# Making a positive difference:

## Case studies on the Waste Minimisation Fund and the Contaminated Sites and Vulnerable Landfill Fund – amended version

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Pragmatica

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## Case study information

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## Research team

Pragmatica Limited held the contract for this case study research. Judy Oakden, Kellie Spee and Alicia Crocket developed the cases in consultation with the Ministry's project management teams.

Amendment July 2026: Total waste generated calculations: The total tonnage of waste generated differed between the Beca (2025) data and the Zero Waste Network (2021) data. The most up-to-date waste tonnage figures are available through the Ministry for Cities, Environment, Regions and Transport's *Waste Statistics Dashboard* (n.d.) and the Ministry encourages readers to use these figures for future analysis and reporting.


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# Executive summary

> *New Zealand's rates of resource recovery – the recovering of waste for new uses – are low when compared to many other countries. … We lack the onshore processing infrastructure to deal with all our waste in ways that get greater value from it and reduce our reliance on landfills.* (New Zealand Infrastructure Commission I Te Waihanga, 2025).

## Background

The Ministry for the Environment – Manatū Mō Te Taiao (the Ministry) invests in two Funds that support developing waste minimisation infrastructure, improving waste resource recovery, reducing landfill reliance and remediating contaminated sites. These Funds are called the Waste Minimisation Fund – Te Pūtea Whakamauru Para[1], and the Contaminated Sites and Vulnerable Landfill Fund – Tahua mō ngā Pae Hawa me ngā Ruapara.

The value of the Waste Minimisation Fund is not in question. In a companion report, *Investing in minimising waste: An impact assessment* (2025) Martin Jenkins estimate the Fund[2] delivers a positive investment return to society of around $500 million overall with a benefit-cost ratio of 3.11 and a payback period of 11 years. However, the Ministry also wanted to gain a **deeper understanding of the impacts and value as experienced across the funds**.

Therefore, the Ministry commissioned Pragmatica to produce three performance-style case studies. The research focused on two objectives: understanding the impact of selected projects in construction and demolition, organics, and contaminated sites or vulnerable landfills; and identifying the qualitative benefits these projects deliver for New Zealanders. The studies highlight economic, environmental, social and cultural benefits across the three focus areas from a qualitative perspective[3].

Fourteen projects were selected, representing a combined investment of $27.3 million – $12.96 million from the Ministry and $14.34 million from Fund recipients. Each case study examines how the projects operate and how funding enabled them to deliver key

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[1] As well these cases include a project from the now discontinued Plastics Innovation Fund – Te Tahua Pūtea mō te Kirihou Auaha. Investment in this area is now funded through the Waste Minimisation Fund.

The Funds are of the following scale:

- Waste Minimisation Fund – $173.7 million invested since 2010. From FY24/25 $30 million per year will continue to be invested via the Fund.
- Plastics Innovation Fund – the Fund started in November 2021 and is now closed, with investment continuing via the Waste Minimisation Fund. The Fund approved investment of $24.3 million across 24 projects.
- Contaminated Sites and Vulnerable Landfill Fund – $60.6 million invested since 2003 (including investment Contaminated Sites Remediation Fund). From FY 24/25 $20 million per year will continue to be invested via the Fund.

[2] Funds referred to by Martin Jenkins in *Investing in minimising waste: An impact assessment* (2025) are the Waste Minimisation Fund, the COVID-19 Response and Recovery Fund for Waste and Resource Recovery Initiatives and the Plastics Innovation Fund.

[3] For more information on the case study methodology please see page. 71

outcomes. These include reducing landfill waste, lowering emissions, and remediating contaminated sites or vulnerable landfills.

The case studies also help capture the shifts across the waste hierarchy from removing residual waste to reduce harm, to recovering waste, to recycling and reusing waste, to ultimately reducing the amount of waste and avoiding unnecessary resource use.

Source: (Ministry for the Envrironment, 2025, p. 4)

# Key findings

The case studies show that the Funds deliver well on their core purposes: to create value through a range of infrastructure investments, to reduce waste, boost recycling and reuse, and to remediate contaminated sites. Key themes are that seed funding unlocks change, progress comes from many complementary actions, relationships drive results, the Funds enable stewardship and kaitiakitanga, and the Waste Levy works best when paired with education.

### Seed funding unlocks change

Seed funding gives Fund recipients the confidence and capital to trial projects that might otherwise be delayed or never happen. Recipients consistently view the Funds as filling a critical gap – supporting businesses, government agencies, councils and charitable trusts to catalyse other sources of capital. The Funds' design helps crowd-in non-government capital[4] which is essential for unlocking the funding needed to drive meaningful change across the waste hierarchy.

The near-equal share of public and private funding demonstrates strong industry support. Firms are confident that projects will continue beyond the life of the grants. Government co-funding helps solve market failures in waste management by tipping marginal projects into commercial viability. This de-risks private investment and enables innovation across the system. However, recycling infrastructure appears more

[4] *Crowding-in non-government capital government funding or support* is government funding or support that encourages private investors, philanthropists, or other non-government actors to also invest in a project or initiative.

concentrated in the Auckland region. Limited access elsewhere may hold back diversion rates and increase freight emissions and costs. A stronger regional focus may be warranted.

### Progress comes from many complementary actions

There is no single "silver bullet". The Funds support a wide range of initiatives, each contributing to progress in different ways – large industrial plants, community-scale hubs, research partnerships and contaminated-land clean-ups all play a part. For example, the construction and demolition projects show the benefits of funding the full value chain – demolition, sorting, processing and remanufacture, rather than focussing on a single component. This mix helps broaden impact and spark innovation. Large grants enable national-scale infrastructure. Smaller grants support community-led trials, such as kerbside organics collections and micro-composting hubs where education is key to changing behaviour and embedding better waste management activity.

Therefore, we suggest the Ministry continues to fund across the full value chain. We note, the current focus for the Waste Minimisation Fund is predominantly on infrastructure. There is an opportunity to invest across the waste hierarchy, including allocating more funding for education to help drive sustainable change made possible by the improved infrastructure.

### Relationships drive results

Strong relationships and trust are essential for collaboration and long-term success. Participants highlighted that trust between councils, iwi, businesses and the Ministry helps make tough jobs – such as consenting, land access and behaviour change, faster and more cost-effective.

Therefore, it is important to allow sufficient time in project plans to build and maintain effective working relationships.

### Kaitiakitanga in action

The Funds enable stewardship and kaitiakitanga that add lasting value and resilience to local communities. Recipients repeatedly stated their goal was to "leave places better than they found them", turning waste problems into community assets. Many are proud to be associated with projects that contribute to environmental regeneration and ecosystem improvement.

We note that the environmental gains, such as greater waste diversion, lower emissions and fewer contaminants are achieved alongside social benefits. These include community engagement, iwi partnerships and improved access to public spaces. We suggest that together, the environmental gains and social benefits strengthen the overall value proposition of the Funds.

### Waste Levy works best when paired with education

The study also surfaced useful feedback for future policy work. The Waste Disposal Levy can be a powerful tool for encouraging positive behaviour and better waste management practices, especially when paired with education. Education around waste minimisation, emissions reduction and land remediation helps maximise the Levy's impact.

## Summary of qualitative benefits from each of the cases

| Case One: Construction and demolition | Case Two: Organics | Case 3: Contaminated sites or vulnerable landfills |
|---|---|---|
| **Economic Benefits**<br>• Creating new business opportunities and transforming existing businesses with new market technologies offering commercial viability for hard-to-recycle streams<br>• Crowding-in non-government capital<br>• Developing infrastructure for future waste sorting and recycling<br>• Recovered resources turned into new product lines (e.g. re-milled timber, polymer pellets), creating new revenue streams and reducing reliance on imported virgin material<br>• Reducing long-term waste management of waste to landfill.<br><br>**Environmental benefits**<br>• More infrastructure available for sorting and diverting waste from landfill and keeping valuable materials in use lifting their productivity<br>• Large waste volumes diverted from landfill (between 40% and 90%) with continuous, scalable diversion of construction and demolition debris<br>• Building capacity to collect, process and reuse in manufacture, PVC pipes and other plastics in large volumes.<br><br>**Social and cultural benefits**<br>• Increasing industry understanding and participation in waste diversion<br>• Educating and raising awareness of new schemes for waste diversion, recycling and reuse<br>• Creating jobs and developing the workforce<br>• Promoting environmental stewardship. | **Economic benefits**<br>• Improving organic resource recovery<br>• Maximising the value of recyclable organic materials/products<br>• Reducing business costs and costs of organic material sent to landfills<br>• Developing local organic waste enterprises and creating new jobs with specialist skills in recycling and composting<br>• Partnering with local businesses<br>• Pricing waste processing to incentivise companies to participate.<br><br>**Environmental benefits**<br>• Fund recipients diverting ~35,000 tonnes of organic waste from landfill per year<br>• Developing sustainable kerbside collection and organic waste recovery and processing infrastructure<br>• Reducing greenhouse-gas emissions by avoiding landfill methane through landfill technology, composting and reuse.<br><br>**Social and cultural benefits**<br>• Achieving community engagement and buy-in to use collection services<br>• Improving community understanding of organics recycling and reuse technology<br>• Using learning hubs to teach communities how to better use organics products such as compost and creating employment, volunteering and capability in organic waste diversion<br>• Supporting council and community waste minimisation goals. | **Economic benefits**<br>• Remediation reduces and eliminates spending on temporary solutions<br>• Removes the risk of further contamination<br>• Cleaning up contaminated land unlocks land for higher-value uses, releasing sites for recreation or commercial revenue producing uses.<br><br>**Environmental benefits**<br>• Eliminating risk of further environmental contamination at the sites<br>• Protecting the marine environment<br>• Restoring the habitats and ecological value of the sites.<br><br>**Social benefits**<br>• Reopening public recreation spaces and restoring access to local community assets<br>• Removing the risk to human health<br>• Improving relationships and connections between community organisations (Councils and the Department of Conservation) and the public.<br><br>**Cultural benefits**<br>• Preserving and renewing culturally significant spaces and enabling kaitiakitanga<br>• Strengthening collaborative relationships with Iwi. |

# Thoughts for the future

The cases show the Funds' clear benefits and support their continued use by the Ministry. Here are ways the Funds' impact may be further strengthened:

Strengthen the Funds' value propositions by integrating environmental and social benefits: Recognise that environmental gains – such as increased waste diversion, reduced emissions and fewer contaminants are strengthened by social benefits including iwi partnerships, community engagement and improved public spaces. Consider both environmental and social outcomes when assessing the overall impact and value of the Funds.

Fund across the full value chain to support behaviour change: Continue funding across the full waste value chain, including infrastructure. Now that some key infrastructure is in place, consider allocating more funding to education initiatives that support behaviour change and maximise the impact of improved infrastructure.

Address regional disparities in recycling infrastructure: Recycling infrastructure appears to be concentrated in the Auckland/Waikato region, limiting access elsewhere. Consider increasing regional investment to improve diversion rates and reduce freight-related emissions and costs.

Support relationship-building in project planning: Allow sufficient time in project plans to build and maintain effective working relationships, which are critical to project success.

Retain application processes that support strong project design: Maintain or enhance administrative processes that help applicants develop well-considered, high-quality proposals.

Maximise the Waste Levy's impact through education and remediation: Explore ways to fund education on waste minimisation, emissions reduction and site remediation. Consider using education to amplify the long-term impact of the Waste Levy.

# Limitations of these cases

The cases draw on 14 projects selected across the Funds. While limited in scale and offering just a snapshot, each case provides rich insights. This case study report adds qualitative depth and breadth to understanding the benefits of the Funds.

We cannot generalise across the total funding. However, together, these cases show how diverse projects contribute to building waste minimisation infrastructure, improve resource recovery, reduce landfill reliance and remediate sites to protect New Zealand's environment.

Note: All quotes are from Fund recipients, unless otherwise stated.

# Case One: Diverting and reusing construction and demolition waste

# Key findings

## How big is the construction and demolition waste problem?

According to the *New Zealand Construction and Demolition Waste Baseline and Tracking Methodology Report: Final Report* (Beca Limited, 2025), nearly 70% of all waste disposed of at Class 1–4 levied facilities is from construction and demolition activities, making it a major contributor to landfill volumes. Just 19% of this waste was diverted from disposal. Regional variation in access to recycling facilities, most of which are in Auckland, may be a barrier to higher diversion rates.

## Key metrics

The Ministry granted $7.2 million for the projects selected for this case, 46% of the funding. Industry contributed an extra $8.6 million giving a total investment of $15.8 million between 2012 and 2025. The funding was to divert a range of waste streams from landfill by recycling, reusing construction and demolition waste. Projects are diverting between 40% and 70% of demolition and construction waste from landfill, and up to 90% in some instances.

## What does the case cover?

The six projects selected for this case show the collective benefits of the Waste Minimisation Fund investments in diverting construction and demolition waste from landfills at all stages in the construction and demolition process. The Fund supports innovations at every stage: building demolition, sorting, recycling and making new products from old materials. The projects show how both large and small investments provide valuable contributions to developing waste diversion infrastructure. This development of new infrastructure includes:

- shredding concrete, removing steel and recycling both materials
- processes for collecting recyclable material, and shredding wood, plastic and plasterboard for recycling and reuse
- designing new products using recycled materials, to replace some virgin materials.

