protect trees on private properties
• increase landowner grants and incentive programmes
• address current and future pressures to Auckland’s urban ngahere and protection
• raise public awareness of the values and benefits of the urban ngahere
• raise arboriculture maintenance programme from two to five years or until new plantings are well established
• establish a labelling programme for protected trees within 12 months.
38. In addition to council initiatives, planting efforts are undertaken by communities and private businesses.
39. The strategy supports the maintenance of urban forest on private land through the ‘Knowing’ phase – informing the community of the importance of a green network particularly as it provides shade, increases carbon sequestration, and contributes to reducing greenhouse gas emissions.
40. Vector Limited has developed an urban forest programme with council and local iwi to plant seedling trees on public parks in south Auckland.
41. Vector’s programme will help offset the company’s ongoing utility maintenance that removes trees that may threaten the overhead electricity supply network. Vector funds the planting of approximately 10,000 seedlings annually.
42. Council’s urban ngahere management efforts have recently received international recognition by becoming a member of the Tree Cities of the World Programme (treecitiesoftheworld.org).

43. Tree Cities is administered by the United Nations Food and Agriculture Organisation and The ArborDay Foundation. It is an international effort to recognise cities and towns committed to ensuring that their urban forests and trees are properly maintained, sustainably managed, and duly celebrated.

Additional funding through the Long-term Plan (LTP) process is proposed

44. A Long-term Plan proposal will be prepared to consider future funding options to increase existing planting efforts and start new projects and workstreams to support implementation.

45. To enable the goals of the strategy to be achieved a package of funding options is necessary. Current financial constraints need to be considered along with the potential opportunities that may exist for employment if specific aspects of the strategy are implemented.

46. Further work is required to provide a detail of the overall costs to implement all 18 key objectives.

47. If council is to amplify its efforts to increase overall canopy cover, the current programme of work will need to continue alongside additional investment and possible policy and regulatory change. This will support a sustained and incremental increase in the urban ngahere.

Tauākī whakaaweawe āhuarangi
Climate impact statement

48. Implementation of the strategy is an example of an integrated action that council can take to both help mitigate emissions, adapt to the impacts of climate change and meet our climate goals.

49. The strategy is identified as a key action in the proposed Auckland’s Climate Plan.

50. Increasing Auckland’s stock of trees and vegetation increases carbon sequestration and contributes towards reducing Auckland’s net greenhouse gas emissions.

51. A research programme is planned to improve understanding of sequestration rates expected from different indigenous species and inform future planting decisions to maximise benefits.

52. Increasing trees and vegetation also provides various natural functions that assist with adaptation to climate change impacts for humans and other species:

• shade and a cooling effect to counter rising temperatures
• slow and reduce stormwater runoff to assist in managing increased rainfall events
• provide additional habitat for indigenous species to occupy, enhancing their resilience to climate change impacts.

53. Another key climate consideration is the threat climate change poses to the urban ngahere, including:

• changing rainfall patterns (e.g. drought)
• increasing temperature
• more severe weather events
• increasing threat of pests and diseases.

54. Research is planned to improve understanding of drought and reduced soil moisture on our vegetation species and what pests and diseases may benefit from climate changes. This will inform future planting decisions that will assist Auckland’s urban ngahere resilience to climate change impacts.
Ngā whakaaweawe me ngā tirohanga a te rōpū Kaunihera
Council group impacts and views

55. A Community of Practice group was established in 2019 with council experts involved in environmental programmes. It aimed to increase the efficiency of plant supply and the process of prioritisation of land areas in council ownership to support planting activities across the council family both in urban and rural areas.

56. An information memo will be provided to the committee sharing the groups functional role in coordinating a regional approach to council’s planting activities to monitor progress and the effectiveness of our planting programmes.

57. Auckland Transport has recognised the importance of incorporating environmental systems into planning for new roads and streets and have included street tree selection and planning guidance for different road and street typologies in their Roads and Streets Framework.

58. A draft Code of Practice (COP) developed by council’s Engineering and Technical Services team includes a section on the design and installation of green assets, including green infrastructure, trees, and new open spaces. The COP promotes the key principle in the strategy to ‘plant the right tree in the right place’.

59. Work is underway to identify opportunities to deliver strategy outcomes through work programmes of other Council Controlled Organisation’s such as Panuku and Watercare.

60. Panuku has developed a programme to look at the Puhinui stream catchment as a whole and to adopt the ngahere strategy objective to increase tree cover and provide great opportunities to connect communities to nature.

61. Work currently underway with The Southern Initiative recognises the value of and need to increase the ngahere canopy coverages through council and private development work.

Ngā whakaaweawe ā-rohe me ngā tirohanga a te poari ā-rohe
Local impacts and local board views

62. Results of the canopy cover analyses showed significant variation in the canopy cover for different local boards, ranging from 8 per cent to 31 per cent.

63. There is particularly low canopy cover in southern local board areas. This means that southern communities do not have access to the benefits of a healthy urban ngahere.

64. Growing a healthy and resilient urban ngahere is a priority for many of the urban local boards as demonstrated by existing local board effort and investment to support area-specific implementation of the strategy.

65. Key feedback from local boards received as part of development of the strategy included:
   • the importance of ensuring that the financial responsibility for the delivery of the proposed outcomes is not fully transferred to local boards; that there is a need for regional financial support and commitment to a long-term programme
   • the importance of addressing the unequal distribution of Auckland’s urban ngahere, for example the differences between different local board areas
   • increasing financial assistance to help support local efforts
   • recognition that not everyone wants more trees and that the urban forest can interfere with infrastructure functioning.

66. Local boards who provide LDI funding to implement the strategy have continued to identify the need for additional funding to help enable full implementation of the strategy.
Tauākī whakaaweawe Māori
Māori impact statement
67. The urban ngahere is an important part of Tāmaki Makaurau / Auckland’s cultural heritage.
68. Remnants of native forest represent traditional kai o te ngahere (supermarkets), wānanga o te ngahere (learning centres), kapata rongoā (the medicine cabinet), kura o te ngahere (schools) and wairua o te ngahere (spiritual domain).
69. Trees also represent landing places of waka (canoe) and birth whenua.
70. Key feedback from mana whenua during the development of the strategy included recognition of the value of the urban ngahere for holistic individual and community wellbeing, and a preference for the use of native species.
71. Further work is necessary to form partnerships and develop collaborative work programmes with mana whenua to help deliver the strategy.

Ngā ritenga ā-pūtea
Financial implications
72. Future financial implications will be developed and considered as part of the Long-term Plan process. Through existing programmes council invests significantly across the parks and open space network, including street trees, to maintain the health of our ngahere. For example, park and street tree maintenance and environmental programmes such as pest control and volunteer tree planting.
73. Planting across parks and open spaces which enhance existing assets are funded through regional planting programmes, the Million Trees programme, Local Board LDI funding, community and private partnerships.
74. To further amplify council’s planting programmes and support climate change initiatives additional resources and mechanisms are necessary.
75. A business case, to consider options to accelerate strategy outcomes, will be prepared within existing staff resources. The proposal will include financial, policy and regulatory mechanisms for sustained and incremental protection and growth of Auckland’s urban ngahere.
76. Future financial implications will be included in the business case and considered as part of the Long-term Plan process.

Ngā raru tūpono me ngā whakamaurutanga
Risks and mitigations
77. If the strategy is not implemented Auckland risks losing urban trees and vegetation cover.
78. This would affect Auckland’s identity and negatively impact on Auckland’s reputation as a leader in enhancing environmental stewardship and preserving cultural values (e.g. taonga trees), historic heritage places and significant areas.
79. Loss of trees and vegetation would also mean loss of ecosystem services provided by the urban ngahere such as:
   • reducing air pollution
   • reducing the rate and volume of storm water runoff
   • securing soil and preventing landslides
   • reducing energy costs for heating and cooling.
Next steps

80. Staff are developing a more comprehensive implementation programme to further support and fast-track implementation of the strategy.

81. This programme will identify specific projects and work streams at both regional and local scale and will be linked to the 18 high level actions in the strategy.

82. Staff will prepare a proposal for the Long-term Plan to enable enhanced delivery of the ngahere implementation programme.

