

Environment Strategy

Enhancing the wellbeing of our existing and future customers, communities and neighbourhoods.

25 OCTOBER 2022



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Introduction



Purpose of the Strategy

Sustainability is concerned with enhancing the wellbeing of our existing and future customers, communities, and neighbourhoods. For the purpose of this strategy, we focus on how Kāinga Ora can accelerate positive environmental outcomes, while understanding the benefits and trade-offs this can deliver against other outcomes. This Environment Strategy aims to enable a shared understanding across Kāinga Ora of our environmental responsibilities, our sustainability priorities and planned actions. The purpose of this document is to provide direction as to where we should exert our efforts and what steps we need to take going forwards.

Overarching Principles

Through the development of the Environment Strategy, we have sought to take a holistic and system-focused approach to delivering on the key environmental outcomes that our activities can support. This recognises both the interlinkages between environmental issues as well as the manner in which our natural environment underpins broader social, cultural and economic outcomes. This strategy also seeks to move towards interventions that support the regeneration of natural systems, not simply the reduction of impacts. This regenerative and system-focussed view stems from the broad recognition that system-wide transformation is required if we are to address our most pressing sustainability issues – issues such as climate change, consumption and inequity – and also reflects the organisation’s desire to embed a more holistic Te Ao Māori approach to our activities.

These system-wide transformational changes will require collaboration from funders, partners and customers, including shifts in the way these various groups have historically undertaken their activities. How Kāinga Ora approaches these shifts with its partners and customers will be critical to the successful implementation of the Environment Strategy. We need to be cognisant of the constraints and challenges that our partners and customers may face through these shifts, but also recognise that these system-wide transformations are critical if we are to achieve a more resilient, low carbon and sustainable future.

This strategy also recognises the values and principles set out in Te Rautaki Māori o Kāinga Ora in particular:

- Mana Motuhake – recognising that in developing localised interventions to the environmental issues resulting from our activities, Māori will know what is best for Māori;
- He waka hourua – that authentic partnerships will be critical to successful regeneration; and
- Kia manawaroa – the long term resilience of whānau must sit at the heart of the transformations that we seek.

On that basis, the actions in this strategy are underpinned by three key principles:

1. **Ensure a fair transition for our customers and communities.** This recognises that environmental issues are changing our world and this will affect our customers. This principle is about ensuring our decisions do not unduly burden them with the physical, social and cultural consequences of environmental degradation or risks associated with transitioning to a lower-carbon economy.
2. **Support Māori aspirations for sustainability in the places where they want to live.** This includes providing healthy housing; restoring mana and mauri of the whenua and awa; restoring kaitiakitanga and whanaungatanga; leveraging holistic and integrated te Ao Māori principles and mātauranga Māori; and, recognising that all of these elements are needed to support Māori people to thrive.
3. **Leverage opportunities** that arise because of the scale and position of Kāinga Ora in the construction and land development sectors.

Key Components of the Strategy

Outcomes

The Environment Strategy sets out four key environmental outcomes which we expect to deliver on those principles.

1. **Avoid producing emissions** or making decisions that result in others producing emissions. Including transitioning our Housing, Infrastructure and Operations to net zero emissions.
2. **Use resources effectively and efficiently** particularly minimising water consumed, waste produced and materials used, supporting the transition towards a circular economy.
3. **Enhance the natural environment** restoring mana and mauri of the whenua and awa recognising that if the whenua is not healthy, every dimension of whanau wellbeing suffers.
4. **Mitigate climate change risks** to minimise negative climate outcomes for our homes, customers and communities, including defending whare and whenua.

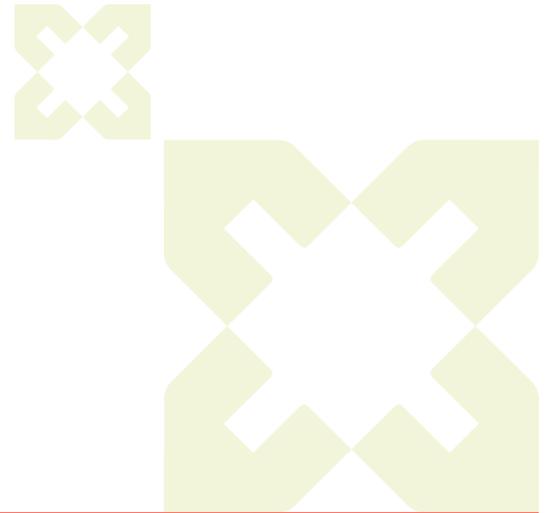
Key moves

To deliver on these outcomes, the strategy sets out 10 key moves Kāinga Ora will take and outlines who we will need to partner with to deliver them, and key timeframes for their delivery. Some of these will be delivered through our housing and urban development activities while others relate to changes in how we work and operate as an organisation. This will require efforts from people across the whole organisation. We will also need to work with external partners such as central and local government agencies, iwi and rōpū Māori as well as private developers, building partners and suppliers.

