Ministry for the Environment
Manatū Mō Te Taiao

Ministry for the Environment's Submission on He Tūāpapa ki te ora, Infrastructure for a Better Future

1. The Ministry for the Environment (MfE) thanks Te Waihanga for the opportunity to provide feedback on 'He Tūāpapa ki te ora, Infrastructure for a Better Future'.
2. Many of MfE's stewardship responsibilities are integrally intertwined with infrastructure – freshwater, urban water, greenhouse gas (GHG) emissions reduction and adapting to a changing climate, urban planning and waste management all rely on the efficient delivery and operation of infrastructure. Outcomes for the environment can be enhanced and delivered while achieving the outcomes envisaged for infrastructure.
3. MfE would appreciate the opportunity to engage further with Te Waihanga on the matters set out in this submission when developing the 30 Year Infrastructure Strategy (the 'Strategy').

Summary of key comments

4. MfE supports, in general, the direction proposed in the consultation document for the draft strategy, the action areas and needs identified, and the proposed priorities (institutional and governance reform; getting the price right; supporting housing supply; supporting a zero-carbon economy and preparing for climate change; a digital future).
5. Supporting the provision of infrastructure in the right place, at the right time through improving the efficacy of the resource management system is a significant opportunity to improve on environmental outcomes across the board and to recognise the intergenerational nature of infrastructure and its ability to shape the future.

Reform of the Resource Management Act 1991 (Spatial Planning Act)

6. The Strategy should consider major existing and future infrastructure such as ports, airports, resource recovery, water infrastructure, and opportunities to make better use of the existing infrastructure network. Under section 142 of the Resource Management Act 1991 (RMA) the Minister of the Environment can 'call in' national significant proposals, however there is no consistent approach for managing nationally significant infrastructure outside of the planning system. The strategic direction set for nationally significant infrastructure in the strategy will be important for informing development of regional spatial strategies under the proposed Strategic Planning Act.
7. The Strategy should allow for the uncertainty associated with the provision of new infrastructure in response to growth and development in particular – whether rural or urban. The use of a range of future scenarios will help to understand indicative costs and timing of future infrastructure and growth, and will help to identify the implications for funding and financing. MfE supports the use of demand management tools such as congestion pricing to support the transition to a low carbon economy, or water charges to optimise water supply infrastructure. The need to provide certainty, while allowing for flexibility, is common to both this strategy and the RM Reforms.

8. There are also important links with a paper currently being developed by the Strategic Planning Act team on enabling efficient and well-functioning urban land markets. While we support many of the recommendations, there are likely to be opportunity costs associated with protecting "lead" infrastructure in advance – particularly when considered alongside the current large infrastructure gap that the strategy does not explicitly address.
9. It is important that the strategy acknowledges the strategic importance of local government in the delivery of infrastructure outcomes, as they carry out their purpose of promoting social, economic, environmental and cultural well-being of their communities.

Te Tiriti of Waitangi

10. MfE endorses Te Waihnga's approach to partnering with Māori. A principled approach to decision-making is necessary to give effect to the principles of Te Tiriti O Waitangi. This means that partnership with Māori is relevant across all action areas - not just in 'Building a Better Future'.

Climate change

11. The Strategy should reflect careful consideration of the Climate Change Commission's final advice.
12. Infrastructure has the potential to create either positive or negative path dependency for climate outcomes. This results from both the individual pieces of infrastructure and the network effects of infrastructure which are central to community development. For infrastructure to deliver better climate outcomes a higher priority or weighting will need to be accorded to climate outcomes.

Proposed Vision for infrastructure 2050

13. MfE supports the proposed vision for Infrastructure 2050 – that it lays the foundation for the people, places, and businesses of Aotearoa New Zealand to thrive for generations, and the priority focus on supporting a zero-carbon economy and preparing for a changing climate.
14. The vision complements MfE's vision - 'to have a flourishing environment for every generation'. MfE will achieve this by making sure that the environment and climate change are at the heart of decision making. Decision making for infrastructure will provide opportunities to support a flourishing environment through better integrated and aligned development and infrastructure planning.

Outcomes and Principles

15. MfE supports:
    a. the proposition that decision-making be guided by Te Tiriti o Waitangi and its principles. This speaks to the importance of Maori as Treaty Partners. The fundamental principle that infrastructure should support orange tangata (the wellbeing of people) also fits well with the principle of te oranga o te taiao – a healthy environment is also fundamental to the wellbeing of people.
    b. the outcomes and guiding principles for infrastructure planning and investment decisions.