Attachments

<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
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<td>Progress update on implementation of Auckland’s urban ngahere strategy</td>
<td>211</td>
</tr>
</tbody>
</table>

Signatories

<table>
<thead>
<tr>
<th>Author</th>
<th>Howell Davies - Senior Advisor - Urban Forest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authorisers</td>
<td>Mace Ward - General Manager Parks, Sports and Recreation</td>
</tr>
<tr>
<td></td>
<td>Barry Potter - Director Infrastructure and Environmental Services</td>
</tr>
</tbody>
</table>
Attachment A. Progress update on implementation of Auckland's urban ngahere strategy.

Key initiatives: Knowing, Growing and Protecting

The key initiatives that are underway to improve our understanding (Knowing) of Auckland’s urban ngahere include:

1. Completion of the comparative analysis of the LiDAR data to assess changes in canopy cover over the period 2013-2016/2018.
2. Development of 12 baseline reports funded by local boards describing the status of the urban ngahere within their local board areas in 2013, one further report under development.
3. Council parks has developed the BioTree app. This software application enables council contractors and staff to record the metrics on a range of urban ngahere management actions.
4. A collective with Wellington City Council, Christchurch City Council, and Canterbury University has been initiated to adopt the I-tree software to quantify ecosystem service dollar values and benefits, in such a way that it can be used for New Zealand. It will enable an Ecosystem services valuation study to be completed on the annual values that are provided by the public tree cover in urban auckland. This will help to inform climate action mitigation work on a regional scale.

The key initiatives to increase Auckland’s urban ngahere canopy cover (Growing) include:

5. Delivering on the Mayor’s pledge to plant a million native trees and shrubs over the 2016-2019 electoral term and extending the Mayor’s Million Trees Programme to 1.5 million trees in this electoral term.
6. Development in 2019 of locally focused growing action plan for the Watemata Local Board. In 2020 a further 11 growing plans are being developed with funding from local boards.
7. Completion of nursery capacity / inventory reviews to understand the current capacity of the indigenous plant nursery industry in the Auckland region. The review has enabled the development of a cross council working group to maximise the opportunities and scale of councils needs for supply of quality plants for its ongoing annual planting programmes in parks.
8. Detailed spatial analysis to identify the most suitable locations to create ecological corridors e.g. Build Ecological Corridors project funded through the Natural Environment Targeted Rate.
9. Auckland Transport’s Road and Streets Strategic Framework has adopted the councils ngahere strategy target of 30 per cent coverage regionally, with a desired outcome to deliver more street trees and greenery in transport networks.
10. Auckland council parks has agreed to a collaborative reforestation research project on regional parks land and led by Auckland University of Technology. The work involves planting new native trees onto regional parks managed and funded by AUT.

The key initiatives to preserve Auckland’s urban ngahere (Protecting) include:

11. A review of the efficiency of tree protection rules in the Auckland Unitary Plan undertaken through the section 35 AUP monitoring project.
12. Administration of council grants for planting on private properties, including the Regional Environment and Natural Heritage Grant scheme, the Community Facilitation and Coordination Fund, the Biodiversity Focus Areas Fund, and the Waterways Protection Fund.
13. Development of best practice guidance to deliver sustainable and flourishing green assets through green and brown field developments.
14. Various initiatives to raise public awareness of the values and benefits of the urban ngahere including a pilot initiative to establish urban trails (e.g. Tree Walks) within the central city area.
15. Working towards extending councils current young tree maintenance programmes to improve survival rates.
### Progress update on the 18 high-level actions identified in Auckland’s urban ngahere strategy

<table>
<thead>
<tr>
<th>High level actions to achieve ‘Knowing’ outcomes</th>
<th>Progress update July 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Incorporate three-yearly LiDAR surveys in council work programmes.</td>
<td>Analyses of the 2016/2018 LiDAR data and comparison with the 2013 results have recently been completed with the results published in Auckland’s technical report ‘Auckland’s urban forest canopy cover: state and change (2013-2016/2018)’. The report outlines changes in the urban ngahere canopy cover across the 16 central urban local boards and is the first in a series of publications that will look at aspects of state and changes in more detail. Key findings of this report are provided in the main committee report.</td>
</tr>
</tbody>
</table>

The technical report used LiDAR data collected in 2013 and between 2016 and 2018 to determine the current status of Auckland’s urban ngahere and identify changes over time across the 16 central urban local boards that were inside the Metropolitan Urban Limit (MUL). It should be recognised that the 2016/2018 analysis was of the whole region not just those areas inside of the MUL.

The tree canopy cover analysis (which defined canopy cover as trees and vegetation >3m in height) looked at 16 local boards in the central and predominantly urban part of the Auckland region. These were Papakura, Manurewa, Ōtara-Papatoetoe, Māngere-Ōtāhuhu, Howick, Maungakiekie-Tāmaki, Orākei, Waitāmatat, Albert-Eden, Pukekohe, Whau, Henderson-Masse, Upper Harbour, Kapiti, Devonport- Takapuna, and Hibiscus and Bays.

Changes in canopy cover are presented as a ‘net change’ and represent the difference between gains and losses at a regional and local board scale. The report does not characterise detailed gains and losses within local board areas (e.g. at a more local scale).

Initial analyses of canopy cover against land-cover and land-use classes, Auckland Unitary Plan zones and tenure (e.g. private versus public land) indicate that net losses are mainly related to clearance of exotic commercial forest, removal of trees and vegetation in rural industrial areas and removal of trees on private properties in both residential and rural zones.

A summary of some of the detail in the report is outlined in the bullet points below, noting that further work is underway to look at the findings in more detail.

The 2016/2018 average urban ngahere canopy cover over Auckland was 18.4%, which is similar to the 2013 average cover of 18.3%, but well below the 30% goal identified in Auckland’s urban ngahere strategy. The 0.1% net increase represents approximately 60ha which is the size of about 60 rugby fields.

At a local board scale, the average canopy cover ranged from 8% to 31%. The Kapātiki and Upper Harbour local boards had the highest average cover (respectively 31% and 28%) and Māngere-Ōtāhuhu and Ōtara-Papatoetoe local boards the lowest (respectively 8% and 9%).

Eleven of the 16 urban local boards meet the minimum threshold of 15% average canopy cover for local board areas identified in Auckland’s urban ngahere strategy. Five local boards, all located in southern parts of the Auckland region, are below this threshold.

Net changes (difference between losses and gains) at a local board scale between 2013 and 2016/2018 ranged from -8% for the Ōtara-Papatoetoe local board to +14% for the Takapuna-Devonport local board. Out of the 16 local boards ten experienced a net increase in canopy cover and six a net loss.

In terms of the number of hectares the biggest net losses occurred in the Hibiscus and Bays and Howick local boards (respectively -125 and -82 hectares). The biggest net gains were in the Upper Harbour and Albert-Eden local boards (respectively 74 and 55 hectares).

Initial analyses indicate that losses are widespread, but that locations experiencing more losses than gains are typically privately owned land (e.g. net loss of -159 ha (2%) on private land in the tenure classes) and/or rural areas (e.g. net loss of -190 ha (27%) in exotic forests across the land cover classes). This is likely inflated by areas of large-scale, commercial exotic forest harvesting, but also the removal of
shelterbelts and other large trees cleared for development, reflective of the changing land use that is enabled by the Unitary Plan e.g. Millwater.

On the other end of the spectrum, the locations experiencing more gains than losses are typically publicly owned road land (e.g. net gain of +142 ha (2%) in roads in the tenure classes) and recreational land (e.g. net gain of +56 ha (3%) in public open space in the unitary plan zone breakdown). However, as seen in the local board breakdown, these gains are not equally distributed.

The greatest gains were observed on public land such as recreational areas (e.g. public open space) and road corridors.

The current 2016-18 height distribution of the canopy surface is skewed toward the lower height classes: the 3-5 m and 5-10 m height classes comprise almost 75% of the canopy surface. Less than 5% of the canopy surface occupies heights of 20 m and above (Figure 3).

A direct comparison with between 2013-2016/2018 is not presented in the technical report but as shown in the Urban Forest Strategy, in 2013 64% of the urban ngahere canopy was less than 10m and 6% 20m or larger, indicating a greater proportion of canopy in lower height classes and lesser proportion of canopy in the higher height classes.

Further work to clarify the structural size distribution and change of the various height categories will be explored further as the data is analyses to a finer grain of detail. Overall tree canopy coverage is shown for the 21 local boards across the region – with a high of 31% and a low of 8%.