| Summary of key moves | | |
|----------------------|--|--|
| Organisational | 1 Embed climate change risk management into decision making | Embedding current and future climate risk into our urban development, building and investment decision making, considering what and where we are building |
| | 2 Embed climate change mitigation into decision making | Reporting on emissions impacts of all key decision making documents and implementing an internal carbon price as a lever to deliver on our emissions reduction targets |
| | 3 Emissions inventories and reduction plans | Developing whole-of-life emissions inventories and emissions reduction plans aligned with Government requirements and a 1.5°C trajectory for our corporate, housing and urban development activities. |
| Housing | 4 Carbon neutral housing | Advancing the carbon neutral housing programme to meet emissions reduction targets and catalyse performance improvements in the sector more broadly. |
| | 5 Renewable energy | Realising the onsite renewable energy generation potential of our public housing assets to both reduce emissions and energy hardship for our customers. |
| | 6 Construction and site clearance waste minimisation | Designing our assets, site clearance and maintenance activities in a way that minimises waste and preserves materials and components for reuse to support the cross government focus on transitioning to a circular economy. |

| | | |
|-------------------|--|---|
| Urban Development | 7 Low carbon urban development and infrastructure | Planning our developments so that they reduce carbon pollution, increase climate resilience and regenerate natural systems. Reducing the carbon impacts of the infrastructure we are requiring and enabling through our developments. |
| | 8 Transport mode shift | Supporting communities to transition into low emissions transport alternatives. |
| | 9 Ngahere in urban environments | Reconnecting communities to the environment around them and supporting environmental restoration with a focus on building ngahere in urban environments. |
| | 10 Restoring mauri of awa | Designing our neighbourhoods to restore waterways and connection of the land with the water; and, reduce the sediment entering our waterways |

Strategy



This Environment Strategy aims to enable a shared understanding across Kāinga Ora of our environmental responsibilities, our sustainability priorities and planned actions

Environmental Issues and the Role of Kāinga Ora

Environmental issues are now putting the long-term wellbeing of New Zealanders at risk. This is particularly the case for some of our customers who will be unduly impacted by the impacts of a changing climate, emissions pricing and environmental degradation. Actions we take to improve environmental outcomes will help to lift broader outcomes for our customers and communities. In recognising the principle of Kia manawaroa – the long term resilience of whānau – set out in Te Rautaki Māori o Kāinga Ora, it is clear that restoring and enhancing the health of the natural environment will be crucial.

This strategy focuses on four key environmental issues that Kāinga Ora has an impact on:

- **Climate Change Mitigation:** The government has made a commitment to net zero 2050, recognising the severe and ongoing impacts of changing climate. The planned build programme and existing housing portfolio of Kāinga Ora will release in the order of 1.8 million tonnes of carbon dioxide equivalent by 2030 and around 4.7 million tonnes by 2050 in relation to the construction and management of homes alone.
- **Climate Change Adaptation:** Human induced climate change means we are already facing increased flooding, drought and temperatures. 23% of Kāinga Ora-owned land parcels are currently exposed to rainfall and river flooding. Of the sites we have targeted for investment, 16% sit within a rainfall or river flooding prone area. Alongside this, some of our coastal sites may be located in areas that are particularly significant to iwi and rōpū Māori.
- **Resource Use:** The construction of our homes demand and consume resources such as materials, energy and water, and result in high volumes of construction waste. Kāinga Ora customers are some of the least able to afford energy, and some of the most vulnerable to cold or hot environments.
- **Nature:** Our construction programme can seriously impact on water and soil quality, and can result in clearing of trees and vegetation – disrupting habitats, microorganisms, cultural and social amenity and functioning ecosystems.

Kāinga Ora impacts environmental issues through our:

- **Organisational activities and structures:** such as the way our staff get to work, site, and out into the community and the energy and water demands of our office buildings. This also includes organisational policies, processes and standards.
- **Construction and maintenance of housing:** such as the way we design energy and water systems, the materials we select, and how we manage site clearance.
- **Urban development activity:** the places we choose to develop, the infrastructure we repurpose and provide, the density and layout we design and how we protect natural systems.