The challenges for New Zealand's Infrastructure

16. MfE agrees with the identified challenges facing infrastructure, and that there is a significant gap between what we need and what we can afford.
17. The environment has been identified as a 'top priority' in the consultation document. We encourage Te Waihanga to consider how the Infrastructure Strategy will relate to regional spatial strategies, to be developed under the proposed Strategic Planning Act. There is potential to lift up the discussions about infrastructure provision and environmental trade-off to a strategic level where we can see the mutual benefits, rather than at the implementation level where this happens at the consenting stage. The spatial strategies will also identify significant environmental values, and this level of decision-making provides the opportunity to respond to the identified challenges for both our environment and the efficient delivery of infrastructure and development.
18. MfE notes that the system of local government is fundamental for the delivery of infrastructure, and that it enables many of the wellbeing outcomes councils seek to promote for their local communities. While acknowledging that there are several reforms underway which will affect local government (RM, Three Waters, Future for Local Government), it is vital that central government supports delivery at the local government level.

Proposed Action Areas

19. Our key comments set out here, in response to each of the three action areas, are complemented by a fuller commentary set out as an appendix to this submission.

Building a Better Future

20. Putting the environment and climate considerations at the heart of decision making in New Zealand is a key objective for MfE with a particular focus on the intergenerational implications of decisions and ensuring the environment flourishes. MfE also acknowledges the Government has declared a climate emergency.

Climate

21. MfE expects that the Strategy should reflect careful consideration of the Climate Change Commission's final advice. For example, Te Waihanga could elaborate on the necessity of climate outcomes being considered at the outset of strategic planning and decision making, including emissions budgets and targets and climate projections, in addition to the important considerations identified. This would clearly illustrate the linkages between infrastructure and meeting our climate goals.
22. Infrastructure has the potential to create either positive or negative path dependency for climate outcomes. This results from both the individual pieces of infrastructure and the network effects of infrastructure which are central to community development. For infrastructure to deliver better climate outcomes a higher priority or weighting will need to be accorded to climate outcomes.

Water quality and allocation

23. While the issues of freshwater management have been subject to national direction since the publication of the first National Policy Statement on Freshwater Management in 2011, and more recently the National Environmental Standard on Freshwater (2020), there are still significant issues to be resolved. Among these, Maori rights and interests in allocation, improving water quality, and the urban water infrastructure issues being dealt with through the Three Waters reform (water supply,

wastewater and stormwater) will remain significant for infrastructure for many years. Rural water infrastructure – for primary production and for small communities – will also need to address these issues. Arotakenga Huringa Āhuarangi/the first National Climate Change Risk Assessment (2021) also recognises the risks arising from a changing climate to water infrastructure, especially from increased frequency of droughts and intensity of rainfall.

Enabling Competitive Cities and Regions

24. MfE considers that the role of infrastructure is critical in enabling well-functioning urban land markets, that provide high quality living and natural environments for their residents and the wider areas. Implementing the new NPS-UD is a key focus for MfE and the Ministry of Housing and Urban Development (HUD). The infrastructure sector has a major influence on housing affordability and supply. Infrastructure capacity and service levels provided to households (proximity to public transport, congestion levels, freshwater, water quality) also impact the liveability of an area for housing, and the prices and incentives to develop, or redevelop.
25. The timely delivery of infrastructure creates opportunities for development where people want to live, and infrastructure delivery is essential for successful delivery of the RM Reform the implementation of the NPS-UD. The draft Strategy identifies the extent of the infrastructure funding gap in New Zealand, but does not provide new mechanisms, or recommendations on how to address this. Once RM Reform is delivered, housing and urban development outcomes will be dependent on the timely delivery of infrastructure. While there would be benefits to protecting 'lead' infrastructure through corridor protection in the new system, given funding constraints, there are also likely to be opportunity costs associated with focusing on protecting 'lead' infrastructure rather than addressing current shortfalls. MfE will continue to work with Te Waihanga on these matters.

Creating a better system

26. RM Reform needs to be more prominent within the Strategy, explicitly highlighting the links between infrastructure provision and the new resource management system. The reform provides critical opportunities to achieve the desired outcomes for both the natural environment, and the delivery of infrastructure and resource use. It is important that the Strategy recognises this.
27. The Resource Management Review Panel (the Panel) advocated preparing and approving spatial plans by a committee of representatives of central government, regional councils, local authorities in the region, mana whenua and an independent chair. The proposed Strategic Planning Act will require statutory long-term regional spatial strategies. The aim of this new legislation is to embed a long-term, strategic and integrated approach to planning, the provision of infrastructure and associated funding and investment. This will better integrate land use regulation (under the new Natural and Built Environment Act), the provision of infrastructure and associated funding, and investment under the Local Government Act 2002 and Land Transport Management Act 2003. It should also link to other relevant legislative functions, including under the Climate Change Response Act 2002 and Conservation Act 1987. The regional spatial strategies will establish the need for new infrastructure corridors, major social infrastructure and other strategic investments.

Governance

28. The consultation document describes the various current actors in the delivery of infrastructure and observes that options to improve the governance of infrastructure need to be explored. Considering the role of infrastructure providers in the regional spatial planning, we encourage Te Waihanga to continue to engage with the RM Reform process as they develop their thinking on this issue.