The high-level percentages show a trend of lower tree canopy cover occurring mainly in the southern portion of the region. Noting that significant growth has occurred with brown and green field development in this area.
### Table 1: Tree canopy cover change between 2013 and 2016-18

<table>
<thead>
<tr>
<th>Local Board</th>
<th>Canopy Cover 2013 (% of Local Board area)</th>
<th>Canopy Cover 2016-18 (% of Local Board area)</th>
<th>Net Change (Hectares)</th>
<th>Difference in Canopy Cover (%): 2016-18 vs 2013</th>
<th>Net Change compared to 2013 Canopy Cover area (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albert-Eden</td>
<td>20</td>
<td>22</td>
<td>55</td>
<td>1.9</td>
<td>10</td>
</tr>
<tr>
<td>Devonport-Takapuna</td>
<td>16</td>
<td>18</td>
<td>46</td>
<td>2.2</td>
<td>14</td>
</tr>
<tr>
<td>Henderson – Massey</td>
<td>15</td>
<td>15</td>
<td>21</td>
<td>0.4</td>
<td>3</td>
</tr>
<tr>
<td>Hibiscus and Bays</td>
<td>25</td>
<td>24</td>
<td>-125</td>
<td>-1.2</td>
<td>-5</td>
</tr>
<tr>
<td>Howick</td>
<td>16</td>
<td>15</td>
<td>-82</td>
<td>-1.2</td>
<td>-7</td>
</tr>
<tr>
<td>Kaipatiki</td>
<td>30</td>
<td>31</td>
<td>35</td>
<td>1.0</td>
<td>3</td>
</tr>
<tr>
<td>Mangere-Ötahuhu</td>
<td>8</td>
<td>8</td>
<td>-28</td>
<td>-0.5</td>
<td>-6</td>
</tr>
<tr>
<td>Manurewa</td>
<td>12</td>
<td>12</td>
<td>-8</td>
<td>-0.2</td>
<td>-2</td>
</tr>
<tr>
<td>Maungakiekie-Tamaki</td>
<td>11</td>
<td>12</td>
<td>32</td>
<td>0.9</td>
<td>8</td>
</tr>
<tr>
<td>Orakei</td>
<td>20</td>
<td>20</td>
<td>18</td>
<td>0.6</td>
<td>3</td>
</tr>
<tr>
<td>Ōtara-Papatowiro</td>
<td>9</td>
<td>9</td>
<td>-26</td>
<td>-0.7</td>
<td>-8</td>
</tr>
<tr>
<td>Papakura</td>
<td>13</td>
<td>13</td>
<td>-18</td>
<td>-0.4</td>
<td>-3</td>
</tr>
<tr>
<td>Puketapapa</td>
<td>20</td>
<td>21</td>
<td>18</td>
<td>1.0</td>
<td>5</td>
</tr>
<tr>
<td>Upper Harbour</td>
<td>27</td>
<td>28</td>
<td>74</td>
<td>1.1</td>
<td>4</td>
</tr>
<tr>
<td>Waitakere</td>
<td>19</td>
<td>21</td>
<td>31</td>
<td>1.6</td>
<td>8</td>
</tr>
<tr>
<td>Whau</td>
<td>17</td>
<td>18</td>
<td>16</td>
<td>0.6</td>
<td>3</td>
</tr>
<tr>
<td>Total (16 local boards)</td>
<td>18</td>
<td>18</td>
<td>60</td>
<td>0.1</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Collection of LiDAR data is a valuable macro tool useful for a range of purposes but is very expensive. Joint funding mechanisms are being explored with a recommendation to look at collecting aerial data for the region, on a five-year cycle. Staff are considering other geospatial remote sensing tools that could be employed to assess canopy cover and enable assessment of changes in tree canopy coverages. Council Geospatial Team is developing a remote sensing strategy, of which LiDAR and other aerial acquisitions will be a focus.

The technology enables accurate tracking of the region’s growth and development on several levels from storm water and flood plan modelling, coastal erosion monitoring, to tree canopy coverage. The tracking of the region’s development growth and its impacts of the environment is important to recognise when looking at ongoing environmental reporting and the development of performance measures on regional canopy cover assessments, over time. The target of 30% is a long-term measure that will take a number of decades of concerted effort to increase the tree coverages in the areas that need it most.

LTP funding will be sought for development of a high-level business case to cost and undertake the development of a funded work programme (every 5 years) in this area ongoing to enable better recording, analyse and understand the effects that changes are having; and where the negative impacts are taking place to help inform better decision making.

The loss and change in percentages of the overall extents of the vegetation cover of the region will be an important environmental measure going forward that can provide a multi-layered view in the terrestrial and marine areas of the region. The extent of the regions urban forest is...
Implementing Auckland’s Urban Ngahere (forest) Strategy – progress update July 2020

<table>
<thead>
<tr>
<th>2. Create database for existing tree-assets within two years.</th>
</tr>
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<tbody>
<tr>
<td>Staff from Parks Sport and Recreation and the Bio-Information Team in Environmental Services have developed the BioTree app which caters for a range of data collection options in urban forest management activities including revegetation programmes, ecological restoration work and street and park tree planting and maintenance activities.</td>
</tr>
<tr>
<td>The system development enables council to accurately track and spatially record tree planting and maintenance regionally across the various programmes that are delivered by Regional and Local Parks (PSR) programmes; alongside operational arbicultural maintenance work. The system development has enabled the establishment of an agile mobile platform to collect and store information in a central database.</td>
</tr>
<tr>
<td>The ‘ revegetation’ layer in GIS holds detail on the plantings that take place on councils regional and local parks network. Council teams involved in planting and revegetation activities, covering different departments and teams, have been inputting past, current and planned plantings into this database. To date the detailing now includes plantings across the region and covers a period of between 3-8 years.</td>
</tr>
<tr>
<td>The system will continue to be developed by councils’ experts in the Geospatial and Bioinformation teams. One of the next steps is to include an option to provide a platform for our community volunteers to help record and update the information that we have on the trees that make up the urban ngahere across the region.</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>3. Integrate scientific knowledge of the urban ngahere with mātauranga Māori in partnership with mana whenua of the urban ngahere.</th>
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<tbody>
<tr>
<td>Further work is required to integrate scientific knowledge of the urban ngahere with mātauranga Māori in partnership with mana whenua.</td>
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<tr>
<td>A bid was submitted to the Te Toa Taktini programme to progress mana whenua engagement to incorporate mātauranga Māori and ensure delivery of Māori outcomes through urban ngahere implementation, but this bid was unsuccessful.</td>
</tr>
<tr>
<td>Staff are looking to develop and include a specific programme to work with regional mana whenua to further this specific area of work. Additional new funding is needed to enable this work to be further explored to provide a more detailed anticipated scope of what this outcome should achieve along with the various scales of funding that are required to enable delivery.</td>
</tr>
<tr>
<td>Council officers have been working with mana whenua on the development of a trail that looks to integrate knowledge on the care and maintenance of plantings in the public realm alongside the daily maintenance delivery work that council will provide in this area once the development works are completed. A planting trial is planned as part of the Quay Street redevelopment work engaging mana whenua to deliver and maintain a range of native plants to enhance the diversity of the plantings.</td>
</tr>
</tbody>
</table>

**Attachment A**  
**Item 9**
### 4. Quantify values and benefits (within 12-18 months)

Work is underway in collaboration with Wellington City Council, Christchurch City Council, and Canterbury University to adapt i-tree software with the developers to quantify the value of environmental services and benefits of urban ngahere assets in such a way that it can be used for New Zealand conditions. 21 local and regional authorities have assisted in providing data on their local conditions which will be used by the USA developers to calibrate the system for use in New Zealand. It is an internationally recognised piece of software that has now been adapted for use in 21 International countries including Australia, Canada, and Europe.

Once the work to establish, baselines in New Zealand is complete it will enable council to complete a regional I-Tree study to determine the various estimated dollar values of benefits that are provided by the urban tree cover. It can also enable work to be undertaken at a finer scale to local board level so that the values of carbon sequestration and air quality improvements can be calculated locally.

The Auckland Climate Plan outlines a programme of urban tree research for council to undertake and/or support, and funding for this will be sought through the Long-term Plan.

### 5. Determine survival rates of new council plantings

Contractors undertaking planting on council-owned land now record tree maintenance activities and plant failure for the 2 to 5-year period following planting. Development of reporting tools to accurately establish survival rates for councils’ plantings on a regional scale is currently in progress. The task is complex and the areas in terms of hectares significant considering the Regional Parks Revegetation programmes and programmes in Local Parks (which together account for the majority of council planting).