## Summary of project initiatives

Grün Group invested in new demolition machinery enabling them to recover 30,000 tonnes of waste on the first project. Since, their business has grown ten-fold, and they have a recovery rate of ~70% diversion from landfill.

Green Gorilla invested in a series of new sorting machines and recycling processes. Projects described in the case now process 30,000 tonnes of wood waste, 40,000 tonnes of mixed demolition waste and 5,000 tonnes of waste plasterboard per year – diverting more than 70% (and at times up to 90%) of waste from landfill.

Marley New Zealand formed a joint venture to set up a nationwide collection and consolidation system for waste PVC, HDPE and PE. They are on track to divert 2,000 to 3000 tonnes of plastic from landfill. For the first time in New Zealand, plastic waste is

collected and recycled into micronised or pelletised plastic and then reused in new product manufacture.

Abodo invested in creating a waste recovery system to recycle high-value thermally modified timber. By using an Optisaw, Abodo was able to repair factory-damaged products and develop two new products: shingles and battens, diverting ~715 tonnes of timber from landfill.

## Benefits generated

| Type of benefit | Description of benefits |
|---|---|
| *Economic benefits generated* | • Creating new business opportunities and transforming existing businesses with new market technologies offering commercial viability for hard-to-recycle streams<br>• Crowding-in non-government capital<br>• Developing infrastructure for future waste sorting and recycling<br>• Recovered resources turned into new product lines (e.g. re-milled timber, polymer pellets), creating new revenue streams and reducing reliance on imported virgin material<br>• Reducing long-term waste management of waste to landfill. |
| *Environmental benefits generated* | • More infrastructure available for sorting and diverting waste from landfill and keeping valuable materials in use lifting their productivity<br>• Large waste volumes diverted from landfill (between 40% and 90%) with continuous, scalable diversion of construction and demolition debris<br>• Building capacity to collect, process and reuse in manufacture, PVC pipes and other plastics in large volumes. |
| *Social and cultural benefits generated* | • Increasing industry understanding and participation in waste diversion<br>• Educating and raising awareness of new schemes for waste diversion, recycling and reuse<br>• Creating jobs and developing the workforce<br>• Promoting environmental stewardship. |

## Other learnings

Critical success factors: Funding supports larger projects than businesses are likely to fund independently. The flexible but robust application process and an encouraging Ministry team supports well thought through applications for successful projects. Investments are of sufficient scale to be future-proof.

Counterfactual: Recipients say that without the Fund they would not have been as motivated or achieved the same scale as fast. The Fund legitimises ideas and attracts other investment and support.

Broader learnings: A potential gap exists for pre-planning design funding. As well, there is growing community and industry engagement in minimising construction and demolition waste to landfills. However, building awareness of minimising waste and waste diversion options takes time and effort – companies are still learning how to do this well.

# Overview

## What is construction and demolition waste?

The Waste Minimisation Act defines construction and demolition waste as follows.

> *Waste derived from the construction or demolition of buildings, structures, and infrastructure. This includes residential, industrial, and commercial structures, pipelines (above-ground and underground assets), roading, land development (including site clearance for building or subdivision construction), and regular slips or other debris not associated with a major natural hazard.* Waste Minimisation (Information Requirements) Amendment Regulations 2023, 2024, Schedule 3, Activity Categories.

As defined in the Act, mixed construction and demolition material includes:

> *… a mixture of timber, glass, metals, plastics, plasterboard, or fibre cement products, fibreglass or insulation materials, masonry, bricks and small (incidental) amounts of concrete, soil, or rock …* Waste Minimisation (Information Requirements) Amendment Regulations 2023, 2024, Schedule 2 Conversion factors for volume-to-weight calculations.

## How big is the construction and demolition waste problem?

According to the *New Zealand Construction and Demolition Waste Baseline and Tracking Methodology Report: Final Report* (Beca Limited, 2025), nearly 70% of all waste disposed of at Class 1–4 levied facilities is from construction and demolition activities, making it a major contributor to landfill volumes. Just 19% of this waste was diverted from disposal. Regional variation in access to recycling facilities, most of which are in Auckland, may be a barrier to higher diversion rates.

## The opportunity to innovate

The six projects selected for this case show the collective benefits of the Waste Minimisation Fund investments in diverting construction and demolition waste from landfills at all stages in the construction and demolition process. The Fund supports innovations at every stage: building demolition, sorting, recycling and making new products from old materials. The projects show how both large and small investments provide valuable contributions to developing waste diversion infrastructure. This development of new infrastructure includes:

- shredding concrete, removing steel and recycling both materials
- processes for collecting recyclable material, and shredding wood, plastic and plasterboard for recycling and reuse
- designing new products using recycled materials, to replace some virgin materials.

Overall, the Ministry granted $7.2 million for the projects selected for this case, 46% of the funding. Industry contributed an extra $8.6 million giving a total investment of $15.8 million between 2012 and 2025.

The investment helped build sustainable infrastructure for waste diversion and reuse, with capacity to expand to meet future needs. It also supported innovative recycling and reprocessing solutions to reduce waste in the construction and demolition sector and an increase in opportunities to recycle and reuse materials. In these projects, the fund recipients estimate they diverted between 40% and 70% of construction and demolition waste from landfills.

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### Who was involved?

Grün Group Limited, Green Gorilla Limited, Marley New Zealand Limited and Abodo Limited led the funded projects, each acting as the primary applicant and coordinating any joint funding arrangements. Fund recipients worked with local and regional councils, other waste collection companies, building firms, architects, engineers and builders. One project also involved Unitec and the Environmental Innovation Centre.

## Snapshots of the projects

### Advancing sustainable demolition and recycling

Before the project, Grün Group Limited, based in Christchurch, used traditional demolition methods, which offered minimal opportunities for recycling and material reuse. This limited their potential to embrace sustainable demolition practices.

In 2022, Grün Group invested in an on-site concrete crusher, a construction and demolition shredder, transportation equipment and an excavator. This equipment enabled them to efficiently process concrete waste. The crusher not only broke down concrete but also separated embedded steel, enabling recycling of both materials. The company contributed 60% of the funding and the Ministry the remaining 40%. This investment marked an important shift for Grün Group, enabling them to evolve from a demolition-only focus to offering an integrated approach that includes recycling and site remediation.

In 2022 Grün Group began using the equipment to demolish 26 buildings on the Masterton Hospital site. While there, they discovered more underground levels to demolish and backfill.

The results surpassed expectations – Grün Group recovered 30,000 tonnes of waste, tripling the original goal of 10,000 tonnes. They achieved a recovery rate of ~70% by strategically stockpiling building materials until the shredder arrived. They also completed the project ahead of schedule.

Photo: Demolition at Masterton Hospital. Source: Grün Group.

This was a landmark project for Grün Group, serving not only to upgrade their capabilities but also to strengthen their recycling processes and train three staff members in handling the advanced equipment.

Following projects have surpassed these early recovery rates, highlighting the versatility and effectiveness of their new system.

## Ongoing scaling

Since receiving seed funding from the Fund, Grün Group has considerably expanded its operations. The company purchased three larger concrete crushers, resulting in a tenfold increase in business turnover. Today, Grün Group offers comprehensive demolition, recycling and site remediation services nationwide.

> *We're not just seen as the company that comes in, smashes stuff down and puts it in a hole now ... we're trying to do a better thing here.*

## Progressively scaling up waste diversion

Green Gorilla Limited, based in Auckland, is a New Zealand-owned company that offers sustainable recycling and waste solutions to minimise landfill waste. The company undertook three progressively larger projects via the Waste Minimisation Fund aimed at diverting construction and demolition materials from landfills, focusing on recycling and reuse. The Ministry contributed 21% funding for the first project and 50% for the following two. Overall, the three projects created 15 new jobs.

- Project 1: Wood waste recycling
  Between 2011 and 2012 Green Gorilla bought and installed a wood shredder. At first, the company aimed to process 15,000 tonnes of timber waste each year. Following a self-funded upgrade recently, the facility now processes 30,000 tonnes per year.

  Green Gorilla sorts both treated and untreated timber. They shred and repurpose untreated timber as mulch, animal bedding and landscaping material. Treated timber is sent to the Golden Bay Cement Works, where high-temperature furnaces incinerate it safely for energy recovery.

Photo: Woodchip product from Green Gorilla. Source: greengorilla.co.nz

- Project 2: Plasterboard recycling
  Between 2013 and 2014, the company invested in a plasterboard recycling plant. It processed at least 6,800 tonnes of waste plasterboard during its first year, recovering around 80% as gypsum for reuse in horticulture and agriculture. This plant consistently processes ~5,000 tonnes of plasterboard a year. This project created a 0.25 FTE job.

  While this plant was a "game changer" this project had difficulty reaching profitability. Nevertheless, Green Gorilla retains the service as a vital part of their recycling offerings.

- Project 3: Construction and demolition waste sorting facility
  Between 2013 and 2015 Green Gorilla built a construction and demolition waste sorting facility. The investment allowed the company to extract materials such as metal, wood, plasterboard, selected plastics, cardboard and rubble from mixed construction and demolition waste. The sorting line now processes ~40,000 tonnes of waste each year and consistently achieves diversion rates of over 70% from landfill. Management suggests that the increase in the Waste Disposal Levy has helped lift diversion tonnages, making waste separation a more viable alternative to landfills for many.

  > *The waste levy increase [has] really helped our diversion tonnages … because suddenly diversion is a viable alternative to landfill, for people to separate [waste] or put it over our plant.*

### Ongoing scaling

Besides these projects, but outside this construction and demolition case scope, Green Gorilla has completed several other infrastructure initiatives:

- installed a modern semi-automated waste sorting line for commercial and industrial waste which includes sorting plastics (with Fund support)
- bought and remediated a Class 2 landfill in Huntly (without Fund support)
- installed another construction and demolition facility at the Class 2 landfill (with Fund support).

The modern, semi-automated commercial and industrial waste sorting line diverts ~40% of the waste stream it processes. This sorter strengthens the company's ability to recover reusable materials from manufacturing, commercial and retail waste streams.

> *Because of the mix of automated and manual processing for the sorting line, we can choose which recyclables we're going to extract.*

The new system allows the company to adapt to changes in recyclable plastics, ensuring continued effectiveness as the recycling landscape evolves. The sorter also copes with expanded foam products (polystyrene, polyethylene and polypropylene), which, despite having low weight, take up significant volume in landfills.

This example shows how the Fund can support committed businesses to continue to re-invest and scale up. Green Gorilla's plant provides an important resource for waste minimisation in the construction and demolition industry for Auckland and Waikato.

## Closing the loop on PVC and HDPE waste

> *For the first time there is a dedicated PVC recycling line in New Zealand.*

Marley New Zealand Limited is one of three New Zealand plastics manufacturing companies, along with RX Plastics Limited and Dynex Extrusions Limited, owned by Aliaxis SA, a privately owned business based in Europe. In 2021, they refined their focus on sustainability, placing greater emphasis on using recycled materials wherever possible. They aimed to reuse processed plastic in manufacturing and to reduce reliance on virgin plastic.

They credit the (now closed) Plastics Innovation Fund, which came online in 2022, as acting as the catalyst for a joint venture called Plastics Recycling NZ. The joint venture is between Aliaxis and Marley, with Waste Management New Zealand Limited as a key supplier of raw material. It will eventually run two of the three plastics recycling plants, with the third based at RX Plastics in the South Island.

The joint venture also collaborated with Unitec and the Environmental Innovation Centre, supporting research to better understand the types and volumes of plastics generated from construction. For this project, the joint venture partners contributed 64% of the funding, and the Ministry contributed the other 36%.

The project had a long lead time. The first two plants came online in March 2025, two-and-a-half years after Marley signed the deed of funding. It has created 16 new jobs. They will commission the last plant later in 2025 through to 2026. Under this initiative, Waste Management's collection services will collect PVC and HDPE plastics nationwide, and transport them to Plastic Recycling's facility to process for reuse.

> *Our estimate is that at least 10,000 tonnes of PVC go to landfill every year. We are hoping to get at least 2,000 to 3,000 tonnes of that … For every tonne we can recycle … we can save a tonne of extra material coming in [avoiding use of a similar level of virgin material].*

Photo: Machinery at the Plastics Recycling NZ plant. Source: Marley NZ Limited

The joint venture enabled partners to develop practical ways to reduce plastic waste sent to landfill. It also helped promote recycling across the construction and demolition sector. The team at Unitec and the Environmental Innovation Centre engaged with key stakeholders, including architects, engineers and waste providers, about on-site barriers to recycling and to encourage plastic-based recycling.

Unitec's research (Low, et al., 2025) found that "on average, 0.61kg of plastic is generated per m2 of construction. Soft plastics were the most generated by mass

(33%), followed by PVC and HDPE pipes (22%), shrink wrap (12%), and expanded polystyrene (5%)." (p. 1). The plastic component of New Zealand construction and demolition waste is estimated at 4% by volume. While this may seem small, it is problematic due to its toxicity. (Low, et al., 2025, p. 1). However, plastic is also a "low density, low value waste stream" (Low, et al., 2025, p. 1), meaning it takes a long time to achieve a return on investment.

Marley and its sister companies plan to reuse the micronised and pelletised plastic to manufacture new plastic products – though only in specific applications where recycled plastic is suitable. The recycled plastic could potentially make up ~15% of the plastic used in their manufacturing, similarly, reducing using virgin material.