Waste

29. The infrastructure challenge as it relates to waste and resource efficiency covers a broad range of matters. The consultation document has a particular focus on the disposal end of the spectrum, and the use of pricing mechanisms to manage this. The Government does not currently have levers to influence the full cost to the consumer of waste disposal - while it can set and review the waste disposal levy, this is only one component of overall charges. We recommend that total negative environmental impacts arising from the disposal of waste to landfill should be captured as part of the discussion of its contribution to wellbeing.
30. Appropriate processes and infrastructure at all points in the supply chain influences the extent to which waste manifests in the first place and how it is managed as a resource (or otherwise). MfE supports Te Waihanga in their efforts to drive a culture of waste minimisation as an ongoing focus area. This is a significant issue for the construction sector – for example. We recommend that the application of domain-specific conceptual frameworks (for example, waste hierarchy, circular economy principles) are important guides for the provision of infrastructure as well as considering non-infrastructure solutions to waste matters.

Appendix A: Fuller commentary for each of the proposed action areas

Building a Better Future

Climate change mitigation

1. MfE support the priority focus on supporting zero-carbon economy and recommend that Te Waihanga amend the wording for the priority 'supporting a zero-carbon economy and preparing for climate change' to 'supporting a zero-carbon economy and adapting to a changing climate,' as our climate is already changing.
2. This is important because decisions made now may lock us in to a particular pathway of development. Te Waihanga have identified pathways that the planning system, infrastructure supply and development can reduce and avoid GHG emissions and help New Zealand adapt to climate change. The two systems need to have a coherent view of how they influence and shape our ability to meet New Zealand's climate goals and respond effectively.
3. A key theme in the final report of the CCC highlights the network potential of infrastructure to support climate outcomes. Action F1.1 is focused primarily on emissions associated with individual infrastructure projects, rather than the potential path dependency, whether that is a positive or a negative one. We recommend that the Actions to deliver better climate outcomes need to give a priority to climate outcomes, and to ensure these are weighted sufficiently.
4. Te Waihanga could elaborate on the necessity of climate outcomes being considered at the outset of strategic planning and decision making, including emissions budgets and targets and climate projections, in addition to the important considerations identified. This would clearly illustrate the linkages between infrastructure and meeting our climate goals.
5. The Climate Change Commission's (CCC) final advice on a low emissions future for Aotearoa includes infrastructure throughout most chapters of the report. In developing the 30-year infrastructure strategy Te Waihanga should update the Strategy to reflect the CCC final advice. (Appendix 1 provides a summary of how the CCC recommendations align with Te Waihanga's proposed actions). In many areas there is good alignment between the CCC final advice and the draft Strategy.
6. Given the breadth of final recommendations that mention infrastructure, the final infrastructure strategy will need to consider how best to address climate change throughout. All 'action areas' proposed by the consultation document, have climate change related challenges and needs and many of the actions will be able to provide outcomes in support of New Zealand's climate goals.
7. In the CCC final advice, Section 5.2 'Principles to guide the Aotearoa transition', discusses several principles, which Te Waihanga should consider in developing the draft infrastructure strategy. Infrastructure is explicitly mentioned in principle 2 and 6, however all bear some relevance to infrastructure planning over the next 30 years.
8. Principle 2-*take a long-term view to 2050 and beyond*- outlines that to adopt actions that set Aotearoa on a path to meet emission reduction targets, they also need to sustain those targets beyond 2050. Meeting these goals will require a long-term view of investments and infrastructure developments. The CCC suggest that the actions taken in the next 5 years are important in terms of positioning Aotearoa to be able to deliver the deeper emission reductions required in subsequent emission budgets.
9. Principle 6 *avoid unnecessary cost*- outlines those actions to meet emission budgets and targets should avoid unnecessary costs by using measures with lower-costs and planning ahead, so replacement of infrastructure and other technologies and assets with low-emissions choices can occur on 'as natural a cycle as possible', thereby avoiding premature scrappage or being left with stranded assets.

10. Te Waihanga need to draw out linkages between infrastructure lock-in and necessity of supporting 2030 and 2050 targets by enabling sectors to decarbonise at pace. Further analysis is needed relating to how delivering infrastructure can be managed with respect to emissions budgets. This relates to several action areas including planning lead infrastructure and identifying priority infrastructure.
11. Strongly recommend reviewing CCC final recommendations and advice on partnering with iwi and Māori in infrastructure, for example recommendation 27 (2) *Creating opportunities and mechanisms for Iwi/Māori to actively participate in co-decision making, co-design, investment in infrastructure and new clean technology, knowledge contribution, and leadership as Aotearoa takes action to address climate change.*