The development and use of the BioTree app has enabled accurate recording of planting sites across the parks network however at this stage survival rates are not consistently captured across all council planting programmes. This is an area of improvement that the council’s Strategic Approach to Planting group is investigating in 2020, opportunities exist for consistent data capture using the BioTree Collector app.

Work is underway to provide detailed costing to further amplify the BioTree App development and increase its range of use, the extent of the user network with council officers and the range of volunteer groups and organisations that we work with.

### 6. Identify key pressures and risks in partnership with mana whenua and local boards

The strategy identified the need for an area specific approach to implementation engaging with local boards, treaty partners and key stakeholders to identify individual needs and drivers for growing and protecting Auckland’s urban ngahere.

In June 2018, Auckland Council’s Park Services department secured locally drive initiatives (LDI) funding from 13 local boards to support area-specific implementation of the strategy: Albert-Eden, Henderson-Massey, Hibiscus and Bays, Howick, Kapātiki, Māngere-Ōtāhuhu, Maungakiekie-Tāmaki, Ōrākei, Ōtara-Papatoetoe, Puketāpapa, Upper Harbour, Waitāmatatū and Whau.

The aim of these initiatives was to ensure that decision-makers are well informed on the scale, health and diversity of urban trees and other vegetation in each local board area and support an evidence-based, strategic approach for future decisions at the local board scale.

The Locally Driven Initiatives budget, (LDI) funded local board analysis (approx. 180K) have resulted in completion of detailed baseline reports for 12 local boards describing to a fine grain the current status of the urban ngahere coverages within their local board areas with one further report currently under development. Work is underway with these local boards to identify area specific pressures to help inform future management actions.

In 2019/2020 two new local boards provided LDI funding to support implementation of the strategy within their local board areas (the Manurewa and Waiheke local boards) bringing the total number of local boards supporting local implementation of the strategy with LDI funding to fifteen.
Significant further work is required to better understand existing and future risks and pressures to the urban ngahere in particular risks related to diseases such as Myrtle rust and risks related to anticipated impacts of climate change.

A range of national research programmes are underway to address the risk of Myrtle rust and Auckland Council now has a specific staff member who oversees Council’s response to this disease alongside a range of other amenity tree diseases.

The work around pest and disease threats to the urban tree cover has been highlighted this year with the largest programme of mature tree removal taking place in the Dutch Elm Disease (DED) management programme. The costs to council for the removal of infected elm trees across the region this year has exceed $300K and is the costliest to date in terms of physical removal costs, alongside the significant large loss of tree canopy coverage on public land in the areas that have been affected. The regional plant pest management strategy now includes DED which prioritises a better integration of the management and tracking of the disease across the region.

The costs associated with the removal of infected trees is only one component to consider. The loss of tree canopy coverage because of these removals is extensive and will take many decades to replace. The loss of environmental services the mature elm trees provided annually would likely be in the $10’s of thousands of dollars annually.

Replacing the maturity of these particular trees will take decades of effort and highlights the risks that are increasing to the urban forest as the climate changes and pests and diseases become more prevalent. Work is necessary to mitigate for this risk ongoing along with funding to enable proactive steps to highlight the risks and prioritise the response.

<table>
<thead>
<tr>
<th>High level actions to achieve ‘Growing’ outcomes</th>
<th>Progress update July 2020</th>
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<tbody>
<tr>
<td>7. Increase canopy cover in road corridors, parks, and open spaces to support an average of 30 per cent canopy cover across Auckland’s urban area with no local board area having less than 15 per cent canopy cover.</td>
<td>Numerous open space and park planting initiatives are undertaken by a variety of council departments for a variety of positive outcomes with many already initiated prior to adoption of Auckland’s urban ngahere strategy. Auckland Transport’s Road and Streets Strategic Framework identifies the need for street designs to provide enough space for street trees/vegetation, and more trees and greenery being a desired outcome for the transport network. The Transport Design Manual (TDM) includes guidance for designing roads and streets to incorporate street trees. The TDM outlines support for Auckland’s urban ngahere strategy and recognises the opportunity for planting in road corridors to help achieve the shared goal of 30 per cent average canopy cover across the region. A growing plan (The Waitāmatua Urban Ngahere Action Plan) was developed for the Waitāmatua local board in 2019 through an LDI funded project. This plan helps to inform open space/park and street tree plantings in their local board area going forward. Working is currently in progress to develop Growing plans for another 11 local boards. Information gathering and draft document are under development made possible through LDI funding ($120K). Final drafts of these are expected to be completed for signed off by local boards by September 2020. Funding was secured to plant trees in the 12 local boards who supported the programme, this is pending Emergency Budget decisions. It is uncertain whether this funding is going to be available in 2020-2021 financial year due to the current budget deficit it is likely this funding will be reallocated to more urgent needs and so planting is not expected to occur in the winter of 2020.</td>
</tr>
</tbody>
</table>
8. Identify and prioritise locations for future planting on public land in partnership with mana whenua and local boards.

Using the ‘ revegetation’ virtual dashboard that reports from the central tree database (see Knowing action 2) council departments are able to spatially input planned and potential planting locations to achieve their desired outcomes. The council Strategic Approach to Planting Group aims to use this information to develop a council-wide planting programme/plan.

Priority locations for future street-tree planting and public park plantings in the Waitakere local board area were identified using GIS modelling and are included in the Waitakere Urban Ngahere Action Plan. As mentioned above (see action 1) similar growing plans are under development for another 11 local boards.

A project named ‘Build Ecological Corridors’ funded through Auckland Council’s Natural Environment targeted rate (NERT) is developing a detailed spatial analysis to identify the most suitable locations to create ecological corridors through planting in both urban and rural areas. The analysis takes into consideration where existing vegetation / species / and important ecosystems are located and is anticipated to be used to prioritise Council funding for revegetation efforts to enable ecological corridor restoration on private and public land.

Similarly, the Freshwater Management Tool is being developed to identify sources of water contamination and identify the most efficient methods to improve water quality which includes (riparian) planting.

9. Use science and ongoing engagement with local boards, mana whenua and communities to inform decisions in relation to types of planting.

The work being undertaken in the ‘knowing’ phase of the strategy implementation, including various research workstreams, will be important for informing future planting decisions.

A collaborative reforestation project proposal led by Auckland University of Technology in partnership with Auckland Council has been initiated. AUT have funding and will oversee the management of the area nominated and arrange for it to be planted into natives

This project aims to revegetate 5 hectares of marginal farmland on public land to create a ‘Living Laboratory’ were university scientists will monitor indigenous tree growth rates, carbon sequestered, biodiversity, soil and water quality improvements, along with social and cultural (i.e. mātauranga) enhancements. A site has been selected on regional park land that is being retired from farming use the data gathered on the benefits of indigenous trees will be extremely useful in informing future decisions regarding appropriate plantings.

10. Increase the capacity of nursery programmes (including marae) to increase the supply of eco-sourced plants.

Several nursery capacity / inventory reviews have been undertaken by different council departments to understand the current capacity of the indigenous plant nursery industry in the Auckland region. These reviews have aimed to identify the commercial, iwi and community nurseries that supply council planting projects, along with their current capacity, diversity of species, barriers to expanding their operations, and areas of support they may require. Potential areas of support include training, financial incentives, biosecurity management, and the desire for more long-term plant contracts (i.e. 12-24 months) and certainty of plant demand. An important consideration identified through this workstream is how to balance the support given to community nurseries (including marae), without it impacting the commercial nursery industry and its ability to expand.

Council staff are currently investigating several avenues to establish a council-owned nursery, potentially in partnership with an existing community nursery, to improve the consistency of eco-sourced plant supply for urban planting projects. An LTP bid is being prepared to look at funding options to set up small locally resourced nurseries to help to supply the councils planting needs. The objective would be to work towards positive local outcomes by working with communities to develop a local sourced supply chain of trees and shrubs for our local restoration in parks.
11. Leverage partnerships established through existing initiatives (e.g. the Mayor's Million Trees programme).

The Mayor's Million Trees Programme created a Memorandum of Understanding (MOU) with the Department of Corrections to supply the majority of the eco-sourced plants for that planting programme, along with providing horticultural training and hands-on experience to Corrections inmates. This MOU with has been extended to potentially supply Auckland Council with an additional 60,000 plants over the next few years.

Auckland Council is pursuing several avenues to establish a council-owned nursery, potentially in partnership with an existing community nursery, to improve consistency of eco-sourced plant supply for urban planting projects across the region.

Work is underway to explore preparation of an application to Central Government looking at funding partnerships with Department of Conservation and the Billion Trees Programme.

