Position paper on a national waste infrastructure planning approach for the waste action and investment plan (2024-28)

Purpose

The purpose of the paper is to provide an initial Ministry position on a preferred approach to national waste infrastructure planning for discussion. The intention is to provide early thinking as part of stakeholder engagement, to test its merits and inform the infrastructure content of the draft, and then final, waste action and investment plan (AIP).

Background

Eunomia Consulting was funded to undertake a waste infrastructure and services stocktake and gap analysis in 2020 and 2021. Subsequently the Ministry published an initial summary report (Dec 2022) followed by a more comprehensive report (May 2023)[1]. Further stakeholder engagement was undertaken to inform the development of a Long-term Infrastructure Plan for waste in 2022, before work was halted and a decision was made to progress this further as part of the AIP.

The Infrastructure Commission and the Climate Change Commission have called for a long-term approach to waste infrastructure planning.

Strategic context

The Te rautaki para | Waste strategy for Aotearoa, New Zealand, published in March 2023, provides the strategic direction for national waste infrastructure in the AIP (2024-28) as one of the eight goals of phase 1 (2023-2030).

> **Goal 2: We have a comprehensive national network of facilities supporting the collection and circular management of products and materials.**
>
> To achieve Goal 2 by 2030, we must focus on the following priorities.

2.1	Align the overall direction and approach across central and local government, and the waste management sector.
2.2	Ensure planning laws and systems recognise waste management services and facilities as essential infrastructure and a development need.
2.3	Secure investment from diverse sources.
2.4	Put in place arrangements that will help parties plan and deliver projects together, efficiently and effectively, so we create a coherent, national circular-resource network.

The first emissions reduction plan (2022) set the direction for increased investment in waste infrastructure to divert and recover organic waste (food waste, green waste, paper and cardboard and timber) from landfill. $120m is available (over two years) through current Waste Minimisation Fund investment signals for infrastructure and enabling systems to reduce landfill emissions from organic waste.

[1] Waste and Resource Recovery Infrastructure and Services Stocktake and Gap Analysis – Full Project Summary Report: https://environment.govt.nz/publications/waste-and-resource-recovery-infrastructure-and-services-stocktake-project-summary-report/

The national circular resource recovery network concept

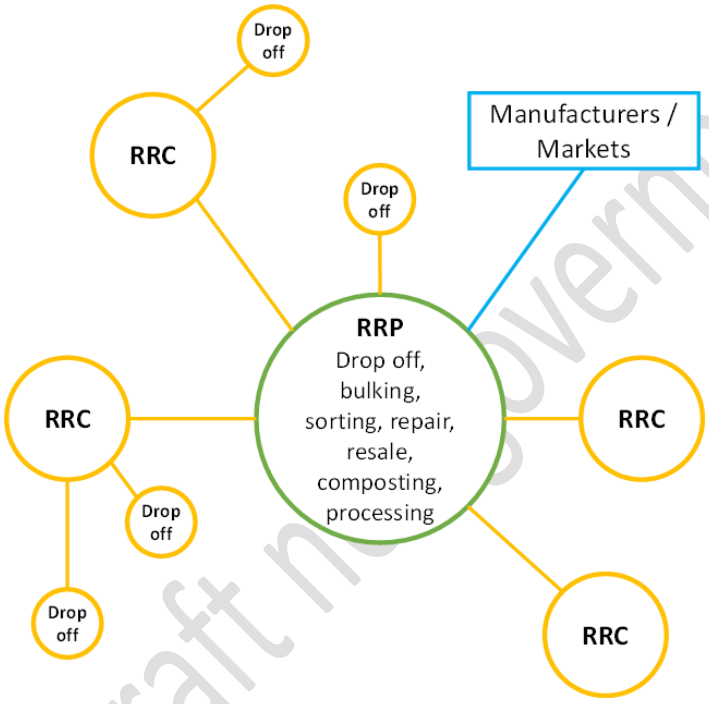
Put very simply the desired state is an appropriate geographic spread of right-sized facilities connected and supported to enable the efficient collection, sorting, bulking, processing, and redistribution of material resources throughout the economy.