Climate Change Adaptation

12. Climate change could increasingly disrupt critical systems, increase operating costs, exacerbate the infrastructure funding gap, and create substantial spill over effects on societies and economies. These changes threaten our coastal communities, cities, infrastructure, human health, biodiversity, oceans and our natural resource based economy.
13. New Zealand's climate is changing – average temperatures in winter are increasing, sea level is rising, glaciers are melting, and extreme weather events are becoming more frequent. This will affect New Zealand's economy, environment, and way of life in significant ways.
14. Our infrastructure influences where we live, work and play. It is imperative that the infrastructure decisions we make now consider and plan for a changing climate, encouraging development away from high-risk areas.
15. Infrastructure investment decisions also need to consider outcomes for climate change mitigation. In doing so, it is important that we avoid locking in emission reductions pathways that increase exposure to climate hazards (maladaptation). Wherever possible, mitigation and adaptation co-benefits should be harnessed. The National Climate Change Risk Assessment highlights several risks relating to infrastructure, including, risks to buildings, linear transport networks, ports and airports to extreme weather events, drought, increased fire weather and ongoing sea level rise. In addition to this, risk to potable water supplies (availability and quality) was identified as one of the ten most significant risks.
16. We suggest that Te Waihanga change the 'prepare infrastructure for climate change' need to 'prepare infrastructure for a changing climate' to recognise that climate change is not one state.
17. There are collective knowledge gaps on climate change adaptation, these include:
    a. understanding social vulnerability
    b. new threats to biosecurity and biodiversity
    c. impacts to human health and health services
    d. how the hydrological cycle in New Zealand may respond to changes in climate, such as the frequency and intensity of rainfall-induced flooding
    e. how natural systems may respond to increased climate variability and intensity of extreme events. This includes the natural environment and cultural indicators of these changes
    f. the costs of inaction over the medium and long term.
18. For F1.1, we suggest more detail is provided on how business case guidelines could consider adaptation (page 52) e.g. alongside requiring infrastructure projects to apply a consistent cost of carbon suggest there is a requirement for all infrastructure

projects to carry out a dynamic adaptive policy pathways (DAPP) like process that requires the cost of addressing whole of life risk to be factored into business cases.

Te Mana o te Wai

19. Te Mana o te Wai has been part of the National Policy Statement for Freshwater Management (NPS-FM) since 2014. Te Mana o te Wai refers to the vital importance of water. When managing freshwater, it ensures the health and wellbeing of the water is protected, and human health needs are provided for before enabling other uses of water. It expresses the special connection all New Zealanders have with freshwater. By protecting the health and wellbeing of our freshwater, we protect the health and wellbeing of our people and environments. Te Mana o te Wai imposes a hierarchy of obligations. This hierarchy means prioritising the health and wellbeing of water first. The second priority is the health needs of people (such as drinking water). The third is the ability of communities to provide for their social, economic, and cultural wellbeing.

Enabling Competitive Cities and Regions

Urban development

20. MfE considers that the provision of infrastructure is critical to achieve well-functioning urban environments. Implementing the new National Policy Statement on Urban Development (NPS-UD) is a key focus for MfE through the Urban Growth Agenda. The infrastructure sector has a major influence on housing supply and affordability. New Zealand's current approach to expanding infrastructure networks, or increasing their capacity, is restricting the ability of land to be developed, or redeveloped, in high growth urban areas.
21. Improvements in infrastructure offer opportunities not only to improve productivity within the economy. Infrastructure can be a serious bottleneck in the supply of residential, commercial or industrial development capacity if its delivery is poorly timed or located. The current legislative framework does not encourage integrated land-use and infrastructure planning, these barriers are due to the timescales consultation requirements and decision-making processes across the LGA, LTMA and RMA.
22. The draft Strategy identifies the extent of the infrastructure funding gap in New Zealand, but does not provide new mechanisms, or recommendations on how to address this. Once RM reform is delivered, housing and urban development outcomes will be dependent on the timely delivery of infrastructure. While there would be benefits to protecting 'lead' infrastructure through corridor protection in the new system, given funding constraints, there may be opportunity costs associated with focusing on protecting 'lead' infrastructure rather than addressing current shortfalls. MfE will continue to work with Te Waihanga on these matters.
23. The NPS-UD aims to ensure that New Zealand's towns and cities are well-functioning urban environments. The NPS-UD emphasises the need for land use planning to be integrated with infrastructure planning. It requires councils to ensure housing and business land is adequately serviced by infrastructure.
24. According to Productivity Commission's 'Better Urban Planning' report, political incentives, poor understanding of the responsibilities of central and local government, and local government funding constraints have contributed to the infrastructure deficit in New Zealand. It has been a historic challenge for local authorities to increase rates to fund new infrastructure as this investment is perceived to benefit future residents

rather than current property owners. Rising council debt levels often make it imprudent to borrow to fund infrastructure as well.