<table>
<thead>
<tr>
<th>High level actions to achieve 'Protecting' outcomes</th>
<th>Progress update July 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>12. Complete a comprehensive review of tree protection under the Auckland Unitary Plan Operative in part.</td>
<td>A review of the efficiency of tree protection rules in the Auckland Unitary Plan will be part of a broader effectiveness and efficiency review of natural area provisions that will be undertaken through the section 35 AUP monitoring project. This monitoring information will form part of the evidence base for a section 32 AUP review beginning in 2023.</td>
</tr>
<tr>
<td>Plan Change 29, an administrative plan change focusing on tidying up the Notable Tree Schedule (without adding, removing, or re-evaluating existing trees on the list) is underway with a hearing scheduled for the third quarter of this year.</td>
<td></td>
</tr>
</tbody>
</table>

| 13. Explore potential for new regulatory tools to protect trees on private properties (e.g. working with central government) | Given the current RMA reform process undertaken by central government, no further work has been carried out to explore the potential for new regulatory tools to protect trees on private properties. |

<table>
<thead>
<tr>
<th>14. Increase landowner grants and incentive programmes (e.g. heritage tree fund for private property owners)</th>
<th>Auckland Council administers several grant programmes for planting on private property, including:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- The Regional Environment and Natural Heritage Grant scheme (total funding $675,000) – open to individuals, community groups, hapū, iwi, whānau, marae organisations, trusts and all other organisations that contribute to the protection and improvement of regionally significant areas and/or promote efficient and sustainable resource use.</td>
<td></td>
</tr>
<tr>
<td>- The Community Facilitation and Coordination Fund (funded through NEfTR, total funding in 2018/19FY of $740,000) – support local community groups to facilitate projects with a biodiversity/restoration focus.</td>
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<tr>
<td>- The Biodiversity Focus Areas Fund is currently being developed and is intended to support private landowners to manage and expand indigenous ecosystems on their property.</td>
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<tr>
<td>- Local boards can provide funding for grants that can support smaller environment restoration projects.</td>
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</tbody>
</table>
Attachment A

Item 9

The key current and future pressures to Auckland’s urban ngahere have been identified as:

- Pests and diseases – the Natural Environment Targeted Rate provided substantial funding for additional activities to address pest, weed and disease risks to indigenous plants. The Regional Pest Management Plan (2019-2029) sets out how invasive species should best be managed and is currently being finalised.
- Climate Change – the Auckland Climate Change Risk Assessments (2019) included identification of climate risks to terrestrial species and ecosystems in Auckland, and actions in Auckland’s Climate Plan are being developed to address these risks.
- Urban Development – blue-green networks are being identified as part of Auckland Council’s structure planning process, and various Auckland Council submissions on proposed national directions (e.g. RMA reforms, NPS-Urban Development, Kanga Ora Bill) identified opportunities to deliver better environmental outcomes as part of urban development. Urban development pressures at the scale of local boards are discussed as part of the LDI funded local board projects.

Further work is needed to accurately track losses of urban trees and vegetation as a result of urban development enabled through Auckland’s Unitary Plan (see also actions under knowing objective). This information will help to identify the need for new planting requirements to ensure urban development does not result in a net loss of urban ngahere canopy cover. Existing efforts to incorporate green infrastructure in urban development projects will be continued.

The work to raise awareness of the values of the urban ngahere is ongoing and is being delivered through a range of programmes in the Park Services, Environmental Services and Healthy Waters departments.

For example, Auckland Council’s senior urban forest advisor in Park Services has worked with its graduates and specialists in the Plans and Places Heritage department (CPO) to develop a series of ‘Tree Walks’ to raise awareness of the notable trees in Waitakere and Maungakiekie-Tamaki Local Board areas. The Te Ara o Tamaki Makaurau/AKL Paths platform now has two walk registered for users to follow and includes a number of significant notable trees along with detailing to add educational value for the users experience. The aim is to further develop this type of approach to recognise the values of the 6,500+ notable trees across the region.

Auckland Council’s Engineering and Technical Services department is working with council’s experts on the development of a green assets chapter within the Auckland Council’s Code of Practice (COP) documents. The draft includes a range of best practice guidance for future green and brown field developments to ensure the green assets created by development align to the principle of the right tree in the right place to ensure a sustainable and flourishing ngahere. This will direct better long term public urban realm development along roads, and in public open spaces. A final version is expected to be released later in 2020.

Volunteering programmes in Park Services alongside teams in Environmental Services and Healthy Waters are delivering programmes for new tree plantings that recognise the need to plant ‘the right trees in the right places’. These programmes also look at ecosystem services provided by different species to help with the selection of species for planting programmes in catchments of for example the Waitamata, Manukau, and Kaparau catchments with a goal to improve the water quality.

Council applied to the international Tree Cities of the World programme in December 2019. The application was accepted and approved in January 2020. Auckland Council is now one of 70+ international cities that are part of this programme. Acceptance indicates that the efforts council is adopting with the strategy development and the associated range of work programmes at a local level meets the programme international standards and shows that the efforts that are being implemented by council meet the standards when assessed against the
<table>
<thead>
<tr>
<th>Item 9</th>
<th>Implementing Auckland’s Urban Ngahere (forest) Strategy – progress update July 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.</td>
<td>Raise arboriculture maintenance programme from two to five years or until new plantings are well established (a target survival rate of 70-80% per cent).</td>
</tr>
<tr>
<td>18.</td>
<td>Establish a labelling programme for protected trees within 12 months (e.g. species, age, and benefits).</td>
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</tbody>
</table>
Te take mō te pūrongo
 Purpose of the report

1. To approve a programme of work to develop a 100-year adaptive management policy to respond to too much water, including flooding, coastal inundation and associated coastal erosion.

Whakarāpopototanga matua
 Executive summary

2. Te Tāruke-ā-Tawhiri: Auckland’s Climate Plan, being considered at this meeting, indicates that natural hazards caused by too much water are expected to increase in frequency and scale across Auckland. The impact of these hazards may also increase.

3. The Environment and Community Committee on 10 July 2019 [ENV/2019/111 refers] requested that staff report back on a scope for developing a region wide, long-term policy position responding to adverse natural weather events.

4. Staff propose the development of a 100-year adaptive management policy in response. This approach draws upon a range of good practice.

5. Taking a long-term approach allows new knowledge, technological advancements and political change to inform ongoing policy refinement. It recognises the intergenerational impact of too much water and that the effectiveness of some interventions may diminish.

6. Approval is sought to develop the policy through four key workstreams:
   - *interventions*: principles, roles and responsibilities, regulatory and non-regulatory interventions, financial tools and implementation approaches
   - *risk and liability*: short, medium, long-term assessments
   - *knowledge*: research, data, monitoring and evaluation
   - *social change*: community engagement, education and awareness.

7. The proposed adaptive management policy seeks to prevent or mitigate high risks to people. Natural hazards can have a disproportionate impact on people on low incomes, people with disabilities and new migrants. It also seeks to appropriately apportion risk and liability.

8. The next steps are to develop interim policy principles by December 2020. This work will mitigate the risk if significant natural weather events occur during the policy development process. Local board input will be sought on the draft and final policy as set out in the agreed principles and processes.

9. A discussion document will then be prepared to facilitate engagement with local boards, Māori and the public in March 2021. The other key deliverables are a draft policy by September 2021 and a final policy document expected by December 2021 ready for consideration by local boards and then the committee.
Ngā tūtohunga
Recommendation/s

That the Environment and Climate Change Committee:

a) note that Te Tāruke-ā-Tawhiri: Auckland’s Climate Plan indicates that Auckland may face more hazards caused by too much water; these hazards may increase in terms of frequency and scale; and the impacts of these hazards on Aucklanders may also increase

b) note that the costs and benefits of responding to hazards caused by too much water will be borne by, and accrue to, at least three generations of Aucklanders

c) note that, over time, the effectiveness of some interventions that have traditionally been used to prevent or mitigate the impact of hazards caused by too much water may diminish

d) approve a programme of work to develop a 100-year adaptive management policy to respond to hazards caused by too much water that includes the following workstreams and deliverables:

Workstreams

i) interventions: principles, roles and responsibilities, regulatory and non-regulatory interventions, financial management and implementation approaches

ii) risk and liability: short, medium, long-term assessments

iii) knowledge: research, data, monitoring and evaluation

iv) social change: community engagement, education and awareness

Deliverables

v) interim principles (December 2020) to guide the council’s response to hazards caused by too much water while the long-term policy is developed

vi) a discussion document (March 2021), including interim principles, intervention logic to support each council function or policy intervention and a comparative analysis of possible responses, based on a comprehensive stocktake and identification of good practice

vii) a draft policy (September 2021) and a final policy document (December 2021) for consideration by local boards and then the committee.