Hub and spoke distribution systems are common in industries that rely on the movement of physical goods through a supply chain to efficiently channel materials from centralised hubs to delivery locations. For resource recovery this is reversed as smaller distributed locations transfer materials to larger processing facilities.

Hub and spoke models currently exist to varying degrees across a variety of resource management elements present, proposed and under development with differing ownership structures and operating models.

A core part of the network concept is connecting facilities so they can specialise, innovate, and efficiently exchange materials, resources, and ideas.

Figure 1: Representation of a resource recovery network



[Resource Recovery Centre (RRC), Resource Recovery Park (RRP)]

Green shoots of a hub and spoke model are emerging across New Zealand and additional investment is being investigated. Current iterations of the resource recovery network have largely focussed on transfer station upgrades and adaption. These operating models have developed the flexibility to adapt to serve the needs of local households, small business and deliver desirable social outcomes to the communities they operate within. The components of the emerging network rely on existing infrastructure and facilities as the hubs to sell and bulk material (e.g., commodity buyers for metal, paper, and plastic). This suggests there is an opportunity to both support adoption elsewhere but also increase linkages of existing (and planned) resource recovery facilities with larger commercial material flows, and more specialised processors and operators.

The vision

Based on the concept outlined above, our proposed vision for a national circular resource recovery network is:

> ***An appropriate geographic spread of right-sized facilities connected and supported to enable the efficient collection, sorting, bulking, processing, and redistribution of material resources throughout the economy.***

This includes:

- A national resource recovery network based around a hub and spoke model.
- Continued support for upgrading and adapting existing transfer stations (and other assets) to improve the accessibility and availability of sites that increase diversion and top of waste hierarchy outcomes.
- Supporting emerging processing capacity/models through coordinated planning, research, procurement guidelines, market signals, bylaw development and legislative changes
- Developing 'networking' capabilities – connections between sites and operators

Key network outcomes

The key objective is progress toward the desired state (Goal 2), this is expected to deliver a range of outcomes including:

- More drop-off sites for return schemes and recyclable materials not accepted at kerbside.
- Businesses, households, and community groups have access to more material streams and disposal options.
- Some standardisation of drop off options, layouts, signage, customer experience and service levels.
- More processing capability and capacity for priority waste streams.
- Facilities and operating models are financially viable.
- Networking – coordination and collaboration that supports efficiencies and knowledge transfer across the system of sites.
- Increased opportunities for additional functions and revenue streams as regulated product stewardship schemes and future Extended Producer Responsibility (EPR) schemes emerge, which could include a future container return scheme.

Expected benefits

The approach proposed in this paper targets the following benefits:

- **Increased market confidence** – the approach is consistent with the waste strategy, the restructured WMF model and supporting actions recently delivered through the Ministry's work programme. The proposed approach is aligned to the Ministry's existing work programme so provides certainty to the sector on direction of travel.
- **Efficiency** – progress on standardisation and coordinated transport logistics would likely create and deliver cost savings.
- **Rationalised capital expenditure** – the initial focus on upgrading and adapting of existing sites limits the capital requirements, reducing the risk of poor investment decisions and stranded assets.

- **Reduces information asymmetries** – making more information available to the market reduces the likelihood of one or more parties having more or better information than other market participants.

The Ministry can play a guiding and enabling role with clear signalling

To realise the vision and outcomes above we need to expand the number of existing resource recovery facilities, broaden the scope of the functions they perform and improve coordination and connections across resource recovery network elements.

The goal for government is to improve coordination and cooperation, enable information sharing, encourage innovative approaches, support better contracts, and support standardisation that improves efficiency and customer experience. The approach overviewed below is consistent with the role government has played over past years, with a more active role in some areas being proposed.