25. We would support Te Waihanga exploring further pathways to explore infrastructure funding and financing. We note that both the Productivity Commission and the Resource Management Review Panel have recommended greater use of user charges and targeted rates to capture value uplift and have recommended better exploration of infrastructure pricing to balance efficiency and cost recovery.
26. Through the NPS-UD, councils in high growth areas are required to assess future housing and business needs and create a development strategy for the next 30 years. The NPS-UD broadens the purpose of the FDS to promote long term strategic planning and integration of planning, infrastructure, and funding decisions and clarifies that RMA planning documents must have regard to the FDS, and local authorities are strongly encouraged to use their FDS to inform other plans and strategies. The strategic priorities in the Future Development Strategies (FDS) will be identified through consultation with hapū and iwi, the development sector, and infrastructure providers.

Climate change mitigation

27. The planning system is a critical element in mitigating and adapting to climate change. Planning and Infrastructure decisions made now can provide transition pathways in service of our climate goals, with outcomes only being realised in upwards of five to 10 years' time. There are several recommendations provided by the CCC that relate to the competitive cities theme. This highlights the connection between the problems outlined in the consultation document that constrain cities, and the co-benefits that can be gained by applying a climate lens.
28. Recommendation 16 relates to the action area C2.3 for example, whereby information on the relationship between GHG emissions and elements of urban form, could be developed and made available to land-use and infrastructure planners and the development sector to understand the emissions impacts and opportunities in the way they plan and develop infrastructure. For example, the CCC recommendations 16 (3) & 16(4) – Enable emissions reductions through changes to urban form, function and development … in the first emissions reduction plan, the Government commit to 'enabling emissions reductions through changes to urban form, function and development', this should include:

    3- Developing a consistent approach to quantifying the emissions impacts of urban development decisions. Use this to continually improve the way emissions consequences are integrated into decision making on land use, transport and infrastructure investments.

    4- Improving the evidence base on the relationship between urban form, function, density, transport systems, land use and other factors. This will support the design of approaches to reduce emissions across different urban areas.

Creating a better system

Resource Management Reform

29. The reform of the Resource Management Act (RM Reform) will significantly change how decisions are made about infrastructure in the natural and built environment. The reform seeks to improve the natural environment, provide an effective role for

Māori, enable development within environmental limits, and improve housing supply and affordability. RM reform needs to be more prominent within the strategy, more explicitly highlighting the links between infrastructure provision and the new resource management system, and the opportunities to improve delivery of both environmental and infrastructure related outcomes.

30. The consultation document describes the role of infrastructure in the future planning system at a high-level. Understandably, the focus of the consultation document, and the strategy, will be on the infrastructure perspective. However, the delivery of infrastructure will rely significantly on the reformed RM system, and it would, therefore, be prudent for the strategy to consider the relationships and interdependencies. The Strategy should complement not only the intended process proposed in the Strategic Planning Act (SPA), but the purpose and outcomes of the Natural and Built Environment Act (NBA).
31. The new SPA will require statutory long-term regional spatial strategies. The aim of this new legislation is to embed a long-term, strategic and integrated approach to planning, the provision of infrastructure and associated funding and investment. This will better integrate land use regulation (under the new NBA), the provision of infrastructure and associated funding, and investment under the Local Government Act 2002 and Land Transport Management Act 2003. It should also link to other relevant legislative functions, including under the Climate Change Response Act 2002 and Conservation Act 1987. The regional spatial strategies will establish the need for new infrastructure corridors, major social infrastructure and other strategic investments.
32. The consultation document describes the various current actors in the delivery of infrastructure, and observes that options to improve the governance of infrastructure need to be explored. In light of the role of infrastructure providers in the regional spatial planning, we encourage Te Waihanga to continue to engage with the RM Reform process as thinking is developed on this issue.

Sustainable Finance

33. Infrastructure systems across urban and rural New Zealand will face climate change challenges. It is critical that these issues and challenges are considered within a wider systems approach to funding and financing the climate transition. This also sits within a wider discussion of liability in relation to climate-related impacts. There is added complexity given the local contexts of specific infrastructure systems (including the challenges faced by infrastructure system operators, local authorities, Te Waihanga and communities).
34. In relation to climate change, some issues to consider more closely could include, but are not limited to, the increasing need to pay for new or replacement climate-resilient infrastructure systems, paying for climate-related repairs and ongoing maintenance.
35. We support the statements that:
    a. funding and financing challenges do not always require new revenue streams
    b. equitable funding and financing is an important component of wider systems change.

Local government capability

36. Central government must improve the tools to plan, fund and finance infrastructure to increase supply and provide certainty for investment. The resource management review panel recommended, in Chapter 11 of 'New Directions for Resource

Management Reform' in New Zealand, greater policy thinking on value capture tools, use of economic instruments such as tradable development rights, and amending the Local Government Ratings Act 2006.