Horopaki
Context

Auckland is at risk of natural hazards

10. Auckland is exposed to a variety of natural events and hazards including flooding, severe storms, coastal inundation, volcanoes and earthquakes.

11. Many of these issues are identifiable and Auckland Council has prepared detailed risk assessments and response planning. Despite this work, significant unexpected events may occur. Their frequency, scale and impact could impact the wellbeing of Aucklanders.

Too much water is relatively common in Auckland

12. Auckland is surrounded and, at times, covered by water. Many natural processes such as rain or ocean currents bring large volumes of water to the region.
13. Te Tāruke-ā-Tawhiri: Auckland’s Climate Plan indicates that Auckland may face more hazards caused by too much water; these hazards may increase in terms of frequency and scale; and the impacts of these hazards on Aucklanders may also increase.

14. Climate change projections indicate that the Auckland region is likely to experience stronger ex-tropical cyclones, extreme rainfall events and ongoing sea level rise.

15. Nearly every year we will experience a damaging flood landslide, cliff fall or other significant event somewhere in the region.

16. Rainfall impacts are expected to be different across the region. The number of heavy rain days per year is projected to increase for most of the region but decrease in the northeast of the region.²

17. These events can become unsafe when they impact on people’s lives.

18. The risks have been increased by reclaiming coastal land, modifying landscapes, increasing impervious surfaces and building in vulnerable locations.

19. Risk can be increased by ongoing development and population growth.

Council has regional and territorial responsibilities to manage

20. Auckland Council has a range of natural hazard management roles and responsibilities. They relate to both its regional and territorial functions.

Table 1: Legislation relating to natural hazard management

| National legislation                                                                                      |
| Local Government Act 2002                                                                                   |
| Council must ensure that the current and future needs of the community for good-quality local infrastructure, local public services and performance of regulatory functions are provided for in a cost-effective manner. This includes managing natural hazards risks when providing infrastructure that enables growth, such as stormwater infrastructure. |
| Resource Management Act 1991                                                                                 |
| Council must manage our natural and built environment. In this role, Council has a range of tools at its disposal that can reduce risk (for example, through land use planning) and increase resilience to a natural hazard event (for example, by ensuring that the environment is protected and managed to provide natural buffers.) |
| Building Act 2004 and Building Code                                                                          |
| Council acts as a regulatory authority and must ensure that buildings and structures are safe and sanitary. |
| Civil Defence Emergency Management Act 2002                                                                    |
| Council must plan and provide for civil defence emergency management within its district, including natural hazards. This task is undertaken by Auckland Emergency Management. |

² NIWA, “Auckland Region climate change projections and impacts”, January 2018
## The council acts in dual capacities as a regional council and territorial authority

<table>
<thead>
<tr>
<th>Regional council duties</th>
<th>Territorial authority duties</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Maintain records of river flows, lake levels, rainfalls and past floods.</td>
<td>□ Collect information on flooding.</td>
</tr>
<tr>
<td>□ Model water flows so they can warn of future flooding.</td>
<td>□ Responsible for controlling buildings and the effects of land use to reduce flood risk.</td>
</tr>
<tr>
<td>□ Issue flood warnings and provide emergency management.</td>
<td></td>
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</tbody>
</table>

### There is a need for long-term regional policy

21. Extreme rainfall events in February and April 2018 caused significant flooding in Piha. Subsequent council analysis concluded that the Piha Stream is subject to flash flooding and that unsafe flooding may occur frequently.

22. The Environment and Community Committee on 10 July 2019 [ENV/2019/111 refers] approved responses to minimise the impact of these storm events based on Ministry for the Environment guidance of ‘local solutions to local problems’.

23. The committee also requested that staff report back in the new council term on a scope for developing a region wide, long-term policy position responding to adverse natural weather events.

### Tātaritanga me ngā tohutohu

#### Analysis and advice

24. The Auckland Plan 2050 sets direction that we proactively adapt to a changing water future. Long-term solutions are needed to improve our ability to manage and respond to water-related hazards.³

25. Both the Auckland Plan 2050 and Te Tāruke-Ā-Tāwhiri: Auckland’s Climate Plan, advocate for greater resilience to such events.

26. Staff have identified both a problem and opportunity to develop regional policy in this area.

#### Problem definition

##### Auckland is at risk of dangers involving too much water

27. Auckland is vulnerable to a range of water hazards that can risk our safety and our daily lives. Threats include intense storm events, flood erosion, coastal inundation and erosion, sea level rise, local and regional floods and tsunamis.

28. There are multiple causes of too much water, but they generally fall into four categories.

29. A breakdown of the types of causes in each category are listed in Table 2 below. These causes were derived using a logic exercise provided in Attachment A.

30. Water hazards are dangerous when they impact on people and the things we value. These areas of impact are social, cultural, economic and environmental.

---

³ Auckland Council, “The Auckland Plan 2050”, Focus Area 5, June 2018
Table 2: The causes of too much water

<table>
<thead>
<tr>
<th>Changing average weather patterns</th>
<th>Day-to-day weather</th>
<th>Physical movement</th>
<th>Human activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Rising sea levels</td>
<td>□ Cyclones</td>
<td>□ Earthquakes</td>
<td>□ Housing and development</td>
</tr>
<tr>
<td>□ Changing ocean currents</td>
<td>□ Storm surge</td>
<td>□ Volcanoes</td>
<td>□ Soil degradation</td>
</tr>
<tr>
<td>□ Changing storm intensity</td>
<td>□ Precipitation</td>
<td>□ King tides</td>
<td>□ Modification and reclamation of land</td>
</tr>
</tbody>
</table>

Opportunity identification

There is an opportunity to develop a cohesive long-term policy to respond to too much water

31. Council would benefit from having a single coherent regional policy that seeks to prevent or mitigate the risk to Aucklanders from too much water over the short, medium and long-term, and that appropriately apportions risk and liability.

32. We currently have a wide range of asset management plans, action plans, frameworks and toolboxes for addressing natural hazards.

33. Other policy documents focus on key population groups, including Māori, young people and diverse communities, which will be affected by water hazards.

34. The strategic context of this work includes:

- The Auckland Plan 2050
- Te Tāruke-Ā-Tāwhiri: Auckland’s Climate Plan
- The Auckland Unitary Plan
- Māori Plan 2017
- Thriving Communities Action Plan 2014
- I Am Auckland
- Our Water Future Discussion Document 2019
- Coastal Management Framework 2017
- Coastal Compartment Management Plans
- Natural Hazards Risk Management Action Plan
- Resilient Auckland – Auckland Civil Defence and Emergency Management Group Plan 2016
- Natural Hazard Risk Comms Toolbox.

Staff propose an adaptive management policy to address too much water

35. Staff propose to develop a 100-year adaptive management policy, including short, medium and long-term milestones, to address hazards from too much water. This would also contribute to Te Tāruke-Ā-Tāwhiri: Auckland’s Climate Plan, considered at this meeting.

36. This is a very long horizon for any strategic planning process, meaning regular reviews and iterations will be essential to success.

37. The policy would build upon the existing strategic context and provide a cohesive response.

38. It would seek to use all the levers at council's disposal to prevent or mitigate risks to Aucklanders. It would also help the public understand their roles and responsibilities as well as the costs and benefits of taking action to address too much water.
What is adaptive planning?

39. Adaptive planning is an iterative process of information gathering, analysis, and intervention.
40. In this context, it means testing a range of responses to ‘too much water’ against possible future scenarios.
41. Pathways are mapped that will best manage, reduce or avoid risk.
42. A plan is developed, with short-term actions and long-term options, and includes pre-defined points (triggers) where decisions can be revisited.
43. Building the decision cycle is structured around five key questions:
   - what is happening?
   - what matters most?
   - what can we do about it?
   - how can we implement the policy?
   - is it working?

Why use an adaptive planning approach?