While all three of these activities impact on environmental outcomes, our urban development activity and our construction of housing is where can have the greatest influence (due to the sheer scale of those activities).

Government Direction

Kāinga Ora have the opportunity to lead on environmental stewardship across the development sector due to the scale, size and nature of development activity we are undertaking. We are in a unique position to work with government to test policies and incentives that overcome barriers to accelerating the delivery of sustainable urban development and housing outcomes at scale. Alongside this, we have the ability to work alongside iwi and rōpū Māori and private developers on innovative projects that improve capability and capacity to respond more broadly.

Key legislation governing Kāinga Ora recognises this opportunity, including the Urban Development Act 2020, the Kāinga Ora – Homes and Communities Act 2020, and the Government Policy Statement on Housing and Urban Development. These state that Kāinga Ora will play a lead role in helping meet the Government’s 2050 climate change obligations, leading by example – particularly in mitigating emissions and adapting to the effects of climate change.

Actions to Date

Kāinga Ora is already positioning itself as a leader in sustainable construction and urban development in New Zealand. We already have a range of activities and programs underway that are contributing to our environmental aspirations. Some of these include:

- **Housing New Zealand Environment Strategy:** This Kāinga Ora Environment Strategy revises the outcomes and activities that came out of this original Housing New Zealand Environment Strategy (including some listed below). It expands our focus to respond to new legislation, and opportunities associated with our new functions such as urban development.
- **Sustainable Financing:** We raise financing under our Sustainability Financing Framework with bonds that attract global investors. Debt issuance is linked to the expectation that we will achieve certain social and environmental outcomes.
- **Urban Intensification:** We have been undertaking regeneration projects that intensify existing urban land and help to locate more people close to schools, shops and employment. We do this through replacing degraded existing public housing with greater intensity development. We also influence and challenge plans to enable Kāinga Ora intensification and reduce barriers to the private sector redeveloping land to a greater density.
- **Homestar:** Since 2019 we have required all our homes achieve a minimum 6 Homestar (version 4) rating, delivering environmental outcomes that go beyond the current building code requirements. We have received international recognition for piloting low carbon buildings.
- **Waste Reduction:** Our urban development and construction programmes relocate large numbers of homes each year resulting in significant waste avoidance. Since 2018 we have relocated 100 former state homes through our infrastructure delivery partner Piritahi and established New Zealand’s first national deconstruction panel.
- **Renewable Energy:** We have been trialling renewable energy technology on our homes. During 2021, we made our first installations in Napier and Lower Hutt.

Other Strategies and Functions

The Environment Strategy is one of five functional strategies guiding Kāinga Ora direction and activity. In addition, Kāinga Ora Strategy 2030 and Te Rautaki Māori o Kāinga Ora are our two primary organisational strategies. The Environmental Strategy aims to support these strategies and their delivery. For instance, the activities of the Environment Strategy improve our understanding of how current and future customers will be impacted by physical changes to the climate, as well as the societal changes that may result. We can work with the customer and community teams to support them in anticipating and responding to these needs.

We recognise there are trade-offs to be managed between strategies. For instance, sometimes land we own for development, or that is cheaper to develop on, may be poorly located and therefore likely to induce high transport emissions. We will need to work with other parts of the organisation to better understand the implications of these decisions on climate, and support them with sufficient evidence and tools to inform decision-making.

Te Rautaki Māori o Kāinga Ora – the Kāinga Ora Māori Strategy

The regenerative and system-focussed view of the Environment Strategy acknowledges the organisation's desire to embed a more holistic Te Ao Māori approach to our activities. We will work with mana whenua to understand their environmental aspirations in a local context and ensure they are given adequate consideration in prioritisation of investment for that site.

Asset Management Strategy

We will need to ensure environmental input is provided as we develop asset management plans, and ensure our practices, capability and assets align with environmental targets and standards.

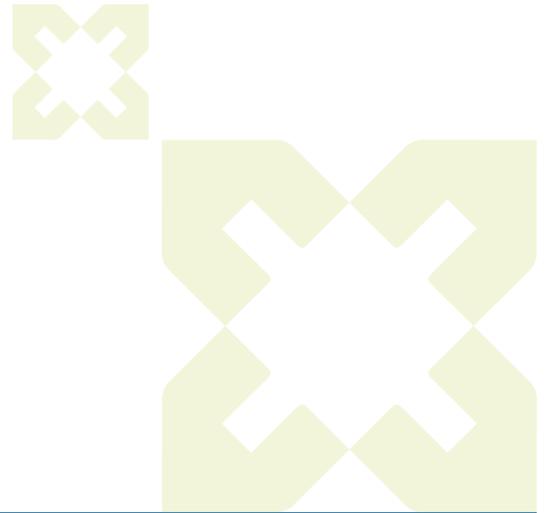
Urban Development Strategy

Urban development decisions play a critical role in locking in environmental outcomes for the long term. Kāinga Ora has an opportunity to deliver significant emissions reductions and wider environmental improvement through its urban development strategy.