37. Existing infrastructure funding and financing arrangements are not sufficient for responding to current and future infrastructure provision challenges. Particularly given that all future investments in infrastructure must be 'green' in the sense of being resilient to future climate change impacts, like increased flood risk, and avoid locking in a high level of emissions due to poor energy efficiency or dependence upon high carbon forms of energy.
38. Not withstanding the various reforms that will affect local government – RM Reform, Three Waters, Future for Local Government – it would be useful for the Strategy to set out how central and local government can work together at a strategic level, to deliver community outcomes through the delivery of environmental and infrastructure outcomes.

Waste

39. The infrastructure challenge as it relates to waste and resource efficiency covers a broad range of matters. Although the consultation document has a particular focus on the disposal end of the spectrum (ie, landfills), appropriate infrastructure at all points influences the extent to which waste manifests in the first place and how it is managed as a resource (or otherwise).
40. We support efforts to drive a culture of waste minimisation and having this as an ongoing focus area. Regarding the effective pricing of waste, waste disposal charges to landfill were reviewed recently (including public consultation in 2019/2020 and subsequent adoption of new regulations progressively increasing the rate of the existing levy for municipal landfills, as well as applying the levy to other landfill types). In addition, the Minister for the Environment is required to review the effectiveness of the levy every 3 years (including consideration of the rate of the levy). The Government does not currently have levers to influence the full cost to the consumer of waste disposal - while it can set and review the waste disposal levy, this is only one component of overall charges.
41. Waste, or more broadly total negative environmental impacts, should be captured as part of this discussion on contribution to wellbeing. The measures used on pages 27-28 (especially those from the global competitiveness report) do not capture that those outcomes may be at the expense of the environment, which therefore limits the ability to sustain positive wellbeing and economic outcomes over time.
42. Knowledge of the externalities of disposing of waste to landfill varies on the type of waste and the type of landfill, and narrowly defined as direct discharges to air and water, nuisance, loss of amenity. However, taking a broader view of the wider impacts to society of using and disposing of resources in a linear manner rather than maintaining resources circulating in the economy in a circular manner, the true cost may be much higher. The recent changes to the levy were intended to balance these costs in a way that would generate positive behaviour change.
43. Specific pricing for individual waste streams (household or construction waste) is not planned at present, but Cabinet has recently agreed to introduce regulations requiring sites to report waste quantities in different categories, which could facilitate future consideration of more nuanced pricing approaches.
44. The application of domain-specific conceptual frameworks (for example, waste hierarchy, circular economy principles) are important guides for the provision of

infrastructure. The waste hierarchy places emphasis on activities higher up the hierarchy that serve to reduce the overall volumes of waste to disposal. Activities that are infrastructure-based can include systems and networks to support reusable/refillable products in lieu of single-use items that end up in the waste stream. Additionally, recycling facilities can ensure that high-quality materials are kept in use. Similarly, the application of circular economy principles emphasises designing out waste (so it cannot end up in the waste stream) and keeping material in use for longer (for example, through reuse systems, or having appropriate recycling capacity).

45. More broadly, there is scope for ensuring there is greater coordination and an agreed strategic direction for addressing waste related matters, particularly with regards to infrastructure. The Ministry for the Environment is progressing a legislation review and working on a revised New Zealand waste strategy along with other supporting material to explore and address these and other matters.
46. Specifically, with the waste disposal levy increasing, the resulting increased revenue stream will mean that existing approaches for funding and financing infrastructure projects are not suitable. The mechanisms for allocating levy revenue to territorial authorities is being investigated as part of the legislation review. We cannot pre-empt what options might be considered and where this will land, other than noting that a projected increased revenue stream will need appropriate mechanisms (legislative or otherwise) to support optimal funding and financing. Waste-related infrastructure provision is likely to be an ongoing focus area given the acknowledged infrastructure deficit that currently exists. We agree that new funding and financing approaches are needed for large-scale projects with potentially transformational regional and national impacts.

Appendix B: Indicative mapping of CCC final recommendations and Infrastructure strategy consultation proposed actions