The innovation lies in several key areas:

- setting up a national collection and consolidation system for PVC and HDPE waste
- gaining a better understanding of the makeup and quantity of plastic waste created
- developing ways to wash and shred the plastic to remove imperfections before it is micronised or pelletised
- identifying suitable products for incorporating recycled material.

## Ongoing scaling

The first two of the three planned plants opened in March 2025. Early indicators suggest the project is on track to meet its initial targets of diverting between 2,000 and 3,000 tonnes of plastic waste from landfill once fully operational.

> *I think last month we did about 50 tonnes, so that's about 600 tonne a year on average from PVC. And from PE pipe we're looking to do slightly less, so maybe [we will] get up to about 400 tonnes of PE pipe … it's early days.*

The last plant is currently being installed at the RX Plastics site in Ashburton.

The project is considering using shredders at key collection points to reduce most material before transporting it to Auckland or Ashburton, improving efficiency and reducing emissions.

> *Shredding can reduce the density, the bulk about seven to one. [So] instead of a nine-cube skip [you've got maybe a [1.5–2 cube bag] … then you can ship it easily because you can put it on a pallet, and it can go on a general freight carrier – so it's a lot cheaper to ship.*

Marley's initiative to recycle PVC and HDPE plastics marks a practical step toward improving resource efficiency in New Zealand's plastics economy. By reducing plastic waste sent to landfill and increasing the use of recycled materials in manufacturing, the company is contributing to sustainability efforts within the construction sector. The collaboration between Marley and its partners reflects the kind of shared commitment needed to address the challenges of plastic waste.

## Piloting a project for high-value waste timber reuse

In 2022, Abodo Wood Limited (Abodo) launched a small three-year pilot project to create a waste recovery system to recycle high-value thermally-modified timber. Abodo focused on recycling damaged timber from its manufacturing operations and recovering offcuts from building sites. Abodo's Research and Development team reworked the recovered lengths into new products for use as cladding on New Zealand homes. They salvaged good timber lengths by cutting out the damage, finger-jointing smaller lengths together, or band-sawing the timber into different widths.

Photo: Abodo Vulcan Shingles at Wellington Zoo. Source: Grant Davis

The pilot aimed to recover this high-value timber instead of discarding or chipping it for fuel. Abodo contributed 50% of the funding, matched by the Ministry. The funding paid for research and development initiatives including buying an Optisaw, with an optical reader which identifies and removes defects in the timber. Abodo subcontracted the finger-jointing process.

The project also sought to better understand the quantities and composition of waste and create a take-back scheme for site-generated waste, including damaged products and cutting errors. The company found that because of rising construction costs, customers stopped adding the recommended 10% site contingency to their orders, which in turn meant that there was less timber left over. Collecting offcuts was challenging because of lower-than-expected volumes and removing nails was labour intensive.

By using the Optisaw Abodo was able to repair factory-damaged products and develop two new products: shingles and battens.

> *Because we were dealing with smaller pieces, we were forced to finger joint them to get the length again. Alternatively, we can use the larger 400-millimetre lengths, as shingles.*

Abodo also ran a targeted marketing programme to raise awareness of its initiatives among customers. The company used webinars to engage key stakeholders, including architects. The company also held discussions with merchants about stocking recycled products, and with senior managers in key building companies about their potential use. These activities aimed to promote the benefits of their recycled high-value thermally-modified timber across the sector.

In its milestone reporting, Abodo noted that its social media campaigns, particularly on LinkedIn, reached over 50,000 people, clearly exceeding the original target of 13,000.

### Ongoing scaling

Currently, the domestic market for shingles is small, while the potential offshore demand exceeds the supply of the available recycled material. These dynamics, coupled with the costs of collecting small quantities of surplus material from building sites, make the commercial viability of shingles and battens from recycling uncertain.

By the project's end, Abodo had diverted ~715 tonnes of timber from landfills and transformed discarded materials into marketable products, contributing to sustainable construction practices. Also, they built valuable in-house capacity for recovering waste timber and creating new products.

> *The company has a strong innovation ethos, so sustainability will continue to be a real driver in its product development. As we've grown, we've started to scale up our inhouse production capability, so support from this grant was helpful.*

## Benefits and outcomes

Investments in construction and demolition waste have produced economic, environmental and social and cultural benefits.

### Economic benefits

The grants allowed Fund recipients to build their strategic capabilities, offering new, more integrated or expanded services to customers and collaborating with other organisations to obtain waste and sell or reuse products. The projects:

- supported innovation by creating new business opportunities and transforming existing businesses
- contributed to developing infrastructure needed for future waste management
- generated revenue from recycled and reused materials
- helped reduce long-term waste management costs as less waste goes to landfills.

Funds support innovation and new business opportunities that would not occur without the Funds.

In assessing economic benefits it's important to understand that recycling and reusing waste from landfill has a cost.

> *Recycling isn't cheaper, but there is a mindset … ingrained in people that if it's recycling you should be able to do it cheaper not charge more.*

Because the cost of recycling can make projects barely financially viable, with some recyclables being of low value, the Funds at times respond to what government may see as market failure.

> *The issue for projects of this size in New Zealand is return on investment … [But] you've got to prove … that once it is up and running it will stand on its own two feet.*

Seed funding helps build decent capacity. Rather than organisations making the smaller investments they could afford alone; they aim for a future-proofed investment.

> *We would have had to get a plant that wasn't as good, wouldn't take the same production, wouldn't have had the same quality. We would have had to go to something less desirable.*

Once a business reaches critical mass, it becomes possible to invest in further growth without external funding. Three of the four Fund recipients chose to scale up, making additional investments to build on the areas initially supported by the Fund. These self-funded expansions reflect growing confidence in the viability of resource-efficient practices within the construction and demolition sector.

> *In the last two or three years since we [first] purchased that equipment [we have bought more equipment ourselves]. Now we are turning over [10 times] what we were doing before [Fund support].*

But scaling waste management solutions can be challenging as what is profitable shifts over time. For instance, if a pulp and paper mill closes down, there is no longer an onshore paper reuse option.

> *For cardboard and paper ... [New Zealand based pulp and paper mill] their mills are closing, as you'll be aware. So, there aren't any [paper] mills in New Zealand anymore. So, all of that [paper and cardboard] will be processed and sent offshore.*

Having a flexible sorting facility can help meet market changes, as this following plastics example shows.

> *It's also helped us with the change in plastics over the last few years and the reduction and changes in different types of plastics that are recyclable, and that changes and will continue to change, because of the line that we've got, we can choose what recyclables we're going to pick.*

## Environmental benefits

Funding the projects provided clear environmental benefits. Fund recipients are now diverting between 40% and 90% of waste away from landfills. By promoting recycling and reuse, the projects help minimise overall resource consumption in line with the waste hierarchy. They also contribute to lowering the carbon emissions of construction and demolition waste through reduced transport of materials to transfer stations or landfills.

Fund recipients are now diverting between 40% and 90% of construction and demolition waste away from landfills.

The environmental benefits are:

- crushed concrete from demolition is used for site remediation, minimising the impact of trucks removing material to other sites
- a waste management plant has more resources to sort and divert waste from landfill

- a waste management plant offers sustainable reuse for plasterboard waste
- there is now the capacity to collect and process PVC pipes, coloured HDPE and PE pipes in large volumes in New Zealand.

Several examples showed waste is viewed as a valuable resource. Recyclers described ways they reused materials or designed new products for longevity or multiple uses without degrading their quality.

> *If we can recycle and put it back … Studies have shown this single piece of PVC; it doesn't lose its properties until you recycle it seven or eight times.*

## Social and cultural benefits

These projects contributed to educating key stakeholders, including infrastructure managers in government agencies, construction company managers, architects, engineers, builders and some members of the public – about the importance of reusing and recycling construction and demolition waste. They also promoted awareness across business and community audiences about the benefits of using environmentally responsible materials, reducing waste, and recycling and reusing materials.

Feedback from the projects show that industry understanding and participation in waste diversion are critical to success. However, businesses are still learning how best to communicate with key stakeholders. Each company involved in the projects noted the need to educate customers, as well as influential leaders within relevant organisations. One Fund recipient highlighted the role of the New Zealand Green Building Council in shaping industry views on recycling and reuse.

> *Through education we need to get up the layers and start educating the influencers of the builders. And from a commercial side, … [we] need to get up the chain to the people who can influence change, who want to make change for the right reasons, because they want to be more sustainable … [For big construction companies], it's really important to them because [it's becoming part of their] … whole branding.*

Participants noted the ongoing need to educate and raise awareness among key influencers and users about new waste diversion initiatives. For example, it is now possible to process in large volumes materials that were previously considered non-recyclable, such as PVC pipes, coloured HDPE and PE pipes. However, many stakeholders are still unfamiliar with these developments, and further communication is needed to support uptake and build confidence in recycled material use.

> *It is around that relationship and … getting out there and working with collectives, Councils, contractors …[In the past] we've been told that … this material is not recyclable – but now it is. So, there's a lot of mindsets you have to change, a lot of people you need to out and see. Every house has PVC in it just about.*

The projects also delivered social benefits through job creation and workforce development. Fund recipients adjusted their operations to reduce waste generation and increase recycling and reuse of the waste they process. Some companies created new roles in waste management and recycling, while others upskilled existing staff to work with new technologies. In several cases, employees were trained from entry-level to skilled positions, building expertise in waste handling. Some Fund recipients also established career pathways within their plants, contributing to a more stable workforce.

Fund recipients have changed their operational approaches to either reduce waste generation or recycle and reuse more of the waste they are processing.

Although the number of new roles was not large, interview data suggests the projects created an estimated 34 jobs.

> *There are around thirty staff at the facility so if those projects didn't exist the facility would be a mere transfer station.*

A striking feature of all the projects was that the providers were passionate about reducing waste to landfill and building a resource-efficient and productive economy. There were also examples of these companies promoting kaitiakitanga (environmental stewardship).

> *Right from the beginning, we wanted to be able to say, hey, we're doing something different. We're actually going to take your waste and do what we can with it before we take it to landfill.*
>
> *We want to do the right thing … So, it does create a bit of social pressure on what other organisations in the industry do.*

There were some examples of collaboration with local iwi on waste management projects. This often related to land remediation and future land use – which was outside the scope of this case study.

## Critical success factors for the projects

The Ministry supported the Waste Minimisation Fund to be useful to applicants in several ways:

- Fund recipients valued a flexible, robust application process and an encouraging Ministry team
- the Funds supported larger projects than what an applicant may have considered on their own
- the Funds supported future-proofing investments.

### Application process and Ministry support

Fund recipients want the simplest application process possible. While the current process does take some thinking through, recipients generally thought the processes were robust and supported economically sustainable initiatives.

> *We really respect the way that the Ministry do their funding through this WMF, that it is for capital items only. I think it's really important that we're not building things that can't sustain themselves … operationally otherwise you're just pouring money into it all the time.*

Fund recipients found the application processes and project management processes allowed for flexible planning, enabling them to adjust to evolving needs and changing market conditions.

> *I would encourage anyone to apply for funding, because it's worked for us.*

In one instance, a proposed site was found to be unsuitable following closer inspection, requiring the project team to identify an alternative location. This process took additional time and required extra funding. The funding and delivery arrangements were flexible enough to accommodate the change, allowing the project to continue without major disruption.

## Supporting larger projects

Fund recipients valued the financial support, which allowed them to consider larger-scale projects than they might have pursued independently. The funding also created opportunities to collaborate with other organisations, strengthening project delivery and broadening impact.

> *Think big about what you want to do. Don't be shy in terms of what you want to achieve... because if it's possible, that's what I'd say to people, is that don't downsize your ambition.*

Fund recipients found the application processes and project management processes allowed for flexible planning, enabling them to adjust to evolving needs and changing market conditions.

Fund recipients thought the Funds are helping build waste management alternatives to reduce a wide range of waste to landfill, and to support recycling and reuse. Without the Fund's support, businesses said they would be less likely to build such big infrastructure because:

- the long timelines on bigger projects makes them challenging to set up
- the payback period can be too long to make them viable.

## Future-proofed investments

Recipients appreciate that the funding enables investment in future-proof technologies and supports a focus on building internal capability to ensure long-term sustainability.

The grants supported Fund recipients to build in-house capabilities across several areas: waste processing, technology, operations, workforce skills and strategic capabilities. Waste processing companies developed methods to separate and manage

a range of materials, carefully assessing different technologies to identify long-term solutions suited to their waste streams.

> *That project increased our capacity 50% … [now] we can remediate sites back to grass.*

These projects show that New Zealand is beginning to build the infrastructure needed to meet waste minimisation requirements aligned with international standards. The funding has made it possible to develop appropriate systems that meet current needs and scale for future demand.

## What would be lost without the funding?

All Fund recipients stated that without the funding, their projects would not have achieved the scale of implementation necessary to develop critical infrastructure.

> *There is no way I could have funded the deposits on the equipment … to do a great job like we said we were going to do it – it was incredible.*

> *[Without the Fund] we would have had to go to something less desirable.*

> *[Without the Fund] we would have probably [bought] some ad hoc … equipment … not the ideal solution … it would have been small scale and not as big as it has been.*

Several Fund recipients noted that the funding helped them move faster than they could have on their own. One participant commented that forming a consortium would have been more difficult without the legitimacy and support provided by the Fund. This backing gave organisations the confidence to collaborate and pursue more ambitious projects.