Community and Customer Strategy

Our customers are some of the least able to transition to low emission jobs and lifestyles, but most likely to be impacted by the physical and societal changes that will result from climate change. We need to anticipate and respond to the needs of current and future customers in the context of a changing climate.

Implementation



This section provides further details on each of these key moves outlining what we hope to achieve, the options Kāinga Ora has, what needs to happen and who we will need to work both internally and externally.

Approach

Prioritisation of actions

In developing this strategy, we undertook a high-level prioritisation exercise to understand the actions we would take over the next five years to achieve our Environment Strategy outcomes. The following criteria were used to develop and refine our key moves outlined below.

- **Significance of impact:** What is the relative environmental impact, such as reduction in carbon emissions, materials used, waste produced or soil and water functionality and what is the impact on our customers, community and Māori?
- **Iwi expectations:** what did mana whenua tell us were the most important issues to them?
- **Stakeholder expectations:** Is this activity regulated or likely to be regulated? Is it aligned with government expectations and policies? What is the reputational impact of [not] undertaking this activity?
- **Role and influence:** What role does Kāinga Ora play in positively influencing this activity/ area? Does it align with the core function of the organisation and our organisational values? Do we play a supporting role to other agencies?
- **Control:** What level of control does Kāinga Ora have over this activity?
- **Momentum:** Is there already work underway, organisational interest or in-house expertise?
- **Ease of implementation:** What is the level of complexity associated with influencing positive change? Can we control the implementation?
- **Co-benefits and trade-offs:** What is the broader impact our actions will have on other outcomes of Kāinga Ora and the wellbeing of our customers, and Māori?

Key Moves

After undertaking this prioritisation exercise, ten key moves were identified that will shape our work programme over the next five years. Each of these key moves have a set of actions along with information on who we will partner with to deliver them.

1. Embed Climate Change Risk Management into Decision Making

Introduction

New Zealand's landscapes will change in response to our changing climate. As that happens New Zealand's assets will increasingly become at risk to damage, particularly from flooding. Other areas will become less habitable due to higher temperatures and drought. Today, 23% of Kāinga Ora owned land parcels are exposed to rainfall and river flooding. Of the sites we have targeted for investment, 16% sit within a rainfall or river flooding prone area. We need to consider the future vulnerability of our sites to climate risk, and use this information to inform our decision making to minimise future costs and harm to communities.

What action needs to be taken

Understanding and planning for risks

Kāinga Ora does not comprehensively understand the risk a changing climate will have to our existing and future portfolio. To rectify this, we are currently undertaking a climate risk assessment for our national portfolio, and looking to understand ways this framework can also be utilised at a neighbourhood and project scale. We will need to work with iwi and rōpū Māori to ensure this framework also captures the unique impacts climate change poses to places, taonga and cultural practise that are important to them. These risk assessments will enable us to undertake further analysis that will enable us to better plan our response. This analysis requires Kāinga Ora to have access to robust data that outlines expected changes in climate change hazards that is not currently available at a national level. We need to look at how we can make better use of existing data, while also supporting a national effort to improve the quality and availability of climate risk data.

Setting service levels

Kāinga Ora can take a range of different approaches to manage climate related risk. Some may protect us from the costs associated with flooding but not protect our customers from disruption or displacement if such an event occurs. For example, higher floor levels may protect home interiors from flooding, but still result in accessibility issues for tenants. In other instances, such as in the case of overheating, it may not be possible to completely eliminate climate risks. Once we understand the risks we need to make decisions about what levels of risk we are prepared to accept and what level of risk we are prepared to expose customers to.

Avoiding risk through investment decision making

Kāinga Ora has three major investment programmes including large scale projects, public and supported housing construction and our retrofit programme. Each of these has different risks and opportunities associated with them. To manage risk appropriately Kāinga Ora needs a decision making framework that balances the amount of due diligence required with the level of risk; the completeness of information about the risk; and the level of investment.

This decision making framework will need to be used to determine the extent of hazard assessment required at each phase of the investment lifecycle.