CCC Final Recommendations	Infrastructure strategy consultation- proposed actions
Recommendation 8 – Aligning central and local government efforts We recommend that the Government commit to: 1. Aligning policy and investments to enable local government to make effective decisions for climate change mitigation and adaptation. This should include aligning the Local Government Act, the Building Act and Code, the Resource Management Act (RMA), national direction under the RMA, proposed RMA reforms and the infrastructure plan.	F1.2 Recognise climate uncertainty in decision-making processes F1.4 Ensure non-built transport solutions are considered first F1.6 Require local government to consider information from insurance markets to inform climate- risk-related planning policy F4.1 Improve analysis of upside and downside risks in infrastructure provision (high and low growth scenarios) C1.1 Continue to review and reform urban planning C1.3 Set targets for housing development capacity and triggers for release of additional development capacity C1.2 Standardise planning rulebooks to increase capacity and reduce cost and uncertainty C2.5 Implement regional spatial planning C4.1 Develop a lead infrastructure policy, supporting implementation guidance and a corridor protection evaluation methodology. C4.2 Enable lead infrastructure corridor protection through resource management reform S1.1 Clarify funding of spatial plans S1.2 review roles and functions of local government and other related infrastructure providers S7.3 Develop a planning system that is more enabling for infrastructure
Recommendation 9- Coordinate efforts to address climate change across government We recommend that the Government commit to: 4. Providing consistent signalling across investments, policy statements, direction to officials, internal policies and directives to ensure that all regulatory and policy frameworks and decisions are aligned with low emissions and climate resilience objectives.	
Recommendation 12 – Make investments net-zero compatible 4. Requiring Crown agencies, entities and Crown-owned companies to include climate change as part of their decision making. This should be a particular focus for long-lived investments such as housing and transport infrastructure, to help achieve emissions reduction and climate resilience objectives, and should include embedded emissions.	

Recommendation 13 – Enable system-level change through innovation, finance and behaviour change We recommend that, in the first emissions reduction plan, the Government commit to: Enabling system-level change in Aotearoa through innovation, finance and behaviour change. 2. Mobilising finance for low emissions and climate-resilient investments: a. Investigating and developing actions government can take to help mobilise private sector finance, including ways to improve access to low-emissions finance for Māori-collectives	F1.1 Adapt business case guidelines to ensure full consideration of mitigation and adaptation C3.2 Use congestion pricing to plan for new transport infrastructure C4.3 Establish a corridor reservation fund to protect lead infrastructure corridors S2.3 Develop a transition plan for transport funding S2.4 Use value -capture mechanisms to fund infrastructure for growth S2.5 enable land-value change as a basis for targeted rate S4.2 Undertake cost benefit analysis for all projects over $150million S4.3 Review the discount rate
Recommendation 16 – Enable emissions reductions through changes to urban form, function and development We recommend that, in the first emissions reduction plan, the Government commit to: Enabling emissions reductions through changes to urban form, function and development. This should include:	F1.5 Enable active modes of travel (by increasing density) F3.4 Design and launch artificial intelligence use-cases (incl. planning- digitising elements of consenting process, real time infrastructure pricing strategies e.g. congestion charging and parking) C1.3 Set targets for housing development capacity and triggers for release of additional development capacity C1.2 Standardise planning rulebooks to increase capacity and reduce cost and uncertainty S7.3 Develop a planning system that is more enabling for infrastructure
1- Developing a policy approach in partnership with Iwi/Māori to ensure well-integrated planning and policies related to urban form, function and development. This approach must also be developed in active collaboration with local councils and communities.	C2.1 Ensure the provision of three waters infrastructure to enable growth

2- Promoting urban design solutions that acknowledge Iwi/Māori whakapapa, identity and tūrangawaewae and the need to preserve and protect their wāhi tapū and sites of cultural significance.	C1.2 Standardise planning rulebooks to increase capacity and reduce cost and uncertainty
3- Developing a consistent approach to quantifying the emissions impacts of urban development decisions. Use this to continually improve the way emissions consequences are integrated into decision making on land use, transport and infrastructure investments.	F1.3 Require a bright-line (pass/fail) infrastructure resilience test C2.4 Conduct post-implementation reviews of transit oriented development opportunities.
4. Improving the evidence base on the relationship between urban form, function, density, transport systems, land use and other factors. This will support the design of approaches to reduce emissions across different urban areas.	C2.3 Improve information on infrastructure capacity and costs to service growth C2.4 Conduct post-implementation reviews of transit oriented development opportunities.
For existing urban areas:	
5. Retrofitting existing public spaces and infrastructure to prioritise the use of active and public transport and other low emissions choices. This recommendation should be considered alongside Recommendation 17 for transport and Recommendation 13 for behaviour change.	S3.3 Improve pricing to optimise use of existing infrastructure
6. Ensuring regulatory settings allow for increased density and use of existing infrastructure, land and built form to reduce emissions.	C1.4 Review and realign crown landholdings- this option talks about identifying opportunities for landswaps, releases of land for development and relocation of major public facilities to more optimal locations- including reviewing legacy facilities that occupy large sites in growing urban areas.
For new urban areas:	
7. Enabling low emissions choices by ensuring services, amenities, facilities and infrastructure are accessible and interconnected. This includes providing safe cycle and walkways and connections to public transport	S5.1 Develop a priority list of projects and initiatives S5.2 Improve the use of the pipeline for commercial decision-making