> *If it wasn't for this funding, I doubt that the partnership would be what it was. And I doubt that we would have actually invested in it because of the payback period and how long it would have taken … we'd probably still be talking about it today.*

Another said that without the funding they would not have prioritised the investment to earn Green Star certification.

> *We became Green Star certified. We would not have been able to do that on the equipment we had.*

While another suggested they would not have been as motivated to look for innovative recycling solutions.

> *[Without the Fund] I don't think we would have been as motivated to try and develop a product … and we can see the market is up for these sorts of things, and if we can carve out a niche that's going to work that's [good].*

# Broader learnings

## Potential gap in the funding

One Fund recipient identified a potential gap in the funding process. Large projects often require substantial investment in early planning, particularly for plant design. This occurs before funding is formally released at deed signing. This means businesses may need to carry the full financial risk during the initial project stage. The recipient suggested that dedicated funding for early planning would be helpful to reduce this burden and support more confident project development. Also, at times projects ran over budget. Currently, the Fund recipient pays for any extra funding needed.

> *There's a condition of funding that you … don't get a portion of anything spent before the deed is signed … [So you have to] take a bet and spend the money up front [on the design] … and even if you do [get funding] that part is not covered. I don't know what the answer is … [but] that is a hurdle because when you get into the detailed design, nine times out of ten the capital expenditure changes.*

Photo: Onehunga facility waste processing plant.
Source: greengorilla.co.nz

## Growing community and industry engagement

The Ministry wanted to learn if Fund recipients saw shifts in building owners being aware of where their demolition and construction waste goes when they contract for renovations or new buildings. Some Fund recipients noticed that a small number of motivated building owners actively consider waste disposal and seek opportunities to recycle and reuse materials. However, these individuals remain in the minority – particularly in the current environment, where rising house building costs may limit interest in sustainability initiatives.

> *Those smaller builders who are building a one-off house type thing or are building a set of units on a corner street or something, not so much … [Only a] particularly conscious consumer will pay a lot [for a] house build to the level of standard which will include [considering] what happens to construction waste.*

Fund recipients identified individuals, builders, companies and government agencies that are positively disposed to keeping construction, demolition, industrial and commercial waste out of landfills. While not widespread, some businesses are tracking their recycling efforts and using the results in their marketing. One Fund recipient reported tailoring solutions for customers seeking higher diversion rates. This includes

providing dedicated bins for specific waste types, offering customised sorting, and developing specialised collection processes to support these goals.

> *Some people want to be … up at 80%, up at 90% [waste diverted from landfill] and we appreciate that.*

At times Fund recipients said they strongly encouraged customers to "do the right thing" – to plan to recycle and reuse waste rather than automatically sending it to landfill.

> *If I'm actually honest, I'm probably forcing it upon them. [I say] you've got to do the right thing here. This is the right thing. It's a horrible thing to say but … [the people I am dealing with], they just get their pay cheque at the end of the week, so they don't care what happens, a lot of them. So, we sort of force our way, try to be the best price while still recycling. That's really how we're educating them.*

There is evidence that waste collectors and processors are working together to extract materials from construction and demolition waste and identify practical reuse options. Some processors are now able to efficiently handle mixed-waste streams, which supports higher diversion rates. Engagement with both the community and industry appears to be steadily increasing, suggesting growing interest in more sustainable waste management practices.

Fund recipients observed that when recycling was affordable, customers were generally willing to choose it over landfill disposal. Recent increases in landfill costs appear to be encouraging this shift further. They also noted that the Waste Disposal Levy acts as a useful policy lever, making recycling a more attractive option for businesses and individuals.

> *It's sort of changing slightly. If you'd asked me that a year ago, I would have said it's still cheaper to put in the hole and it's a feel-good factor for a lot of people to recycle. But I feel that's changing. Dump costs are increasing drastically, dramatically. So, we're seeing everyone is trying to recycle. It's definitely changing. It's probably 50/50 now.*

# Case Two: Diverting and optimising the recovery of organic waste

# Key findings

## How big is the organic waste problem?

Organic waste represents one of the most pressing and complex challenges within New Zealand's waste system. In some areas, such as Auckland, organics make up and around 19% of all waste to landfills, with food scraps being the dominant contributor. Other regions, like Christchurch and Wellington, report similarly high levels of organic waste, pointing to a systemic issue that spans urban and regional centres. Despite isolated initiatives and successful local programmes, much of this organic material goes to landfills, creating avoidable environmental harm (Zero Waste Network, 2021). With effort more organic waste could be recovered.

## Key metrics

The Ministry granted $3.0 million for the projects selected for this case – 42% of the funding. Industry contributed an additional $4.3 million, giving a total investment of $7.4 million between 2018 and 2023.

## What does the case cover?

Each of the four projects chosen for this case illustrates building sustainable and scalable infrastructure through diversified organic waste solutions. These include kerbside collection, decentralised composting, industrial-scale processing and specialised de-packaging (removing packaging around food).

The projects draw on the understanding that organic material is a high-value resource. Key solutions focus on diverting organic material from landfills and unlocking waste recovery's environmental and economic value through products such as soil enhancers, stock feed and bioenergy, and reducing methane gas emissions.

## Summary of projects

Central Otago District Council implemented a new kerbside collection system. Implementation of the project resulted in participation from 10,159 households, and diversion of 3,040 tonnes of waste from landfill.

Queenstown Lakes district Council established several community-led composting systems including:

- a community food garden – which now diverts 40 tonnes of waste from landfill
- a local community focused kerbside collection/drop off
- a hospitality sector food waste management system is now diverting 50- 60% of waste in Queenstown hospitality sector
- a business food scrap composting system.

The funding has enabled more than 200 learning opportunities, supported local employment and volunteering and provided free compost back to the community.

Enviro NZ installed a high-tech organic waste composting system at Hampton Downs which now process over 30,000 tonnes of food and green waste and diverting 27,000 tonnes yearly. It also diverts 95% of methane emissions and created between 22 - 28 jobs across the project's development and associated infrastructure.

Prime Environmental installed repackaging technology which processes up to 6,000 tonnes of food waste per year. It can handle a complex mix of waste streams and converts the waste into animal stock feed and compostable materials, diverting 94% of waste from landfills. Six jobs were created.

## Benefits generated

| Type of benefit | Description of benefits |
|---|---|
| *Economic benefits generated* | • Improving organic resource recovery<br>• Maximising the value of recyclable organic materials/products<br>• Reducing business costs and costs of organic material sent to landfills<br>• Developing local organic waste enterprises and creating new jobs with specialist skills in recycling and composting<br>• Partnering with local businesses<br>• Pricing waste processing to incentivise companies to participate |
| *Environmental benefits generated* | • Fund recipients diverting ~35,000 tonnes of organic waste from landfill per year<br>• Developing sustainable kerbside collection and organic waste recovery and processing infrastructure<br>• Reducing greenhouse-gas emissions by avoiding landfill methane through landfill technology, composting and reuse. |
| *Social and cultural benefits generated* | • Achieving community engagement and buy-in to use collection services<br>• Improving community understanding of organics recycling and reuse technology<br>• Using learning hubs to teach communities how to better use organics products such as compost and creating employment, volunteering and capability in organic waste diversion<br>• Supporting council and community waste minimisation goals. |

## Other learnings

Critical success factors: Fund administration and milestone reporting requirements support organisations to take a more strategic outlook when applying for funding. Funds support council and community waste minimisation goals and encourage future-proof investments.

Counterfactual: Without funding, organisations would not have achieved the same level of technological advancement, rapid regional and national expansion, or the confidence to take an experimental approach. The projects supported effective community capacity building, engagement, education and training.

Broader learnings: These projects show that waste is not an endpoint but a resource with renewable potential. They demonstrate it is important to engage with communities and understand their dynamics to engender project support. And, that uptake requires ongoing education and monitoring to shift recycling behaviour.

# Overview

## What is organic waste?

There are many different definitions of organic waste. It can include green waste from sources like garden trimmings, leaves, grass clippings, and the decaying component of the waste stream, such as fruit peels, vegetable scraps and other food waste. For this case, we use the *2010 New Zealand Waste Strategy* which defines organics as "garden waste, kitchen waste, food process wastes, and sewage sludge". Under this definition, organic waste includes meat and fish scraps. Food waste is sourced from households, commercial businesses, and factories.

## How big is the organic waste problem?

Organic waste represents one of the most pressing and complex challenges within New Zealand's waste system In some areas, such as Auckland, organics make up around 19% of all waste to landfills, with food scraps being the dominant contributor. Other regions, like Christchurch and Wellington, report similarly high levels of organic waste, pointing to a systemic issue that spans urban and regional centres. Despite isolated initiatives and successful local programmes, much of this organic material goes to landfills, creating avoidable environmental harm (Zero Waste Network, 2021). With effort more organic waste could be recovered.

Organic waste represents one of the most pressing and complex challenges within New Zealand's waste system.

When organic waste breaks down in landfills, it generates methane, a potent greenhouse gas, and contributes to broader environmental degradation. Landfills with no methane capture systems, or those that flare off the gas without reusing it, only intensify these problems. Also, organics make up a significant source of contamination in recycling waste streams, undermining the overall performance of waste recovery systems. Beyond these issues, there is a lost opportunity to return nutrients to the soil, sequester carbon, and build a more resilient, community-based resource-efficient food system.

Diverting organic waste from landfills can positively impact environmental, economic and social domains. The Zero Waste Aotearoa network and international examples suggest, bold systemic change is needed. Change could include mandatory separation and processing of organics, investment in regional composting infrastructure, and support for community-led solutions. The organic waste problem is not just a waste issue – it's a climate, food and equity issue. Addressing it meaningfully offers a clear opportunity to build a waste recovery economy that benefits people and the planet.

### The opportunity to innovate

Each of the four projects chosen for this case illustrates diversified organic waste solutions, including kerbside collection, decentralised composting, industrial-scale processing and specialised de-packaging (removing packaging around food).

The projects draw on the understanding that a resource-efficient and productive economy requires treating organics as a high-value resource. Key solutions focus on diverting organic material from landfills and unlocking waste recovery's environmental and economic value through products such as soil enhancers, stock feed and bioenergy.

The Waste Minimisation Fund supports innovations at every stage. Projects range from developing early collection pathways to establishing and strengthening key processing infrastructure, to optimising the higher value of organic waste recovery. Overall, the Ministry granted $3.0 million for the projects selected for this case – 42% of the funding. Industry contributed an additional $4.3 million, giving a total investment of $7.4 million between 2018 and 2023.

The investment helped:

- build sustainable and scalable infrastructure, and innovative recycling and reprocessing solutions
- divert waste from landfills
- reduce methane gas emissions.

### Who was involved?

The four projects studied in this case were run by:

- Central Otago District Council,
- Queenstown Lakes District Council and community composting providers
- Enviro NZ Limited
- Prime Environmental Limited.

In each instance, a lead company applied for the funding and coordinated any joint funding with other organisations. Typically, the projects collaborated with local councils, regional councils, engineers, builders, community organisations and mana whenua. Early consultation also occurred with communities near the processing facilities. Ongoing engagement and information sharing across all stakeholder groups continues to be important across the projects.

## Snapshots of the projects

### Sorting for sustainability: Central Otago District Council's kerbside waste transformation

In July 2023, Central Otago District Council launched a four-bin kerbside collection system to reduce landfill waste, improve recycling habits, and support national waste

goals. The new system includes a large organics bin for food scraps and green waste, helping meet targets from the 2023 Otago Regional Waste Assessment to lift diversion rates above 50% by 2030 and cut biogenic methane emissions.

Households receive:

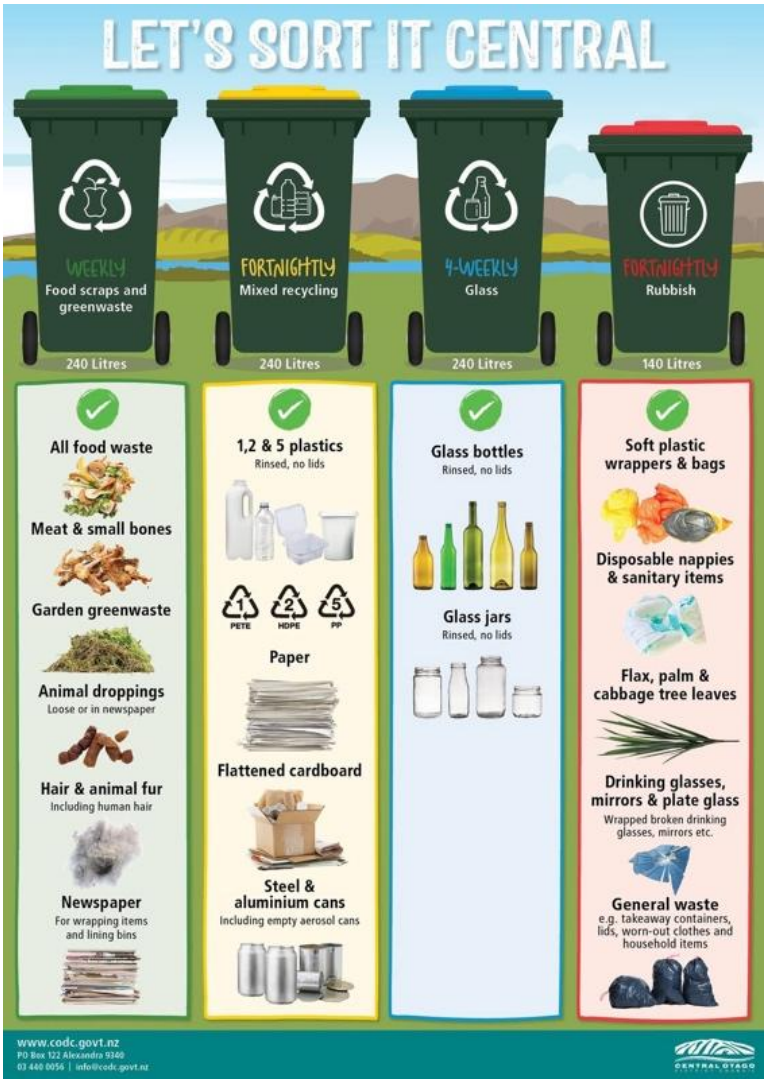
- 240-litre bins for organics (green lid), glass (blue lid), and mixed recycling (yellow lid)
- a 140-litre bin for general rubbish (red lid)
- weekly organics collection, with rural access via designated drop-off points

Before this service, organic waste made up nearly 45% of general rubbish. Now, each household can divert over 12 cubic metres of organic waste annually. Early results show reduced landfill volumes and lighter red bins.