2. Embed Climate Change Mitigation into Decision Making

Introduction

From 2021, Kāinga Ora intended to spend \$7 billion to \$7.2 billion on new public and supported homes up to 2024. We need to ensure that the investment decisions we make fully consider emissions implications and that Kāinga Ora actively reduces emissions through investing in lower carbon options. The greatest opportunity to reduce the greenhouse gas emissions of our investment decisions is at the earliest decision-points in a development process.

The Kāinga Ora Board recognise the significance of this and have agreed that life cycle carbon assessment should be required within all business cases for public and supported housing investment decisions defined as 'significant' under the Kāinga Ora Investment Management Framework. This aligns with the Government Rules of Sourcing requirement that projects over \$9 million consider carbon implications. However, currently we do not have a process for quantifying emissions, and assessing the value of reductions against other priorities.

What action needs to be taken

Including emissions impacts in decision making documents

Kāinga Ora needs to develop an approach to calculating the emissions of our activities during the planning and design phase. This will provide us with evidence we need to consider costs and benefits of us taking action. International standards give guidance as to how to measure emissions of infrastructure and building projects, such as PAS 2080 Carbon Management in Infrastructure, and EN 15978:2011 Sustainability of construction works: Assessment of environmental performance of buildings. There are also commercially available tools to assist with undertaking the calculations.

We are beginning by implementing an emissions calculation tool which will allow for the emissions associated with our new construction projects to be estimated at each stage of building design and expect to expand this into infrastructure and land development in the future.

Emissions shadow pricing and internal trading

Carbon emissions can be difficult to conceptualise and balance against other costs, benefits and priorities, especially in business cases and investment planning. Emissions shadow pricing is a mechanism that can help to address this imbalance by assigning a financial cost to carbon emissions. This emissions shadow price takes into consideration the cost of mitigating the negative impacts of these emissions both environmentally and societally. Using accessible tools, the expected emissions resulting from proposals can be calculated and then monetised for inclusion within business cases using the emissions shadow price. This means the broad cost of carbon associated with decisions can be explicitly presented to decision makers. Further work is required to determine the shape and function of any internal emissions pricing scheme, however the establishment of a shadow price by 2024 and internal emissions trading scheme beyond this will help drive the organisation's emissions reduction efforts. Shadow cost pricing will make decision-makers aware of the carbon cost associated with their decision. Full internal carbon trading will incentivise decision makers to select lower carbon option

3. Emissions Inventories and Reduction Plans

Introduction

Kāinga Ora is required to report on all our material emissions sources annually from FY 2023, and to develop reduction targets in line with a 1.5°C climate scenario. To be compliant with those requirements we need to have a comprehensive understanding of the emissions intensity of our actions and make informed decisions about how we can avoid making emissions-intensive decisions where a lower carbon alternative is possible.

What action needs to be taken

Emissions inventories and reporting

Kāinga Ora does not have established processes for reporting on our emissions across all of our activities. We need to decide which emissions we are going to report on and how we will collect this information. We expect our emissions inventories and reporting to be organised in line with the activities we undertake:

- Corporate emissions includes reporting on our fleet fuel use and electrification programme, office electricity usage and business-related travel among other smaller sources.
- Public and Supported Housing emissions will include whole of life impacts of the existing housing portfolio and houses in the pipeline
- Infrastructure and Urban Development emissions will include embodied emissions from the delivery of infrastructure projects and land development, as well as anticipated operational emissions such as the transport-related emissions of people living in our developments.

Emissions reduction plans

Kāinga Ora does not currently have a clear strategy as to how we will align our actions with a 1.5°C climate scenario. We need to develop emissions reduction targets and pathways to achieving these. The establishment of emissions inventories will help to inform this work, along with the pilot projects we have and continue to undertake. To successfully deliver on these plans we will also need business and investment planning and design decisions to consider the climate impacts of different options, and how the preferred options will enable us to deliver on our targets. In preparing our emissions reduction plans we will also need to work with iwi and rōpū Māori to identify opportunities to embed matauraunga Maori in our approach and understand and respond to actions that may unfairly impact these groups.

4. Carbon Neutral Housing

Introduction

Kāinga Ora is currently leading the largest coordinated construction programme in the country, with 16,000 homes in our construction pipeline. New Zealand’s buildings are notoriously cold, damp and inefficient, and new homes are increasingly prone to overheating. Kāinga Ora is in a unique position to pivot the sector towards low carbon, high performance residential construction practices. Achieving carbon neutrality across the Kāinga Ora housing portfolio and housing delivery programme will be a challenging, complex and long-term endeavour, however there is an imperative to take immediate action given that decisions made now will lock in emissions beyond 2050.