A guiding and enabling role that targets outcomes at the top, while also addressing key infrastructure deficits in the middle of the waste hierarchy, with clear signaling, is preferred to a prescriptive centrally planned approach. This means:

- laying out a **vision for the future.**
- **facilitating regional planning** to identify waste infrastructure needs, improve coordination, cooperation, and support more collaborative delivery that aligns needs with resources available across regions and nationally.
- continued use of the WMF signals to **target infrastructure funding** at high impact areas.
- signaling **nationally significant investment** opportunities ('big shifts' i.e. what is needed, where).
- taking and **supporting actions** that shift and leverage market incentives to increase revenue and reduce costs for existing and emerging elements of the national resource recovery network, including:
    - making **data and information** available to the market, e.g. infrastructure stocktake, research on market barriers, national communications campaigns.
    - **encouraging standard approaches** by - utilising national standards enabled via new waste legislation; and promoting best practice operating processes and contracts though guidance and incentivised through investment.
    - **changing system settings** via new legislation and regulation, e.g. standardising kerbside, performance standards, right to repair, waste operator licensing and possibly CRS.

Q: What are your views on the proposed government's "guiding and enabling" role? What are the implications?

Q: What are challenges you see in network development without these interventions?

Our proposed approach in more detail

Regional planning

As expanded on in the section below, progress towards the vision will be made by taking a planning approach at a regional/super-regional level. This approach will consider the need for regional operating entities, the options, and requirements as part of the regional pilot approach (contributes to Priority 2.4 of the Waste Strategy).

Targeted infrastructure funding

Practically this means continued use of the Waste Minimisation Fund (WMF) signals to target funding at high impact areas, especially nationally significant investment opportunities that can rapidly transform markets.

The Ministry will also continue to explore options beyond grant funding for WMF with other agencies (contributes to Priority 2.3).

Q: What should be the priorities for infrastructure investment?

Nationally significant investment

Another role where central Government may support improved outcomes is signalling where investments at a greater-than-regional scale are needed. This might be achieved through signalling nationally significant infrastructure needs in the AIP or via WMF and/or other funding mechanisms.

There are a range of nationally significant investments to consider such as supporting onshore reprocessing capabilities for plastics, metals, glass, and fibre. These could support hub development; provide resilience against volatile global commodity markets; and support progress towards international commitments. There are currently very limited options for large volumes of treated timber and several options and risks around different types of waste to energy investments.

Q: Are there material streams that lend themselves to Government signalling and support for significant investment to improve outcomes at a national level? Q: What factors drive the need for Government intervention e.g. increased coordination and network efficiency or need to address environmental externalities such as emissions, greater resilience to international markets or climate change?

Supporting actions - potential activities to enable network development

In addition to investment in physical infrastructure there are a range of levers available for government to support the development of the network and influence markets. These can be thought of as coordinating functions that enable collaboration, operating efficiencies, and knowledge transfer across the system of sites.

We acknowledge enabling network effects is not an easy task. A first step could be to develop an independent understanding of the barriers. The lack of coordinating function(s) could be a combination of several barriers such as the time, skills, and resources available to operators, and the competitive tension between public and private models. Once these are better understood, research could be procured and leveraged to assist with developing coordination and shared logistics. We explore some options below.

Q: What are the current barriers to expanding the network?

Q: What could government do to enable network effects?

Q: What other network effects can be achieved and what role does the Government and others play in achieving them?

Data and information provision

To help people connect and inform the market we propose to develop, conduct, procure and disseminate a research programme that improves the availability of information required to make investment decisions and optimise operations. This could include research on best practice locally and abroad, and engaging or partnering with organisations and the sector to develop and deliver initiatives. For instance:

- investigating the opportunity to support and leverage existing and planned research, and through partnerships with data owners, to enable the development of reverse logistics capabilities. A live example is a *Road Freight Market Study* procured by EECA that aims to enable decarbonisation and will be shared to support the New Zealand freight system to run as efficiently as possible.
- digital marketplaces and online business directories can reduce transaction costs, such as the time and effort required to find a desired product or service.
- national waste communications campaigns and product labelling to support correct and increased use of services and facilities, and reduce contamination.