New trucks collect all streams and use onboard cameras to monitor contamination. During the early implementation of the project Council audited bin contents and reported promising shifts in community waste habits:

- 2,280 tonnes diverted from landfill, exceeding the 2,000-tonne target
- 10,159 households participating over nine months

However, contamination, especially from soft plastics, remains a challenge. The Council is on track to divert 3,040 tonnes of green waste in the first year. Continued education and auditing will support long-term success. Currently, waste is composted in Timaru, but the Council wants to develop a local processing facility.



Source: Central Otago District Council Facebook

## Composting for change: a community-led sustainability movement in Queenstown

Ministry funding enabled Queenstown Lakes District Council to launch a three-year, community-led composting initiative to tackle organic waste challenges. The project supports innovative, decentralised composting approaches across the region.

Limited access to organic waste services prompted the Council to back local solutions. Individuals, businesses and community groups partnered to deliver composting projects that build awareness, skills and shared responsibility.

The goal is to shift organic waste from a disposal issue to a community resource – driving behaviour change and supporting more sustainable waste management.

Photo: Waste to Wilderness delivering of a load of community composting, used on a project planting 30,000 native trees. Source: Waste to Wilderness website

Four established composting hubs, and two more in development, have diverted over 260 tonnes of organic waste from landfill. The initiative has outperformed expectations and provides valuable data to inform the Council's long-term organics strategy.

The hubs reflect strong community leadership and local innovation:

- Grow Wanaka: A community food garden with on-site composting.
- Zero Waste Glenorchy: A kerbside and drop-off initiative using a specialised recycling container.
- Waste to Wilderness: A hospitality-focused food waste collection and composting service.
- Wanaka Worm Farm Community Compost: A business-focused food scraps composting initiative.

These projects have delivered more than 200 community learning opportunities and support local employment. By embedding community engagement and local

ownership, the response manages waste sustainably and champions residents and businesses as active participants in shaping a low-waste future.

Each hub developed locally tailored approaches. Zero Waste Glenorchy uses a specialised recycling shipping container to process organic waste. The Ministry and Community Trust South partially funded the initial infrastructure, with the balance coming from the Headwaters Eco Lodge owners. Funds from Ministry and Queenstown Lakes District Council also enabled Zero Waste Glenorchy to provide education on organic waste recycling, run the facility, and trial kerbside collection of organic material with an e-bike.

At least 65 households and small businesses collect food scraps, diverting ~ 40 tonnes of waste from landfills yearly. The project transforms food waste into high-quality compost in about 10 weeks using an advanced composting technology with an auger system.

Photo: Community Composting Hub Zero Waste Glenorchy. Source: Zero Waste Glenorchy Facebook Page

The compost supports local food production as community members collect it directly from the facility at no cost. The project creates community pride, collective action and offers an accessible and cost-effective way for locals to share in reducing waste. Community members unite around a shared environmental goal and through education workshops and information sharing.

Waste to Wilderness started during Covid-19 as a community-driven voluntary initiative in Queenstown and focuses on waste management in the tourism sector. The project developer collects food waste from hotels, tourism businesses and cafes. With support from the Fund and Council, Waste to Wilderness runs a low-cost diversion and composting system.

The project collects and processes 20 - 30 tonnes of food waste monthly. For efficient collection, Waste to Wilderness provides 80-litre bins to local businesses. There is a charge of $30 per bin collection for an average of 70kg of food waste – similar to landfill disposal. Waste to Wilderness estimates diverting around 50 - 60% of waste in the Queenstown central hospitality sector, including cafes, restaurants and some fast-food outlets.

Compost creates value and supports local ecosystems. The compost is used for community reforestation and gardening and has the potential to save the community around $100,000 a year on waste management. Local hotels and tourism businesses now see waste as a resource rather than as a problem.

## Closing the loop: Hampton Downs' organic waste journey

Enviro NZ set up the Hampton Downs Organic Waste Composting facility in 2015. This initiative emerged in response to growing mandates for local councils to remove organic material from general waste streams. In 2018, Enviro NZ recognised the urgent need for scalable infrastructure. They invested heavily and gained multi-year funding from the Ministry to expand their processing capacity over two phases.

Phase One involved expanding the original composting facility from 4,800 to 12,000 tonnes processing capacity, and buying key processing plant equipment, specifically a shredder, screening machinery and materials handling tools. With nearby councils looking to set up green and food waste solutions, an opportunity existed to create the capacity to process organic waste from the Auckland, Hamilton and Tauranga regions.

Phase Two expanded the Hampton Downs Composting Facility further by building six new engineered compost systems. These are aerated static pile bunkers plus a concrete paved area of ~ 800 square metres. This expansion increased processing capacity from 12,000 to over 30,000 tonnes. It provided enough capacity to process the Hamilton City Council food and green waste consolidated at Lincoln Street Transfer station (~ 6,000 tonnes per year).

Funding supported building six new engineered compost systems capable of processing up to 30,000 tonnes of food and green waste a year.

The expansion was critical in supporting the Hamilton City Council's new kerbside collection food waste programme. The first load of kerbside food waste arrived at the facility on 3 September 2020. Since 2021, the Hampton Downs facility has received ~ 8,000 tonnes a year of municipal green waste from the Hamilton Organics Centre.

Technological advancements are central to the project, enabling the facility to process complex organic waste streams while minimising environmental impact. The Hampton Downs facility shows that large-scale organic waste processing is viable in New Zealand.

Each year, the facility diverts 27,000 tonnes of organic waste from landfill, significantly reducing methane emissions. It also contributes to local and regional council waste minimisation plans and targets.

Economically, the project has created jobs (~ 22 - 28 jobs across the project's development and associated infrastructure) in the waste sector and produces high-quality compost that boosts agricultural productivity.

Its success has led to the development of two more composting sites in Timaru and Dunedin, extending its impact and supporting a more resource-efficient economy.

Photo: Enviro NZ Hampton Downs Compost Facility Source: Enviro NZ

## Reimagining waste: Prime Environmental's sustainable vision

Founded in 2011 as a liquid waste management company, Prime Environmental experienced an unexpected turning point during the Covid-19 pandemic. A large tonnage of stranded milk powder prompted the company to reimagine its role in supporting sustainable waste solutions.

This shift in focus gained momentum in 2020. With Ministry funding support, Prime Environmental fast-tracked its transition into organics processing by buying a specialised de-packaging machine and waste collection truck and setting up a dedicated organic waste processing facility.

Customised de-packaging technology which can process up to 6,000 tonnes of food waste a year is at the heart of the transformation. This technology allows the facility to handle complex, mixed-waste streams while unlocking multiple value pathways.

The facility converts waste into animal stock feed and compostable materials, with the potential to grow future energy generation options. The environmental impact is already notable, with an estimated 5,637 tonnes of waste diverted from landfills each year, reducing methane emissions and contributing to soil enrichment efforts. Economically, the project has created six new jobs, opened new revenue streams, and reduced business disposal costs.

Funding supported customised de-packaging technology capable of processing up to 6,000 tonnes of food waste annually

Photo: Installed depacker at Prime Environmental Christchurch facility. Source: Prime Environmental

Prime Environmental' s vision is bold and strategic. It challenges traditional perceptions by treating waste as a resource, not a problem. The project is a New Zealand-owned, innovation-led approach to sustainable waste management focused on technological advancement, environmental stewardship and community benefit.

# Benefits and outcomes

In general, investment in the organic waste resource-efficient and productive economy has the following benefits:

- diverting organic waste from landfill and reducing methane emissions
- improving resource recovery by maximising the value of recyclable materials in the system
- developing sustainable organic waste recycling and processing systems.

## Economic benefits

The four projects demonstrate various economic benefits including developing local enterprises, reducing business costs, increasing value from waste streams and creating jobs. Collectively, these initiatives support local economies while building toward a more resilient future.

All projects generate economic value from waste streams, from the waste processors to end users. By transforming waste into valuable products such as stock feed and compost, the projects generate economic value from materials previously destined for landfill. One facility alone has repurposed 288,000 cans of milk powder, 80 tonnes of UHT cream and 30 tonnes of jam into valuable feed inputs. In another example, kiwifruit growers gained access to high-quality organic compost. This increases the humic content of the soil, acts as a natural inoculant, and contributes to improved crop quality, reduced disease and better yields.

> *Long-term, we're trying to recover as much value as possible from what other people have designated their waste.*

> *If you're a [produce] grower, … you will find … a significant economic benefit from using organics, particularly compost. It improves the humic content of the soil, [and] compost is its inoculation system. It produces better fruit, less disease, etc. There's lots of things like that.*

Each project has also created local jobs and new avenues for innovative solutions. One facility has grown to employ six staff, with projections for further expansion. Others have added roles through site development, waste collection and pre-processing activities. These projects have also provided opportunities for smaller local composting operators. One fund recipient shared that the initiative helped create pathways even during the Covid-19 economic downturn.

Range of economic benefits are evident including new jobs, local enterprises, reduced costs for business and increased waste streams

> *I think my forecast had somewhere in the region of nine or ten people. I've got one, two, three, four, five, and I'm just about to make an offer to another person, so we'll be up to six staff.*

The projects involve developing partnerships with local businesses and industries, including food producers, supermarkets and waste management companies. One project offers participating businesses personalised reporting on waste recovery. This information supports their sustainability goals and provides them with evidence when telling their environmental impact story. This is especially valuable for hospitality and tourism operators whose vision is to build environmentally sustainable practices.

> *We are reporting to customers on how we deal with the waste volumes we receive and their final pathways for disposal or treatment. From that, they can tell a good story.*

One community composting project invites visitors and holiday homeowners to contribute food waste to a local composting system, reinforcing the region's image as a sustainable destination.

Another project diverts autumn leaves from landfill by collecting and providing a drop-off spot for community and council services. The project then uses the leaves as brown material in composting to help balance the nitrogen-rich food waste. Over the past year, the leaf collection initiative diverted ~ 500 tonnes of organic material from landfill, representing a direct cost saving of ~ $200,000 in landfill fees for the community[5].

This initiative forms part of a broader community impact value cycle, where existing food waste contracts with local hotels finance the processing of leaves. This model displays a positive secondary benefit, leveraging one waste stream to support another. The final layer of impact is still unfolding, with composted material contributing to local food production. When scaled, this has the potential to reduce the cost of living for participating whānau through home-grown produce and sustainable living.

> *In [one region], there is no composting facility. Two people [are] there already [but] we're not composting there. They are collecting and shredding organics and sending it to a plant [in another region]. [This plant] has two facilities operating [and] three extra jobs have been created. Then, in our expansion, we used to have one-and-a-half people; we now have between three and four people there. It's not a big, big scale; we're not creating hundreds of jobs, but we are definitely creating positions with each expansion.*

An important insight raised by Fund recipients was the economic dynamics underpinning waste management - cost of diversion versus landfilling. Landfilling is often cheaper and more profitable, discouraging innovation or commitment to more sustainable practices. Therefore, a key part of the organic waste strategy involves pricing waste processing in a way that creates economic incentives for waste companies to participate. By making recovery options more cost effective and attractive than traditional disposal, the projects aim to shift industry behaviour and unlock long-term savings.

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[5] Given the variable nature of leaf moisture content – ranging from 20 kilograms when dry to over 100 kilograms when wet – the estimated diversion is based on an average weight calculation to provide a fair representation of the true volume.

> *We are working with some farmers who have a supply of food that they get given but it's packaged, so we open it for them at a more cost-effective rate. It saves on labour and time. I'm looking to price it so that all the other waste companies have an incentive to knock on our door and send it to us. Hopefully, the customer will be the final beneficiary because they'll get a lower price. And they will get the benefit of a great story to tell to their customer.*

Across the projects there is ongoing potential to reduce costs. They offer a compelling value proposition by providing a sustainable alternative to landfill disposal while creating multiple value recovery pathways, such as compost, animal feed and potential energy generation.

Photo: Autumn leaves collection sample.
Source: Waste to Wilderness Project, Queenstown.

## Environmental benefits

Annually, the projects have diverted more than ~35,000 tonnes of organic waste from landfills. This brings significant environmental benefits, including reduced methane production and prevention of valuable nutrients being lost in landfills. Across the projects repurposed organic material is now turned into compost, bioenergy or animal feed, creating new opportunities for local resource recovery.