What action needs to be taken

Improving our understanding of what low-carbon housing looks like

Kāinga Ora has the opportunity to lead the way in figuring out what low carbon housing and construction looks like. We can do this through supporting implementation of MBIE’s Building for Climate Change programme and proposed carbon performance caps. These standards also enable us to better support whanau wellbeing through improving warmth and dryness of homes and reducing the cost of energy bills. Through the delivery of pilot projects we could design and build to these targets ahead of the changes to test feasibility, buildability and cost of potential solutions. This can improve our understanding, capability and capacity to respond – and help us support the industry to do the same.

Translating innovation into business-as-usual

To achieve meaningful carbon reductions, Kāinga Ora will need to transition from delivering one-off high performance low carbon homes as part of a pilot, to delivering at scale. This will require integrating low-carbon solutions as requirements within our standard designs and specifications. Homestar certification provides a platform to support this – but we will need to move up star rating levels to achieve our carbon goals.

Supporting the sector to transition

Delivering on our emissions reduction aspirations will require a supply chain that can deliver what we need, when we need it, at the right price point. This means that it is important Kāinga Ora plays a role in supporting our supply chain and the New Zealand construction sector more broadly through this transition. We will need to set clear expectations, share our knowledge and collaborate to ensure we all can understand and solve barriers to implementation.

5. Renewable Energy

Introduction

New Zealand's electricity system is likely to go through a significant period of change over the next 30 years. Electricity generation and distribution capacity needs to double by 2050 to meet projected growth and transition to 100% renewable by 2030. Kāinga Ora has existing housing stock, and planned development with considerable roof space under our control, in concentrated locations and physically connected to the end user. This means we are in a position to deliver distributed energy solutions in New Zealand that could alleviate energy hardship for our customers, reduce the emissions associated with our homes and advance the decarbonisation of New Zealand's energy network.

What action needs to be taken

Forward pipeline of trials

Kāinga Ora is developing a pipeline of trials to test the integration of renewables on different types of housing stock, including new developments and existing homes, duplex and stand-alone homes as well as apartments. The purpose of these trials is to understand the opportunities, benefits and constraints associated with deploying solar energy assets on Kāinga Ora developments to inform our approach going forward.

The trial will involve providing solar energy systems to a small number of Kāinga Ora homes, across different regions of New Zealand. This will be facilitated through MBIE funding, up until June 2024. So far, Kāinga Ora has committed to installations across five regions on 201 units. We are constantly reviewing and assessing new projects to add to the pipeline.

Energy sharing innovation opportunities

Not all Kāinga Ora homes will be suitable for installing decentralised energy resources. These properties will still have to purchase electricity from the grid while properties that are suitable may produce energy in excess of their requirements. There is currently no easy mechanism for sharing energy between neighbouring Kāinga Ora customers. Excess energy can be sold back to the grid, but for a much lower price than what our customers are able to purchase it for. This could lead to inequality across our portfolio. Kāinga Ora is working closely with the Ministry of Business, Innovation and Employment, the Electricity Authority, Transpower and Ara Ake to understand this problem and our options for off-market energy-sharing solutions and are planning a number of trials to test these solutions.

6. Construction and Site Clearance Waste Minimisation

Introduction

Construction and demolition waste may represent up to 50% (6 million tonnes per year) of all waste to landfills in New Zealand. It is also the majority contributor of waste to clean fills or construction and demolition waste dumps. In addition, some estimates predict that up to 15% of virgin materials are skipped on a construction site. Kāinga Ora has a role to play in supporting the implementation of solutions to increase the circularity of the construction and development sector.

What action needs to be taken

Data and Targets

Kāinga Ora has a waste minimisation programme that is aiming to significantly reduce on-site waste coming from our construction and site clearance activities. To date we have adopted a range of waste diversion and housing relocation targets for site clearance activities. We still need to develop these for construction waste. To help us understand how we are performing against these targets we have developed a tool to enable accurate data collection from our sites. We are currently trialling this for site clearance activities with the intention of replicating this across construction sites also, to enable a better understanding of waste volumes and types.

Policy, Strategy and Industry Transformation

Kāinga Ora has successfully adopted and implemented a waste hierarchy for site clearance activities through our new site clearance policy. This prioritises house relocation where possible, followed by deconstruction, with demolition as the least preferable option. While we have made progress in how we manage site-clearance waste, we need to better understand and manage our construction waste, and identify industry-based solutions. In doing so we aim to look for solutions across the whole life cycle, including designing out waste, reusing materials and specifying low-waste/ recycled-content products and materials. Kāinga Ora does not hold all the levers to enable transformation, and as such partnerships with BRANZ, WasteMINZ, local councils, the Ministry of Business, Innovation and Employment and the Ministry for the Environment will be critical to both reducing our own waste volumes, and the successful transition of the New Zealand residential construction sector to a circular economy.