44. An adaptive planning approach recognises that it is usually not possible, practical or sensible for decisions to wait until uncertainties are reduced.
45. This is important in the context of ‘too much water’ because there will be considerable variability in water hazards across the region. There is a high degree of uncertainty about ongoing sea-level rise. The scale of climate change impacts is also unclear.
46. When planning for the future under uncertain conditions, it is important to use a method which considers potential for the transfer of risk in the future, legal liabilities, and the financial consequences of decisions to others, including future generations.
47. An adaptive approach also anticipates and responds to change. Some change can be predicted, including new knowledge, technological advancements and political change.
48. The policy or agreed actions can be adjusted, for example if new climate change information becomes available.
49. This helps avoid locking in investments that could make future adjustments difficult and costly. As such, it assists both longer-term sustainability and community resilience.
The proposed approach draws upon a range of good practice

50. In proposing a long-term adaptive management policy as the preferred approach, staff considered international and national guidance documents as well as good practice examples.

Three key ideas central to this framework are:

- a greater effort to understand risk (in all its dimensions), so we can prioritise investment, make better risk-informed decisions, and build resilience into everyday processes
- a shift of focus from managing disaster to managing risks, including to reduce the underlying drivers of risk (exposure and vulnerability).
- a broader whole-of-society approach to risk where everyone has a role in reducing and managing risk.

---

Sendai Framework for Disaster Risk Reduction 2015-2030

This national policy provides guidance on strategic planning which includes considering:

- the nature of coastal hazard risk and how it might change over at least a 100-year timeframe
- where, how and when to provide for future residential and urban development at a regional and district level
- responses, including managed retreat, for existing developments that may be impacted by climate change.

---

New Zealand Coastal Policy Statement 2010

Ministry for the Environment’s guidance document which introduces:

- new material on hazard, risk and vulnerability assessment, and collaborative approaches to engaging with communities.
- a dynamic adaptive pathways planning approach. This approach identifies ways forward (pathways) despite uncertainty, while remaining responsive to change should this be needed (dynamic).

---

Preparing for coastal change (2017)

Principles of this strategy include:

- taking a long-term approach to coastal hazards impact management in order to develop resilient communities out to 2120
- ensuring that coastal hazard responses are assessed on the basis of...
Strategy 2120

| adaptability and the site-specific nature of the particular coastal hazard; and not preclude or unnecessarily constrain choices to adopt different options into the medium- and longer-term horizons |
| making decisions on a level of community resilience to coastal hazards that is consistent with the likelihood of the risk, the magnitude of the consequences, and the community’s desire for risk acceptance |
| minimising public costs arising from decisions made by private landowners, which incur unnecessary risks despite available information. |

What other options could we consider?

51. There are two possible options that council could consider instead of the proposed adaptive management approach.

52. One option is to continue to operate under the current wide range of plans outlined in paragraph 34 above.

53. This option has been discounted. This is because engagement with communities on flooding, coastal inundation and erosion has shown that there is confusion about the roles and responsibilities of public and private interests.

54. Council could also employ ‘predict and act policies’.

55. This option has also been discounted. Without a planned response, there is a risk adaptation could be ad-hoc and limit future options. The risk to communities from too much water is also expected to increase over time.

What is the scope of the proposed programme of work?

56. Approval is sought to develop the policy through four key workstreams:

- **interventions**: principles, roles and responsibilities, regulatory and non-regulatory interventions, financial management and implementation approaches
- **risk and liability**: short, medium, long-term assessments
- **knowledge**: research, data, monitoring and evaluation
- **social change**: community engagement, education and awareness

57. It will entail the following deliverables:

- interim principles to guide the council’s response to hazards caused by too much water while the long-term policy is developed
- a discussion document, including interim principles, intervention logic to support each council function or policy intervention and a comparative analysis of possible responses, based on a comprehensive stocktake and identification of good practice
- a draft policy and final policy document for consideration by local boards and then the committee.

Tauākī whakaaweawe āhuarangi

Climate impact statement

58. Climate change will bring more extreme weather events to Auckland, amplifying the natural dangers from too much water. Both the Auckland Plan 2050 and Te Tāruke-Ā-Tāwhiri: Auckland’s Climate Plan advocate for greater resilience to such events.

59. There are no climate impacts arising from this scoping report. Rather this report addresses aspects of climate change to assist in making Aucklanders better prepared and more able to respond to adverse weather events.
Ngā whakaaweawe me ngā tirohanga a te rōpū Kaunihera
Council group impacts and views

60. Legal risk, especially in relation to land use decisions, affect the council group.
61. There has been initial engagement with staff at Auckland Transport, Panuku and Watercare
to build awareness of the development of regional policy to address too much water and toseek views on the scope of the work. Engagement will continue when the workstreams are
underway.

Ngā whakaaweawe ā-rohe me ngā tirohanga a te poari ā-rohe
Local impacts and local board views

The new regional policy initiation process includes assessing local board relevance

62. In October 2019, Auckland Council introduced an initiation process for regional policy as part
of its shared governance approach. This process gives the committee ability to approve the
scope for the review and its relevance to local boards.

<table>
<thead>
<tr>
<th>Relevance to local boards</th>
<th>Level of local board input on:</th>
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<tbody>
<tr>
<td></td>
<td>Options</td>
<td>Draft Policy</td>
</tr>
<tr>
<td>Impacts local governance[1]</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>High interest[2]</td>
<td>×</td>
<td>✓</td>
</tr>
<tr>
<td>Low interest[3]</td>
<td>×</td>
<td>×</td>
</tr>
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</table>

63. Staff have assessed the adaptive policy development against the ‘Local Board involvement
in Regional Policy, Plan and Bylaws: Agreed Principles and Processes 2019’. Development
of a regional adaptive management policy does not impact on local governance and has
been assessed as a high level of interest to local boards. This means that local boards will
be involved through consideration of the:
- draft policy for feedback to the committee
- proposed final policy and public feedback for formal feedback to the committee.

Natural hazards can have a disproportionate impact on some households

64. Socio-economic factors in particular influence a person’s or community’s capacity to
anticipate risk and adapt to natural hazards.
65. There is also a relationship between socio-economic status and the ability to cope with, and
recover from, natural hazards. People with low incomes and those living in rental
accommodation are more vulnerable and take longer to recover.
66. There are increased risks for children, elderly people and people with disabilities in floods.
This can be mitigated by advance planning, bespoke services and additional support.
67. New migrants may have less understanding, or experience of, dealing with the types of
natural hazards that Auckland will face. They may also lack the social networks that
underpin resilience and recovery. New migrants should be a target of education
programmes and will require additional support following a natural hazard.

[1] Governance means review impacts assets or services that a local board has a decision-making role.
[2] High interest means review is of major interest to one or more local communities
[3] Low interest means review does not impact local governance and is not high interest.
Tauākī whakaaweawe Māori
Māori impact statement

68. Natural hazards caused by too much water is an issue of significance for mana whenua and mataawaka. Ensuring the safety of people, communities, marae and sites of cultural significance are key concerns.

69. There are no specific impacts arising from the development of this scoping document.

Natural hazards are an issue of significance for Māori

70. Environmental resilience, protection and management is identified in the Kaitiakitanga – Ensuring Sustainable Futures key direction of the Māori Plan for Tāmaki Makaurau.

71. An adaptive management policy to prevent, mitigate and respond to water-based natural hazards will investigate how to incorporate an intergenerational responsibility to protect, maintain and enhance wellbeing.

72. The proposed 100-year timeframe responds to the focus on intergenerational reciprocity and reducing risks to future generations.

Mana whenua have expressed interest in the issue and seek involvement in policy development

Mana whenua were informed of council’s intent to develop a long-term natural hazards policy and were invited to provide input.

73. Some mana whenua groups indicated their interest in being involved in the policy development process.

74. Ngāti Te Ata Waiohoua and Te Kawerau ā Maki requested involvement in the policy development process and provided feedback, which highlighted the need to:

- consider risks to Māori land and housing, marae, cultural sites, resource gathering and harvesting
- draw upon mana whenua experiences with flooding, coastal inundation, erosion and drought and acknowledge the impact of climate change on these hazards
- incorporate te ao Māori (the Māori world view) and mātauranga Māori (Māori knowledge) in policy responses and acknowledge the spiritual relationship of Māori with the whenua (land).

Staff propose to involve Māori in policy development

75. Staff will develop a communications and engagement plan that seeks a range of opportunities for ongoing involvement by mana whenua and mataawaka in policy development. Including opportunities to share their experiences preventing, mitigating and responding to water-based natural hazards.

76. This can include kanohi ki te kanohi (face to face), hui (workshops, meetings), data collection and information sharing as well as other ways mana whenua and mataawaka may choose to be involved.