> *The outcomes have been really good. I could comfortably say now from the hotel sector, which is the larger player sector, I'm probably sitting about 80% diversion.*

> *I think the landfill operators probably improved their capture rate … so there were about 30 percent fugitive gases. But I think they've improved that to 90 percent according to some other data, but it's still 10 percent gases released, and in the fullness of time, some of that product that will be suitable for that will go to that anaerobic digestion.*

A major environmental impact of the projects is the significant reduction of methane emissions from organic waste. And, all projects explicitly selected composting technologies to avoid methane production. Methane typically forms in anaerobic conditions. The technology used in Hampton Downs addresses this by pushing or pulling oxygen through the green waste, which serves as the composting material. The system is fully computer controlled, managing airflow to maintain the oxidation level, preventing methane from forming during the composting process. Gas wells, capping and piping technology actively capture methane

Around 35,000+ tonnes of organic waste diverted from landfill across the projects

Hampton Downs Landfill, which is then converted to renewable electricity. This process generates 35,000 to 40,000 MWh annually, enough to power ~23,000 electric vehicles. The site has also improved its methane capture efficiency from ~70% to ~90%, significantly reducing fugitive emissions.

> *We chose a technology that we knew would minimise emissions, particularly methane generation, and that's why we went down this path. There's lots of other sorts of technologies out there that aren't as effective. We have relative confidence that the fugitive emissions that are very harmful to the environment are associated with organic waste; we've covered all those with our technology …*

> *If you think about the greenhouse emissions from organic waste, as you probably know, it's always massive because of the methane, which is 20 times more potent than carbon gas. So, having that and reducing that amount of food waste that goes through landfill, it's a big part.*

Glenorchy's community composting system uses a recycled and insulated shipping container, equipped with an automated auger that moves composting material through the unit. Within the temperature-regulated environment, composting can occur year-round composting, with rapid, odour-minimised decomposition. The composting process runs for about three weeks inside the container, with a balanced mix of nitrogen-rich food scraps and carbon sources to optimise bacterial activity. The resulting high-quality compost, free for local use, suppresses weeds and strengthens local food production, generating enough compost for ~2,000 home gardens.

> *A lot of people come and get compost to grow fruit trees and just grow veggies in their garden, so that compost works as a carbon sequestration as well, and just helping people have veggies in the garden, which also promotes health, organic, local growing, no chemicals, no spray and no fertilizer.*

At the Prime Environmental facility, a blend of waste solids and natural materials are delivered to composters. From there, they cure mixture for 60 days and mature it for nine months, resulting in high-quality fertiliser replacement for farmers.

> *We're forecast to reach nearly 3,000 tonnes of liquid waste by the end of this coming year.*

Fund recipients all shared how converting waste to compost enriches soil profiles and plant growth. Organic matter and nutrients returned to soil systems, support healthier, more resilient soil essential for food production and, sometimes, helps with ecological restoration, especially on degraded or industrial land.

> *Suffice to say all that lovely fluid energy in that waste food and grease, fats and oils gets picked up and recycled back into the environment and is a really great compost. Very rich.*

## Social and cultural benefits

These projects highlight the importance of education and community engagement in fostering shared responsibility for waste management. For instance, when Prime Environmental established its organic waste processing facility, it maintained ongoing communication with nearby residents and businesses. This included open discussions about how the facility would operate, along with clear explanations of the waste management processes involved.

Fund recipients are building collective responsibility around waste management with the community

Hampton Downs signed a kawenata (memorandum of understanding) with mana whenua and continues to work with them as the site develops. The company understands the mutual benefits of iwi involvement and the importance of building early relationships. In other projects, they have proactively contacted local iwi about new proposed developments. This approach has laid the foundation for shared outcomes, relationships and more culturally grounded, regionally supported projects.

> *In our recent tender with [a rohe], we contacted the local iwi groups and the ones that would be affected in the region that we were looking to build, and in the end, we had a joint agreement. They found us land that was suitable … They saw a direct benefit for sure for processing.*

Across the projects, open conversations and regular communication also demystify waste recovery technology and make it easier for the local community to understand and support each project's goals. Community conversations help to alleviate concerns around odour, noise and the environmental impact.

> *We took a pretty open approach and tried to consult as widely as possible around neighbours who might be affected to explain what we're trying to do. [For us] success is if we run this high-performing value recovery service from our location without anybody knowing about us because we're not causing any undue consequences to anybody. If the general public never knows about us, that'll be a success. They'll know about us as a good story, but they won't know about us because we're making a nuisance or unsightly behaviour.*

All projects understand that transparency is a key principle, that can help shift perceptions of waste processing and build shared values. All projects support the principles of designing out waste and pollution, keeping products and materials in use, and regenerating natural systems.[6]

> *To make a low waste community, a [resource- efficient and productive] economy community where the resources we use or don't use get transformed or recycled into something useful and goes back into the community … I think that's the magic.*

[6] https://environment.govt.nz/what-government-is-doing/areas-of-work/waste/ohanga-amiomio-circular-economy/

In Queenstown, organic waste projects have become learning hubs, hosting schools, businesses, councils and grassroots groups. One community composting initiative adopted a deeply community-centric approach, engaging multiple sectors, including hospitality businesses, schools and households. Hotels, cafes and other local companies agreed to act as collection points for coffee grounds and food scraps. This community-driven approach raised public awareness and helped to normalise new behaviours.

> *We've hosted countless people from all sorts of places … People from business, councillors, compost enthusiasts, community workers. People trying to set up something similar all come to learn about what we do and how we do it. I've hosted multiple school groups, and they come to see why composting is important. So, there's that educational piece, too.*

Source: Central Otago District Council Facebook

Community workshops and collaboration with local champions encourage people to think differently about the value of organic waste and reinforce practical composting knowledge. As one community composting project developer observed, the opportunities to engage in organic waste management help to build a sense of community and collective pride.

> *I think socially and culturally, I see people putting their buckets out. I see that sort of pride in the community and people feeling that they belong to something and are doing their part. Many people come to communities like ours because they're more introverts, but they still want to be part of a community, so that's how sometimes they feel they're part of something because they're collaborating on a project like this.*

Regardless of where the projects are within the organic waste management system, from collection to processing, they are all based on sustainable practices and encourage people to reflect on consumption patterns. As shared by one of the Fund recipients, sustainable living is often about reviving traditional practices like bottle returns, paper packaging and local food delivery. These practices can affirm a cultural identity and show that sustainable living is not a new idea – it's a return to values communities already hold.

> *I remember a time when you'd go down to the butcher, and you get it wrapped in a brown paper bag and similar, or you'd buy your loaf of bread, it would be wrapped up with a bit of newsprint around it or something, and the boy would deliver your meat, the milk was delivered to the door in bottles. [So] it's a funny old world when you get down to it because we've reshaped everything to the way things were to minimise waste.*

### Supporting council and community waste minimisation goals

Projects support councils' waste minimisation goals and provide knowledge to inform local and regional waste management plans. Council partnerships are essential, culminating in several benefits:

- Waste management: Councils benefit from reduced organic waste going to landfills, which in turn reduces costs and emissions over time. The projects are growing local infrastructure and strategies that support current and future kerbside collection and waste diversion systems, like community composting.
- Reputation and credibility: The projects are helping to position Councils as forward-thinking and environmentally responsible, enhancing their reputation for innovation, community partnership and sustainability.
- Community development: With the ongoing commitment of fund recipients, regions are building local capacity and knowledge, which contributes to the development of local waste solutions from Councils.

> *By having a compost facility, it's helpful to promote the solutions to the Council for processing their organics. It can be a showcase. We can bring councils up there. They can see the facility. They get to understand how it works and its risk profile. It's a very, very robust technology, so it sells itself.*

> *It was about getting a baseline understanding for the whole of the community to take some responsibility, and in the future, if we had a kerbside collection system, already there would be a greater awareness of why you would bother to separate your material because all of those different communities [already] had a pathway, were well socialised within each of their communities, [and] they understood that it was a problem and that there was something that they could do about it.*

When local councils, businesses and communities lead successful organic waste initiatives, they also contribute to New Zealand's reputation as a clean, green and innovative country. The organic waste approaches across these projects tell a strong story of environmental responsibility, particularly for the hospitality and tourism sectors. By actively diverting food and green waste from landfills, these projects demonstrate their commitment to sustainability, aligning with the expectations of environmentally conscious visitors and enhancing the reputation of their regions.

> *The positive thing is that we invested in technology that was not the cheapest [but it] can be utilised over a range of organics. It also gives the ability to push the best management practice limits. We can sit on the top or the bottom of those limits, and the technology is robust enough to deal with them. That is a real revelation for us because it's meant that things can change. Different feedstocks can come and go, but we can adapt. It's exceeded my expectations. From a biological decomposition perspective, it is really effective, and we've had regional council people standing on top of piles, and there isn't any offensive malodour.*

# Critical success factors for the projects

Fund recipients said that the grants supported positive benefits across the projects, including future-proofing investments and developing scalable infrastructure.

## Funds support future-proof investments

The Fund has played a critical role in future-proofing investments by transforming promising initiatives into scalable, sustainable waste management solutions. The funds provided the essential boost for projects to move beyond early-stage concepts and build the foundations for long-term success. This development includes enabling flexible technologies, developing scalable infrastructure, and establishing systems adaptable to changing waste streams and environmental demands. The Fund also supported innovation by removing the risks of early investment and allowing for experimentation. As a result, some projects are now positioned to expand regionally and serve as models for others.

The Fund has played a critical role in future-proofing investments by transforming promising initiatives into scalable, sustainable waste management solutions.

> *That waste minimisation funding, in this instance, fills that gap to make organics processing and organics recycling into compost financially viable because, without that funding, it wouldn't have been.*

> *It's a very good technology, but more importantly for us, having that technology in there, we've got a much greater understanding of capital and operating costs, so we know that these plants are best at scale. We've priced [other areas], for instance, which has only got about 2,000 tonnes of organic waste, and we know that they would be doing it as cheap as possible, [and] that would cost us about $4 million in capex alone to do that. So, these plants work better at scale and probably better at a regional scale.*

Some recipients said the funding milestone requirements and accountability mechanisms also supported them to take a more strategic outlook. One project developer reflected that while the process was rigorous, and challenging at times, it instilled a level of maturity in their approach that might otherwise have taken years to develop.

> *Volunteer individuals who get together to make something happen often don't think beyond the next few weeks for this type of stuff, and it forced beyond a 12-month timeframe to go like and what happens when and when and when. So that level of maturity would have taken, I think, quite a lot longer to develop if the essential MFE [Ministry] project planning and processes and checks and balances [weren't in place].*

## What would be lost without the funding?

Without the funding, the projects would not have:

- made significant technological advancements
- had the capital for immediate expansion of processing capabilities
- developed their infrastructure as quickly
- taken an experimental approach, allowing for risk taking and innovative solutions
- been able to take advantage of other opportunities, including regional expansion across the country
- built or supported community capacity and engagement, including education and training
- engaged as effectively with the community and stakeholders.

Without the funding Fund recipients consistently noted that infrastructure growth would have been piecemeal or delayed by years.

> *If we hadn't received the MFE [Ministry] funding, we would probably just stay with our core facility, and there'd be organics from the Auckland region just going to landfill. We would have expanded it to the capacity of 8,000 tonnes and probably no further. We wouldn't be doing anywhere near what we're doing now.*

> *Yeah, it would have taken a lot longer, probably another year-and-a-half. We would have done it anyway, but it would have just taken a year-and-a-half longer probably.*

They also shared that adopting and integrating technology and systems like data tracking, reporting and monitoring would have been fragmented. Instead, they had the ability to develop systems, maintain operations, and lay the foundation for scalable and efficient operations.

> *[Without the funding], I wouldn't have the capacity to keep doing it. I could probably look at scaling it down quite significantly and trying to run on a volunteer base, which will be quite tricky; it's quite a small community with people [who are] really busy with lots of projects. And you'd probably try to apply for other small funds, like community trusts and groups … which might give some funding. But the project will be at risk of not happening, which will be really sad because the equipment and machine we have here is world-class.*

> *These things have been driven by individuals who are really good at getting their hands dirty. None of them had the level of maturity to be able to use cloud-based information-sharing systems. So that's been a massive learning for each of those groups. None of them had anything but a cursory thought towards health and safety. So the MFE [Ministry] project process really forced the thinking around risks and health and safety procedures to a whole new level of maturity.*

As one project developer explained:

> *I've brought the concept into being, so basically [the funding] didn't change what I was doing, but supported the costs of being compliant.*

Fund recipients also said that without funding support, it would have been more challenging to expand beyond core facilities or effectively engage across council, community and commercial sectors. With resourcing, they can test solutions and adapt in real time to create different recovery pathways. These calculated risks would not have been feasible under a business-as-usual model.

> *Like the waste stream that we're composting at the moment, just started trying it, there's no guarantees … So, the risk of investing in these waste streams and building ahead of the curve, [Ministry funding] helps with that. I think [our project] is definitely a great example where we took a lot of risks, but at the same time, [Ministry] supported us in that, and it's worked out really well.*

## Broader learnings

Across the projects, Fund recipients noted several key learnings. Waste needs to be framed as a valuable resource with renewable potential rather than an endpoint. This requires waste systems that close the loop, from collection to composting to reuse and resource recovery.