7. Low Carbon Urban Development and Infrastructure

Introduction

Kāinga Ora is leading the largest urban regeneration programme ever undertaken in New Zealand. Along with delivering on a range of social, cultural and economic outcomes, this investment also enables us to think about how we can regenerate existing neighbourhoods in a way that reduces our greenhouse gas emissions, and improves the climate resilience of our customers and assets. It is recognised that transformative changes are required to New Zealand's urban form if we are to deliver on these outcomes.

What action needs to be taken

Low Carbon Neighbourhood Pilot Project

As a country we are still building our knowledge, capacity and capability in terms of understanding how we can drive carbon emissions reductions within urban development activity. While we have some of the solutions, we do not understand the tools we need, the adequacy of existing policies and standards, and how our governance systems and funding mechanisms need to change. There are also limited local and international case studies for us to draw on. Kāinga Ora is well placed to collaborate with government and industry in testing innovative solutions and approaches on real urban regeneration projects to accelerate change and build collective knowledge.

Evidence Based Decision Making

Kāinga Ora makes decisions about where we develop to enable more housing. We can do this through purchasing new land, or making better use of land where we already own. Internationally, brownfield intensification has been recognised as critical to delivering low carbon, compact urban environments that deliver a high quality of life. However, there is little evidence on the comparative carbon benefits or costs in our context. We need to collect better data on the emissions impact across our different types of development activities to better inform our investment decision making.

Promoting Land Use and Transport Integration

One of the greatest impacts we can have through our urban development activities is supporting reductions in transport-related emissions. This is because at this scale we have the opportunity to think about how the various components of the neighbourhood interact, to reduce trip distances and realise strong walking, cycling and public transport outcomes – which is not available when working on a single site or piece of infrastructure (see also the Transport Mode Shift key move).

Low Emissions Infrastructure

The processes and materials we use to undertake land development and the construction of infrastructure result in emissions from manufacturing, transporting, maintaining and disposing of materials across the entire life of the assets. The most effective way to avoid embodied emissions is through reducing the quantity of materials needed. This can most easily be achieved by concentrating our development in areas where there is already capacity within the existing infrastructure network, and maximising yield when we don't have to increase the capacity of the network. We can also utilise low carbon alternatives for pavements, roads and pipes. We need to work with asset owners to improve the acceptability of these materials to make consenting processes easier and improve the supply chain.

8. Transport Mode Shift

Introduction

Transport is one of New Zealand’s largest sources of greenhouse gas emissions. In a neighbourhood-wide emissions assessment of one of our inner-city Auckland regeneration projects, the way people travel to and from the neighbourhood was responsible for 45% of the neighbourhoods total emissions. For greenfield development located further from the city this could be as high as 80%. Kāinga Ora has agreed on a set of [Sustainable Transport Outcomes](#) that commit our organisation to promoting a transition to low carbon transport options for our customers and communities whilst also delivering more inclusive, accessible, safe and healthy communities.

What action needs to be taken

Prioritising Development in the Right Locations

Kāinga Ora can prioritise development in areas close to existing public transport links, employment and education centres, and goods and services that meet the needs of residents. We also have the opportunity to place people in areas close to their whānau, where they already work, study, go to church, or attend social activities. This can reduce car dependency, as residents are able to utilise walking, cycling and public transport for every day trips – thus reducing transport related emissions.

Delivering Density

Kāinga Ora can optimise density in these well-located areas to provide for concentrated populations. This supports the viability of community facilities, social infrastructure and local commercial activity within walking distance of people’s homes; and, the provision of more frequent public transport services. Kāinga Ora can also explore opportunities to improve the provision of commercial activities and other services that better meet the needs of communities in our neighbourhoods and are within walking distances from their homes.

Improving access and safety of walking, cycling and public transport

High quality walking and cycling connections make low carbon modes of transport more attractive and safe for more people to use. Kāinga Ora can design our neighbourhoods, superlots and individual homes in ways that support walking, cycling and play over car movement and storage. As part of this, we need to better signal our development activities to road controlling authorities so we can integrate with their long term investment planning and ensure our developments are connected to the wider transport network. We also have a role to play in responding to the unique travel needs of our communities, including iwi and rōpū Māori and supporting and advocating on behalf of them for changes to the transport network or subsidies that benefit them.