Q: What is the key information and data components the sector needs to support infrastructure planning and investment?

Standards and standardisation

Another area government can guide and support is by developing common operating standards and encouraging standardisation. Consistent approaches to material handling and acceptance would support standardising operations for network efficiencies. For example:

- A standardised modular approach business case could be developed/supported to procure and supply/maintain standardised equipment.
- The consistent use of standard waste and recycling colours and signage would improve outcomes across the network.
- There have been a variety of approaches to operating contracts. There may be a role and value in evaluating contracting approaches and outcomes to develop a view on best practice for the desired outcomes.
- Supporting end-market development by understanding contaminants to inform updated national composting standards.

Changing system settings

A range of significant shifts to system settings, primarily through new waste legislation, are being undertaken. These are intended to address gaps and provide new tools to help deliver on goals and commitments. These and other changes to waste legislation will require the local waste planning (WMMPs) to align with the Waste Strategy and AIP (contributes to Priority 2.1). For example:

- changes to kerbside collections will drive demand for increased food waste processing capacity. In addition, kerbside standardisation presents an opportunity for parts of the network to collect and process household materials that are not accepted in kerbside.
- recyclable content requirements and right to repair.
- developing a national licensing scheme is also key, with requirements for a national register of operators and facilities improving information and data availability. Licenses may include entry requirements, operating standards, as well as oversight and sanctions.
- there is a need to engage in Resource Management spatial and resilience planning processes to develop an understanding of consenting challenges, how these can be overcome, and can be best communicated to the sector (contributes to Priority 2.2).
- the Ministry will also procure advice on barriers to market entry which will consider the extent and impact of consenting challenges.

Building a national circular resource recovery network through regional planning

Hub and spoke models are emerging and more investment is being investigated across the country. A key question is how can the existing models be leveraged for improved outcomes, interest in future investment be harnessed and progress be accelerated?

Planning across a wider region may improve coordination, cooperation and support more collaborative delivery that aligns needs with resources available across wider regions as well as regionally-specific material flows and challenges. This could improve both the scale and replicability of infrastructure investment as well as allowing for refinement of the model. Iterative planning would also allow for greater flexibility and for wider investment with linkages to adjust to changed dynamics.

The Ministry intends to procure and support services to facilitate a pilot collaborative planning process at a regional level. This will:

- build on existing knowledge available from council waste assessments, the national stocktake to define the short and long-term waste and resource recovery infrastructure challenges facing the region.
- identify what is required to address these challenges across the range of existing, planned, and desirable waste, resource recovery, and reuse/repair services and assets.
- identify the levels of service options and costing, and funding options and opportunities across short- and longer-term priorities.
- provide advice to the Ministry, and recommendations for a proposed approach to move forward with other regions.

Given the emission reduction plan and waste strategy targets, it is anticipated a key focus of regional planning would be on diversion and beneficial use of organic, and construction and demolition material flows. However, all material flows will be considered. Landfills and other infrastructure vulnerable to the effects of severe weather will also need to be considered. Noting every region is different, a regional (or sub/super-regional) approach presents the opportunity to consider a variety of funding, contract and ownership models for existing and new sites that could incorporated within a network model.

The WMF encourages joint and collaborative resource recovery projects. There is already some collaboration within regions, and some will be more ready to work in this way. This approach would not hinder progress where regional collaboration is already occurring, aligned to waste strategy goals and national circular network vision. If successful this approach could provide a template for other regions, even if unsuccessful it would likely provide valuable lessons for alternative approaches.

Q: What are the challenges and opportunities you see with a regional pilot approach to infrastructure planning?

Q: How can this pilot planning approach be coordinated with wider resilience/infrastructure planning?

Appendix

Examples of circular resource recovery network concept schematics