> *The best way to minimise waste is not just to reduce its volume ... but actually change the waste into a raw material.*

Waste is not an endpoint but a resource with renewable potential.

Fund recipients engaged with people and learned about community dynamics. Waste diversion hinges on shifting community behaviours and requires ongoing education, positive reinforcement and accountability.

> *Education is the key. If people had a greater understanding of what they can put in their organics bin, we'd have less problems with the compost that we produce.*

Fund recipients reported that one-off messaging campaigns create initial interest and involvement, but consistent and frequent messaging is vital for long-term engagement and change.

> *I think a key message back has to be it's got to be ongoing. You can't say, "Oh, we've done a great marketing campaign; we've ticked that one off." [Because] then people forget, and new people arrive. It's got to be ongoing.*

Fund recipients also explained that ongoing monitoring, waste audits and enforcing compliance helps to support behaviour change. These approaches, when aligned with education efforts, can strengthen system integrity and reduce contamination in the organic material collected. As one fund recipient put it:

> *You need a comprehensive education programme, but you also need to back it up. You need that compliance monitoring enforcement and regular communication across the media to say, "We still need you to do this, and if you*

> *don't do this, then your bin will get taken away," or whatever. That's slowly happening, but it takes a while.*

Finally, although community ownership has led to stronger organic waste diversion outcomes, it is important to build a good understanding of how recycling efforts contribute to wider goals. From these shared understandings and values a sense of pride and responsibility grows.

> *I am really hopeful that because of those unique [community composting projects], we'll have lower contamination rates, and the community has more responsibility and ownership.*

# Case Three: Remediating contaminated sites and vulnerable landfills

# Key findings

## How big is the contaminated sites and vulnerable landfills problem?

New Zealand council registers include ~20,000 sites, previously used for hazardous activities or industries, that may be contaminated.

## The metrics

The Ministry provided $2.76 million, or 66% of the funding for three projects. Further contributions from the local councils and the Department of Conservation of $1.44 million, provided a total of $4.2 million for site investigation and remediation between 2022 and 2024.

## What does the case cover?

This case study draws on the three projects to demonstrate the potential of the Contaminated Sites and Vulnerable Landfills Fund by highlighting the process and benefits of site investigation and showcasing two different types of remediation. The cases show how the Fund enabled site remediation – removing hazards to human health and the environment, and restoring the ecological, social and cultural value of the land for the benefit of current and future generations.

## Summary of projects

Te Reakaihau Point: The initial site investigation identified a range of contaminants at levels of risk to human health. With a thorough understanding of the problem, Wellington City Council decided to remove the material completely. Stakeholders included Wellington City Council, Wellington Regional Council, local iwi (Taranaki Whānui) consultants (Beca) and the Department of Conservation for lizard relocation.

Tāhunanui Beach: Tāhunanui Beach is a popular recreational area for locals, and tourists. Local iwi in Nelson considers the beach a taonga. Waste sawdust contaminated with timber treating chemicals including arsenic, boron, chromium and copper was present at the south end of the beach at levels of risk to human health. The sawdust was eroding into the sea and there was risk of further erosion. The project involved removing 10,750 tonnes of contaminated material which required careful consenting. As well, 5775 cubic metres of sand was shifted from another part of the beach to backfill the site. The site was then planted to remediate the sand dunes. Businesses now operate near the beach again, and it is open to the public.

Awaroa/Godley Head: This heritage site and former World War II military base is the most intact and extensive example of coastal defences in New Zealand. The site investigation identified the soil was contaminated with asbestos and heavy metals at levels of risk to human health. 35 areas needed remediation. The Ministry and the Department of Conservation signed a memorandum of understanding to remediate the site. The material was contained, and the site is again open to the public

## Benefits generated

| Type of benefit | Description of benefits |
|---|---|
| *Economic benefits generated* | • Remediation reduces and eliminates spending on temporary solutions<br>• Removes the risk of further contamination<br>• Cleaning up contaminated land unlocks land for higher-value uses, releasing sites for recreation or commercial revenue producing uses. |
| *Environmental benefits generated* | • Eliminating risk of further environmental contamination at the sites<br>• Protecting the marine environment<br>• Restoring the habitats and ecological value of the sites. |
| *Social benefits generated* | • Reopening public recreation spaces and restoring access to local community assets<br>• Removing the risk to human health<br>• Improving relationships and connections between community organisations (Councils and the Department of Conservation) and the public. |
| *Cultural benefits generated* | • Preserving and renewing culturally significant spaces and enabling kaitiakitanga<br>• Strengthening collaborative relationships with Iwi. |

## Other learnings

Critical success factors included strategic leadership and clear project prioritisation by key stakeholders and having comprehensive and transparent communication strategies. The detailed site investigation and site remediation plans helped scope the projects. However, projects also needed personnel with sufficient technical expertise and project managers who were flexible and responsive.

Counterfactual: Two projects would not have been completed without this investment.

Broader learnings: For well executed, successful remediation projects it is necessary to allow for:

- a complicated consenting process, which takes time and requires strong working relationships between the various parties involved
- the detailed site investigation and remedial action plan while robust and invaluable, need to be implemented flexibly, adapting when new information surfaces
- time to build, nurture and maintain relationships through the project.

# Overview

## What are contaminated sites and vulnerable landfills?

According to the Ministry website, "Contaminated land is defined under the Resource Management Act (RMA) as land with hazardous substances in or on it that are reasonably likely to have significant adverse effects on the environment (including human health)" (2021). Within New Zealand, contaminated sites arise from the historical storage, use and disposal of chemicals by industry, agriculture and horticulture, which would not meet today's safety standards. Often, contamination remains in the soil or moves into waterways or the food chain through leaching, runoff or dust. Vulnerable landfills risk spreading contaminated waste into the environment due to climate-related erosion and inundation (*New Zealand Gazette*, 2024).

Past activities that created contaminated sites include: manufacturing and using pesticides, producing gas and coal products, mining, treating timber and dipping sheep.

## How big is the problem?

New Zealand council registers include ~20,000 sites, previously used for hazardous activities or industries, that may be contaminated.

## The opportunity to innovate

This case study draws on the three projects to demonstrate the potential of the Contaminated Sites and Vulnerable Landfills Fund by:

- highlighting the process and benefits of site investigation
- showcasing two different types of remediation.

The projects show how the Fund enabled site remediation to remove hazards to human health and the environment, and restore the ecological, social and cultural value of the land for the benefit of current and future generations.

Across these three projects, the Ministry provided $2.76 million, providing 66% of the funding. Further contributions from the local councils and the Department of Conservation of $1.44 million, provided a total of $4.2 million for site investigation and remediation between 2022 and 2024.

The Fund design supports investigating and remediating contaminated legacy sites. Sites are eligible for funding if contamination took place before the Resource Management Act (RMA)1991, or after 1991 if enforcement action is not possible. It can provide funding for three out of the four phases of contaminated land remediation: detailed site investigation, remedial planning and site remediation. The first phase, the preliminary site investigation, must be funded by the applicant.

Regional councils, territorial authorities and unitary authorities can apply for funding either for their own land or on behalf of other landowners.

### Who was involved?

Wellington City Council, Nelson City Council and the Department of Conservation, ran the projects selected for these cases and engaged with a range of key stakeholder groups. In each case, a project manager coordinated both the working and governance groups.

For investigation and remediation projects, the key stakeholders included local and regional councils, the Department of Conservation, local iwi, the Ministry, and the environmental consultants and contractors who carried out the work. Projects kept local community stakeholders, such as business associations, heritage trusts, and members of the public informed throughout. Sometimes, their perspectives helped shape the investigation and remediation decisions.

## Snapshots of the projects

### Contamination investigation at a popular coastal area to ensure effective remediation

Te Raekaihau Point is a recreation and conservation coastal area in Wellington, located on the margin of the south coast. It marks the boundary of Taputeranga Marine Reserve. The area is classed as an open space for recreation and a site of significance to local iwi, Taranaki Whānui. The path is popular for walking and running; and the area for swimming, diving, snorkelling and stargazing.

Te Raekaihau Point was a vacant beach from 1938 until the 1960s, when gravel was extracted from the site and the surrounding area and then backfilled with other material. Recently Council identified the backfill material was potentially contaminated. The initial investigation revealed that the fill material contained scrap metal, rods and pipes, asbestos cement sheeting, bitumen, plastics and glass. After the discovery of the waste, the Council installed a temporary revetment made of large rocks to minimise the risk of erosion. But this site remained vulnerable due to storm surges and coastal inundation.

Photo: Aerial photograph with the site and remediation area outlined in red. (Beca, 2024, p .4) Source: NearMap

Greater Wellington Regional Council received funding from the Ministry for a detailed site investigation to identify the extent of the contamination and suggest remedial options. Wellington City Council then took responsibility for the remediation work. Stakeholders involved in the process included the two Councils, local iwi (Taranaki Whānui), consultants (Beca) and the Department of Conservation (for lizard relocation).

The detailed site investigation (Beca Ltd, 2024) revealed that contamination levels varied across the site. In some locations, soil lead and asbestos concentrations exceeded the human health assessment criteria. In addition, some places had heavy metal, total petroleum hydrocarbons, polycyclic aromatic hydrocarbons and cyanide levels that exceeded limits for terrestrial receptors (such as plants and animals). The detailed site investigation confirmed the level of risk that informed the remedial strategy. Wellington City Council's decided to completely remove contaminated material.

The Council then received further funding from the Fund to remediate the site and remove the contaminated material. This work is excluded from the case study because it was in progress and not completed at the time of information gathering.

### Removing contaminated sawdust exposed by coastal erosion to restore a popular beach

Tāhunanui Beach is a popular recreational area for locals and tourists. Local iwi, in Nelson consider it a taonga. The specific location of concern was the back beach car park, which was reclaimed in the 1960s using waste sawdust from local sawmills. The sawdust under the car park was contaminated with timber-treating chemicals, including arsenic (which exceeded the safe limit for recreational land use) and boron, chromium

and copper, all of which exceeded ecological guidelines aimed at protecting land and marine life.

Photo: Aerial photograph of site location of the contaminated material (Tonkin + Taylor. 2024, p.2). Source: www.topofthesouthmaps.co.nz

The Tonkin + Taylor site investigation report (Tonkin + Taylor, 2024) estimated that one-third of the buried sawdust had entered the sea due to coastal erosion and the channel migrating. The site was at risk of substantial further erosion with each high tide or storm event. Therefore, Nelson City Council carried out temporary measures to prevent the spread of contaminated material. They shifted sand from down the beach and piled it up between the car park and the sea every six to eight weeks. The Council needed a longer-term solution to manage this costly, disruptive and ongoing risk.

Council shifting sand every six to eight weeks was not sustainable.

Key stakeholders for this project included Nelson City Council, Tonkin + Taylor (consultants), the local public health service, local communities, local businesses, local iwi, and the Ministry. Between June 2023 and April 2024, a full site investigation confirmed the extent of the contamination. A remedial action plan was developed and approved. The remediation took place in the last quarter of 2024, with the beach area reopening before Christmas.

There were several challenges to remediation. The project needed careful planning and implementation to prevent exposure of contaminated material at high tides and storm events, which could have caused cross-contamination between clean and contaminated material during excavation works. Further, the remediation team had to capture and move a local population of northern skinks before any work could begin.

The remediation method involved excavating and removing 10,750 tonnes of contaminated material to a local landfill. This comprised 59% contaminated sawdust, 33% underlying contaminated sand, and 8% other organic material that couldn't be

separated. The remediation team shifted 5,775 cubic metres of sand from another part of the beach to backfill the site, restoring it to its natural state. New plantings support restoring the low dunes over time, ensuring the site's ongoing ecological value.

## Remediating a local heritage site of contaminated soil while maintaining historical value

Awaroa / Godley Head is a former World War II military base in Canterbury maintained by the Department of Conservation as a heritage site. It is one of the country's most intact and extensive examples of coastal defences, and contains a selection of buildings, structures and ruins associated with the former military operations. Heavily used for recreational purposes, the area serves as a recreation reserve with heritage attractions. A caretaker lives on the site, which has a well-used camping ground and a small amount of visitor accommodation.

Workers first discovered the contamination during a road repair project, which led to an initial investigation. The remedial action plan (2023) identified that soil contaminated with asbestos and heavy metals from heritage buildings posed a risk to human health. Other contaminants included arsenic and coal tar/polycyclic aromatic hydrocarbons, also at levels high enough to be a risk to human health. In total, the investigation identified 35 areas needing remediation.

Early in the investigation, the site closed due to the risk to residents, workers and visitors. The remediation process required mitigating the risk to human health – and that the can site reopen, with its heritage value preserved. Part of the detailed site investigation considered the historical significance of existing and former building locations. In some cases, this limited the remedial action possible. Also, a population of local lizards needed relocating as part of the remediation plan.