Innovative and Transitional Parking Solutions

In the recent Kāinga Ora Customer survey, around a third of respondents stated they would like to travel by car less; however, are forced to into car ownership, despite the associated expenses. Private vehicles require significant resources to run, and low-income households are likely to forego many other needs to afford vehicles. We want to encourage and enable communities to make use of alternative travel options, while also managing shorter terms demands for parking. We need to explore innovative solutions to centralising parking, staging its provision and thinking about transitional structures or ways it can be repurposed when it is no longer needed. These solutions can also help us to make better use of space, provide higher yields and other amenity, and concentrate car traffic away from high pedestrian and cyclist areas.

9. Ngahere in Urban Environments

Introduction

Nature in urban environments provides well-documented social, health and economic benefits to the people who live near them. Mature trees provide an array of benefits to city dwellers, including air quality, water quality and storm water management, erosion prevention, street safety, and wellbeing benefits. Neighbourhoods where Kāinga Ora owns significant areas of land have some of the lowest tree canopy coverage. Given the investment planned in its urban land holdings, Kāinga Ora could play an important role in re-establishing biodiversity within our urban centres.

What action needs to be taken

Policies, Practices, Guidance and Toolkits

Within Kāinga Ora we face a tension between retaining and establishing vegetation, with the need to maximise the development potential of our sites. We need to ensure the benefits of vegetation in our neighbourhood are prioritised, while also addressing barriers to realising this such as, safety, and maintenance, interference with underground services and ecological vandalism. Kāinga Ora needs to develop a national framework, policies and guidelines that give clarity to the role of the organisation in this space.

Mangere Demonstration project

To help us better understand some of the barriers associated with retaining and establishing ngahere in our urban environments we plan to use one development area as a test case, being the Mangere Development. The purpose of this is to work towards a target of increasing tree canopy coverage from 8% to at least 15%. The project will aim to identify and overcome barriers to delivering on this target, and apply these findings across other development sites.

Strategic partnerships

Kāinga Ora aims to improve ngahere in towns and cities across New Zealand. To achieve this we need to establish a range of strategic partnerships across major land and asset owners and nurseries. We also need to collaborate with iwi and rōpū Māori and the community so we can understand and respond to understand local values and aspirations and empower local residents in the ongoing care of ngahere.

10. Water Quality

Introduction

Te Mauri O Te Wai. Freshwater is a taonga for Māori. It is linked to identity and is recognised for the way it provides for a range of environmental, social, cultural and economic values held by iwi and community. For Māori, great care must be taken in managing human impacts on freshwater.

Urban development (and housing construction) activity impacts on te mauri o te wai in many different ways, from sediment run-off during construction activities through to the disruption of natural water flows by impervious surfaces. Importantly, construction activity often creates new pathways – for example through roadways and other modified environments – that allow pollutants to travel into water bodies and change physical characteristics like temperature and turbidity, which can damage ecosystems. In addition, a warming climate and changing rainfall patterns will increase the potential for detrimental impacts on water quality and availability as a result of more intense periods of rain and longer periods of drought.

What action needs to be taken

Recognise mana whenua aspirations

In areas where we are undertaking development activity we must ensure that we understand mana whenua concerns and aspirations in relation to awa, both in its existing state and through development. This often relates to ability to carry out cultural practises in waterways, use waterways for recreational purposes and also to protect native species within the receiving environments. Doing this allows us to prioritise our decisions and efforts based on their aspirations.

Planting and improving awa

Kāinga Ora undertakes activity to improve waterways on a needs assessment basis. This involves planting awa as a means of reducing erosion, within both our development areas and where there are erosion hotspots downstream. This can also include stream daylighting, wetland restoration and planting as part of development. This results in higher water quality and better water temperature control, which delivers amenity of improved water amenity value and improved biodiversity.

Construction site sediment run-off

Sediment run-off leads to extra sediment and extra nutrients in waterways, which damage the ecosystems in the water. When we are undertaking development activities, sediment control is usually strictly regulated by councils who require silt control measures to be in place. However, our typical approach to land development (e.g. undertaking earthworks to create flat sites) increases the risk of sedimentation issues. Kāinga Ora is developing approaches to minimise these sedimentation risks, including working more within existing landforms to minimise soil disturbance.

Rainwater capture and re-use

In the past Kāinga Ora has only consider rainwater re-use in limited circumstances. There are a number of perceived or real management issues that need to be overcome. However, rainwater re-use within the house and garden results in less water being drawn from waterways. Collecting rainwater can also reduce the first flush impact of heavy rainfall events on the local storm water network. Kāinga Ora is developing a formal position in relation to rainwater capture and reuse within its developments.