Recommendation 20 – Decarbonise the energy system and ensure the electricity sector is ready to meet future needs We recommend that, in the first emissions reduction plan, the Government commits to: Delivering a strategy to decarbonise the energy system and ensure the electricity sector is ready to meet future needs.	F2.3 Investigate the need for a specific regulatory framework for offshore energy generation
5. Enabling a fast-paced and sustained build of low-emissions electricity generation and infrastructure by ensuring resource management processes, other national and local government instruments, and settings for transmission and distribution investment decisions are aligned to the required pace for build.	F2.1 Enable electricity distribution networks to minimise barriers to the connection and use of large numbers of local generation, storage and demand response facilities (distributed energy resources or DERs) F2.2 Reduce barriers to building spare transmission capacity where that would reduce inefficient barriers to large-scale renewable generation and the electrification of large process heating units
Recommendation 13 – Enable system-level change through innovation, finance and behaviour change We recommend that, in the first emissions reduction plan, the Government commit to: Enabling system-level change in Aotearoa through innovation, finance and behaviour change.	F1.1 Adapt business case guidelines to ensure full consideration of mitigation and adaptation C3.2 Use congestion pricing to plan for new transport infrastructure
2. Mobilising finance for low emissions and climate-resilient investments: a. Investigating and developing actions government can take to help mobilise private sector finance, including ways to improve access to low-emissions finance for Māori-collectives	C4.3 Establish a corridor reservation fund to protect lead infrastructure corridors S2.3 Develop a transition plan for transport funding S2.4 Use value -capture mechanisms to fund infrastructure for growth S2.5 enable land-value change as a basis for targeted rate S4.2 Undertake cost benefit analysis for all projects over $150million S4.3 Review the discount rate
Recommendation 17 – Improve mobility options and reduce emissions We recommend that, in the	

first emissions reduction plan, the Government commit to: Improving mobility options and reducing emissions by providing affordable, reliable, convenient and low-emissions alternatives to high-emissions vehicle use	C3.1 Implement congestion pricing and/ or road tolling to improve urban accessibility C3.2 Use congestion pricing to plan for new transport infrastructure C3.3 plan for congestion pricing schemes in other NZ cities
3. Ensuring regulatory settings provide local authorities with the tools needed to deliver a low-emissions and climate-resilient transport system at pace. This should include evaluating the role of pricing incentives beyond the NZ ETS. For example, congestion charges or where public transport fare reduction would have the greatest impact on behaviour change.	
Recommendation 18 – Accelerate emissions reductions from the light vehicle fleet We recommend that, in the first emissions reduction plan, the Government commit to: Accelerating emissions reductions from the light vehicle fleet	F3.4 Design and launch artificial intelligence use-cases (incl. planning- digitising elements of consenting process, real time infrastructure pricing strategies e.g. congestion charging and parking)
3. Accelerating the uptake of electric vehicles (EVs) by introducing a range of measures, including: e. Enhancing the roll out of EV charging infrastructure to ensure greater coverage, including at marae, multiple points of access, mandatory smart charging, and fast charging. (See also Recommendation 19, and Recommendation 20 in Chapter 15: Policy direction for energy, industry and buildings).	F1.4 Ensure non-built transport solutions are considered first F1.5 Enable active modes of travel (by increasing density)
Recommendation 19 – Create options to decarbonise heavy transport and freight by 2050 We recommend that, in the first emissions reduction plan, the Government commits to: Creating options to decarbonise heavy transport and freight by 2050	C5.1 Develop a long-term national supply chain strategy
1. Developing a national low-emissions freight strategy that establishes the investment settings and infrastructure required to deliver a low-emissions freight system. a. Be developed in partnership with Iwi/Māori, give effect to the principles of Te Tiriti o Waitangi/The Treaty of Waitangi, and align with the He Ara Waiora framework. b. Be developed in collaboration with freight stakeholders, to leverage private-sector action and finance.	

Recommendation 23- We recommend that, in the first emissions reduction plan, the Government commits to: Revising the New Zealand Waste Strategy so that it will deliver emissions reductions, and implement measures to reduce HFC emissions.	F1.7 Drive a culture of waste minimisation F1.8 Efficient pricing of waste
1. The revised New Zealand Waste Strategy should include: d. Accelerating investment in: ii. Infrastructure for waste collection, processing, and resource recovery	
Recommendation 24 – Reduce emissions from agriculture We recommend that, in the first emissions reduction plan, the Government commits to: Accelerating reductions in agricultural emissions by rolling out policies, incentives and tools, and investing to create future emissions reduction options	
5. Investing to create options for deeper emissions reductions in future by: c. Supporting deployment of the systems and infrastructure needed for alternative lower emissions farming systems and products, including enabling Māori-collectives to participate in these new opportunities.	
Recommendation 27 – A Māori-led approach to an equitable transition for iwi/Māori and the Māori economy	F.5 Partner with Māori: Mahi Ngā tahi
2. Creating opportunities and mechanisms for Iwi/Māori to actively participate in co-decision making, co-design, investment in infrastructure and new clean technology, knowledge contribution, and leadership as Aotearoa takes action to address climate change	