77. A stocktake of iwi management plans across Tāmaki Makaurau will be completed.

78. A number of these management plans address the threat of adverse weather and natural hazards, including coastal inundation and erosion, flooding, drought, land instability and fire.

Ngā ritenga ā-pūtea
Financial implications

79. The costs associated with the development of the adaptive management policy can be met within existing departmental budgets for 2020/21.

80. At this stage two full-time equivalent staff will be allocated to the project.
81. Staff from across the council will also contribute knowledge and information. This ensures the project team has a good mix of capability and knowledge in environmental science, social sciences, research, engineering and operational delivery.

82. Research will be sourced, where possible, from the Research and Evaluation Unit and the Natural Hazards Research Programme.

83. There are costs associated with engaging with Aucklanders, Māori and vulnerable populations. The engagement plan will be designed and managed within existing departmental budgets.

Ngā raru tūpono me ngā whakamaurutanga
Risks and mitigations

84. The proposed adaptive management policy seeks to prevent or mitigate high risks on people from natural hazards. These events can have a disproportionate impact on people on low incomes, people with disabilities and new migrants. This can be reduced by taking an equity-based approach.

85. Identification and mitigation of all other risk categories is the focus of the risk and liability workstream.

Ngā koringa ā-muri
Next steps

86. A council policy on responding to natural hazards will take time to develop, and it is possible that significant natural weather events could occur during this process.

87. It is recommended that key policy principles are developed in the interim to minimise risk.

88. A discussion document will also be prepared to facilitate engagement with local boards, Māori and the public.

Interim principles – to guide the council’s response and mitigate risk if significant weather events occur during the policy development

Discussion document – including intervention logic and comparative analysis to facilitate engagement with local boards, Māori and the public

Draft policy – for consideration by local boards, the committee and then the public

- Engagement plan

Final policy document – for consideration by local boards and then the committee.
Ngā tāpirihanga

Attachments

<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
<th>Page</th>
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<tbody>
<tr>
<td>A0</td>
<td>Logic exercise to understand causes of too much water</td>
<td>235</td>
</tr>
</tbody>
</table>

Ngā kaihaina

Signatories

| Authors                  | Maclean Grindell - Policy Analyst  
|                         | Paul Marriott-Lloyd - Senior Policy Manager |
| Authorisers              | Kataraina Maki – General Manager - Community & Social Policy  
|                         | Jacques Victor – General Manager Auckland Plan Strategy and Research  
|                         | Barry Potter - Director Infrastructure and Environmental Services |
Attachment A: Logic exercise to understand causes of too much water

There is too much water.

Why?

There is more water entering the environment than normal.

Why?

Why?

Sea level rise.
- Heavy/consistent precipitation
- Run-off from neighbouring environments

Why?

Run-off from neighbouring environments?

Why?

Why heavy/consistent precipitation?

More water in the ocean.
- Ocean water pushed to specific place

Why?

Why ocean water pushed to specific place?

Climate change (melting ice)
- Climate change (changing currents)
- Tsunami
- Natural events (tsunami, earthquakes, volcanoes, etc.)
- Cyclone storm surge

Why?

Why?

Sea level rise?

Cyclone precipitation.
- Climate change
- 50 year/100 year/500 year event

Why?

Why?

The environment cannot process the water.
- Human interference of water exits

Why?

Why?

Why?

Why?

Why?

Infrastructure developments (walking, housing, mining, dams)
- Agriculture
- Soil degradation
- Cumulative effects of landscaping
- Deforestation

Why?

Why?

Why?

Why?

Soil moisture conditions.
- Rising temperatures (evaporation)
  - Prolonged sun exposure
  - Less precipitation
  - Human interference

Why?

Why?

Why?

Why?

Why?

Why?

Why?

Climate change
- 50 year/100 year/500 year event
- Natural events (tsunami, earthquakes, volcanoes, etc.)
- Cyclone storm surge

Why?
Te take mō te pūrongo
Purpose of the report
1. To receive a summary and provide a public record of memoranda or briefing papers that may have been held or been distributed to Environment and Climate Change Committee members.

Whakarāpopototanga matua
Executive summary
2. This is a regular information-only report which aims to provide greater visibility of information circulated to the Environment and Climate Change Committee members via memoranda/briefings or other means, where no decisions are required.
3. The following memos were circulated to members of the Environment and Climate Change Committee:

<table>
<thead>
<tr>
<th>Date</th>
<th>Memo</th>
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</thead>
<tbody>
<tr>
<td>1/4/2020</td>
<td>Confidential: Changes to disposal of mixed paper and cardboard collected through kerbside recycling bins. (no attachment)</td>
</tr>
<tr>
<td>23/04/2020</td>
<td>Update on Regional Sector Environmental Enhancement Projects 2020-2023. (attachment A)</td>
</tr>
<tr>
<td>30/4/2020</td>
<td>Auckland Council’s submission on Taumata Arowai – Water Services Regulator Bill. (attachment B)</td>
</tr>
<tr>
<td>1/5/2020</td>
<td>Confidential: Update on disposal of mixed paper, cardboard and plastic collected through kerbside recycling bins. (no attachment)</td>
</tr>
<tr>
<td>7/5/2020</td>
<td>Update on Regional Pest Management Plan Environment Court appeals. (attachment C)</td>
</tr>
<tr>
<td>8/5/2020</td>
<td>Auckland Council’s input into the Ministry for the Environment’s Basel Amendment Industry Engagement. (attachment D)</td>
</tr>
<tr>
<td>15/5/2020</td>
<td>Confidential: Approval of Auckland Council’s submission to central government’s consultation on Managing the trade in plastic waste: New Zealand’s approach to implementing amendments to the Basel Convention. (no attachment)</td>
</tr>
<tr>
<td>1/7/2020</td>
<td>Confidential: Update on waste contracts. (no attachment)</td>
</tr>
<tr>
<td>2/07/2020</td>
<td>Confidential: Waste-to-energy in Tāmaki Makaurau / Auckland on waste contracts. (no attachment)</td>
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</tbody>
</table>
4. The following workshops/briefings have taken place:

<table>
<thead>
<tr>
<th>Date</th>
<th>Workshop/Briefing</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/6/2020</td>
<td>Confidential joint Environment and Climate Change and Planning Committee workshop – Transport Climate Change. (no attachment)</td>
</tr>
<tr>
<td>24/6/2020</td>
<td>Environment and Climate Change Committee workshop - Te Tāruke-ā-Tāwhiri: Auckland’s Climate Plan Review of draft plan. (attachment F)</td>
</tr>
</tbody>
</table>

5. These documents can be found on the Auckland Council website, at the following link: http://infocouncil.aucklandcouncil.govt.nz/
at the top left of the page, select meeting/ Kōmiti Mō Te Hurihanga Āhuarangi me Te Taiaro “Environment and Climate Change” from the drop-down tab and click “View”.
- under ‘Attachments’, select either the HTML or PDF version of the document entitled ‘Extra Attachments’.

6. Note that, unlike an agenda report, **staff will not be present to answer questions about the items referred to in this summary.** Governing Body members should direct any questions to the authors.

**Ngā tūtohunga**

**Recommendation/s**

That the Environment and Climate Change Committee:

- receive the Summary of Environment and Climate Change Committee information memoranda and briefings – 21 July 2020.

**Ngā tāpirihanga**

**Attachments**

<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Update on Regional Sector Memorandum Environmental Enhancement Projects 2020-2023 <em>(Under Separate Cover)</em></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Memorandum Auckland Council’s submission on Taumata Arowai – Water Services Regulator Bill <em>(Under Separate Cover)</em></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Update on Regional Pest Management Plan Environment Court appeals <em>(Under Separate Cover)</em></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Auckland Council’s input into the Memorandum Ministry for the Environment’s Basel Amendment Industry Engagement <em>(Under Separate Cover)</em></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Strategic Approach to Sediment programme – June 2020 update <em>(Under Separate Cover)</em></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>Environment and Climate Change Committee workshop - Te Tāruke-ā-Tāwhiri: Auckland’s Climate Plan Review of draft plan. <em>(Under Separate Cover)</em></td>
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</tbody>
</table>
Ngā kaihaina
Signatories

<table>
<thead>
<tr>
<th>Author</th>
<th>Suad Allie - Kaitohutohu Mana Whakahaere Matua / Senior Governance Advisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authoriser</td>
<td>Barry Potter - Director Infrastructure and Environmental Services</td>
</tr>
</tbody>
</table>