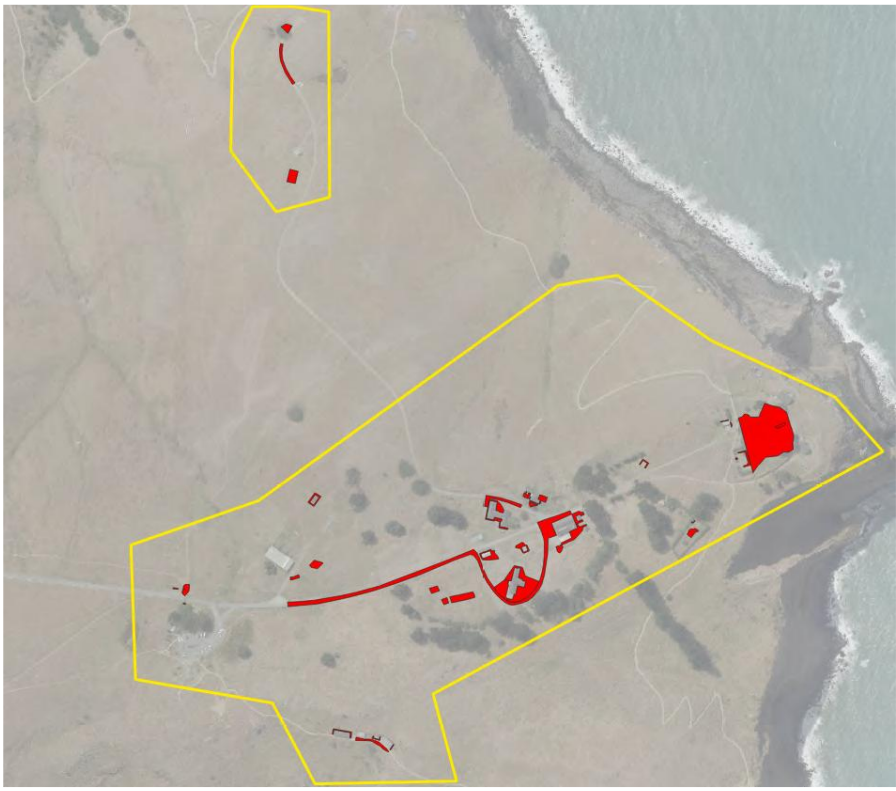

Photo: Remediation areas and area of managed contamination (2021). (Sephira 2024). Source: mapviewer.canterburymaps.govt.nz)

In September 2022, the Ministry and the Department of Conservation signed a memorandum of understanding to remediate the site. Key stakeholders involved in this project included the working group (comprising representatives from the Ministry, Environment Canterbury, the Department of Conservation and Ngāti Wheke), consultants (Sephira Environmental Ltd), local iwi (Ngāti Wheke), Christchurch City Council,

Heritage Community Trust and the local community. Remediation included several methods which contained or capped the contaminated material.

All contaminated material was placed into a specially designed earthquake-proof bund, created to match the site's visual profile. This area was fenced off and warning signs erected. Where contaminated material didn't need to be removed, it was capped with an appropriate barrier and then covered in topsoil and stabilised with grass.

The site reopened in 2024 and is now enjoyed by visitors once again. An ongoing monitoring and maintenance plan ensures that the bund remains secure, and the in-situ caps remain intact.

# Benefits and outcomes

The outcomes from these three projects span economic, environmental, social and cultural benefits.

## Economic benefits

There were two key economic benefits of these projects. First, the remediation reduced or eliminated spending on temporary solutions. Second, the reopened sites could contribute through revenue-producing activities.

At two sites, temporary measures were in place to mitigate the risk of contamination before remediation. At Tāhunanui council moved sand every six to eight weeks, and at Te Raekaihau Point, the temporary rock barrier became less effective over time. Both measures consumed local council spending.

At Tāhunanui, local businesses affected when the site closed wanted the Council to reopen the beach as soon as possible. At Awaroa / Godley Head, the camping grounds and accommodation create revenue for the Department of Conservation which supports the ongoing maintenance of the site.

> *And it's also the campgrounds have revenue income for DOC [Department of Conservation], which is super, super important.*

## Environmental benefits

Three key environmental benefits were realised from these projects:

- eliminated risk of environmental contamination
- protected the marine environment
- restored the habitats and ecological value of the site.

Removing and/or containing contaminated products means that contaminants can no longer leach further into soil layers or be exposed to terrestrial receptors. At Tāhunanui, contaminants from the sawdust were leaching into the soil underneath. On-site testing

ensured that the excavation had gone deep enough – and the remaining soil was within acceptable guidelines for these contaminants. At Awaroa / Godley Head, where the material was capped rather than removed, ongoing site management ensures no further risk.

> *We've got an onsite management plan that has gone through DOC's [Department of Conservation] internal system. So in the future they'll have that as a reference if they want to do anything. We've also got some monitoring happening, to make sure we don't disturb the cap. That runs until 2028. But because we've completed the remediation and it's all signed off, our oversight is pretty minimal now.*

Photo: Excavation at Tāhunanui Beach. Source: https://shape.nelson.govt.nz/tahunanui-back-beach-sawdust-remediation

Two out of three sites in this case study identified risks to the marine environment because contaminated waste could enter the sea and the beach ecosystem. The spread of contaminated material could potentially limit the mahinga kai of local iwi at both sites, and the contamination at Te Raekaihau Point could potentially enter the Taputeranga Marine Reserve. Coastal erosion and storm events posed a substantial hazard at both these sites, creating situations where contaminated material and waste could spread and require subsequent cleanup.

> *Every time there's a high tide or a storm event, we had all the contaminated material spread across the beach. It's not a good look. Also, we have some data that shows that the whole shoreline is moving quite rapidly. If you left it any longer we will lose all that stuff into the sea.*

Finally, a key environmental benefit for all projects is restoring habitats and ecosystems. After remediation, habitats are now richer, and restoration has focused on planting flora that supports local ecosystems and is visually appealing. One project offered local communities the opportunity to contribute to the planting efforts. At Tāhunanui, planting native flora had the added benefit of restoring a dune system, which provides local

diversity in ecosystems and reduces the impact of coastal erosion. Nelson City Council will monitor and maintain planting over the next 5 to 10 years to enable dune formation.

> *We have planted the site with plants that help bind wind-blown sand, such as spinifex, pīngao, which would then encourage dune formation. We've also included various other local plant species to help with the formation of the dune system.*

## Social benefits

Remediating the sites created a range of social benefits:

- reopened public recreation spaces and restored access to local community assets
- removed the risk to human health
- improved relationships and connections between community organisations and the public.

When the contamination was confirmed, Awaroa / Godley Head and parts of Tāhunanui Beach were closed to the public. Te Raekaihau Point was open and closed at different times during the investigation. These sites are important community assets; they are all popular destinations for locals and tourists. After reopening, local communities can benefit from having local places to be active and enjoy the environment and increased foot traffic for local businesses.

> *We've had good feedback from the Tāhunanui business and residents association.*

Photo: Opening ceremony at Tāhunanui Beach showing planting to restore dunes.
Source: https://shape.nelson.govt.nz/tahunanui-back-beach-sawdust-remediation

Reopening Awaroa / Godley Head meant that people can now learn about and be immersed in important local heritage and the site can again form a revenue stream for the Department of Conservation.

> *For DOC [Department of Conservation] it's the second most visited site in the Eastern South Island. People come to Christchurch to go to Arthur's Pass or to Godley Head, so it's really important … By having it open to the public now it's great. It's busy which is really awesome.*

As well as mitigating environmental risk, the remediation process has reduced the risk to human health. While the risk profile in these cases is relatively low, contaminants still exceeded the guidelines for human health. The contamination was more apparent at Awaroa / Godley Head because it was more concentrated on the surface, and a caretaker was living on-site.

Photo: Soil examination at Te Raekaihau Point. Source: Joel De Boer

At both Tāhunanui and Te Raekaihau, visiting the site for recreation would not likely result in significant health risks. Nevertheless, once the Council identified the contamination, the risk needed to be reduced or removed.

> *I've seen photos, and there's asbestos broken up on the ground, people have been smashing it up and treading it around for fifty, sixty, seventy years. So what we've done now is actually just mop up something that was a lot bigger. At Awaroa / Godley Head, some lower traffic areas where the risk did not warrant a full removal of the contaminant were fenced off to restrict access. Ongoing monitoring and maintenance are now part of the site's ongoing management plan.*

> *We put farm park fencing around some of the areas because they were low traffic and low risk. We still have to manage the risk.*

All these projects involved many interested stakeholders and groups. The communication and relationships formed during the process have realised social benefits for the project managers and their organisations.

Project managers believe the process of engaging with communities and ensuring the investigation and remediation were done transparently. Regular and open

communication has improved community engagement and increased confidence in local environmental management.

> *We engaged them in different stages [and] we engaged them in different ways. We've got a social media front where we communicate quite regularly. We used a lot of paper ads, radio ads. We met them in person, specifically the community and the beach community [and] the business community. We called them when it was appropriate, like when we knew we had a solution, when they got the feedback, we spoke to them. They were 99% supportive.*

These projects also strengthened relationships between project managers and other community organisations, such as between local and regional councils, with iwi and government agencies/ministries. These strengthened relationships are likely to support more effective and efficient processes in future projects.

> *Those relationships have been so easy since we finished the project because they sit really close to me. It's just invaluable. I can give someone a call and get a response really quickly. And it's the same for the district team.*

## Cultural benefits

There are two primary areas of cultural benefit for these projects. The first is the preservation and renewal of culturally significant spaces, which enables kaitiakitanga and transmission of knowledge and mātauranga. The second is the strengthened collaborative relationships with iwi, which pave the way for future projects.

All three sites have cultural significance. Throughout the process project managers engaged with local iwi, who were seen as important stakeholders. Local iwi ensured that the site investigation and remediation met the needs and aspirations of mana whenua. At Awaroa / Godley Head, while there was a limited historical connection with the site, iwi had aspirations for the site's future and believed it would be a suitable venue for gatherings. This meant that the relationship was more strategic.

> *In terms of our relationship with local iwi, it was more strategic than operational because the site is important to them, but there aren't historical Māori taonga there such as pā and urupā.*

Conversely, the engagement for Tāhunanui and Te Raekaihau was more firmly grounded in kaitiakitanga for the moana and whenua, ensuring iwi could maintain their ancestral connections through activities such as mahinga kai.

> *That particular sea holds a lot of value for them, I can see why they are on the same page because they don't want their environment to be contaminated.*

# Critical success factors for the projects

These projects highlighted a range of critical success factors when investigating and remediating contaminated and vulnerable landfill sites. The success factors are:

- strong leadership and clear project prioritisation by key stakeholders
- comprehensive and transparent communication strategies
- sufficient technical expertise (consultants and consenting processes)
- flexible and responsive project management
- detailed investigation and planning
- commitment to heritage and ecological preservation.

## Strong leadership and clear project prioritisation

Interviewees identified all these projects as complex, involving many processes and people. Also, the journey from early identification to remediation took years, rather than months. These characteristics mean that strong leadership and clear project prioritisation are critical for a successful result.

Senior leadership support enabled project managers to prioritise and put in the significant work required to coordinate and manage the project to completion. The support of senior leadership helped the process move as quickly as possible with clarity and cohesion.

> *I think Council [and] our Mayor has been great, to provide that very clear direction, what the expectation is. We knew exactly what was expected. There wasn't any confusion about priorities or anything, it was a clear direction*.

## Comprehensive and transparent communication

Due to the large number of stakeholders involved in these projects with diverse interests and needs, comprehensive and transparent communication was essential.

Project managers had a critical role, being responsible for information transfer. Comprehensive communication ensured that everyone knew what was happening, what decisions were being made and why, and what was required of them.

> *I had everybody in the team [there] and you'd start, right this is the process, this is what I want you to do, and it was bang, bang, bang. I just loved that sort of top level organisation. And you know sending out really great minutes and documenting, because there was a load of governance for it.*

Interviewees from two out of three projects believed that communication could have been better between themselves and the Ministry, and this is a potential area for improvement in the future. One site noted that they received no feedback from the Ministry after submitting their regular update reports. They would have appreciated acknowledgment of the report and that it had been read.

> *So you know we'd do that [regular update reporting] and we'd send it through with all the bits and pieces, but there wasn't a great deal of feedback or questions … just a little bit more continuity on the comms, it seems pretty hit and miss.*

In one project, dedicated communication teams created and implemented the communication plan, while in the others, the project manager was responsible for communicating transparently and comprehensively with all members of the public or interested groups.

> *I mean like [name of group], residents association, they were supportive, right behind us from day one. Like they are the real faces and people we meet. They wanted to talk if they had questions and all that, but it was all supportive they were right behind what we were doing.*

Two interviewees highlighted the reputational risk to their organisation once they identified the contamination. Communication with the public was one of the key ways they managed this risk. They ensured that local people using the site or concerned about the contamination or remediation process, had regular communication about decisions, answering any questions, and reassuring them of the remediation plan in place.

### Technical expertise

Technical expertise around regulatory obligations and consenting processes from environmental consultants and from within councils was critical for the success of these projects. Each of the interviewees drew on their own and others' expertise to complete the work.

Environmental consultants carried out the initial investigation, wrote the detailed site investigation and created the remediation plan. In one project, the consultants' expertise kept costs within budget. They worked with the local landfill to ensure the volume of contaminated material was within its allowed limits. If the local landfill had not taken the contaminated material, the project would have incurred significant costs to transport it to another landfill.

> *Our consultants deserve the credit here – they took a thorough approach. They began by carefully reviewing the landfill's consent to understand what was allowed under the conditions. Then, through extensive on-site testing, they were able to clearly show that our work was in line with those consent requirements.*

Another area of expertise required was in the consenting process within local councils. Each of these projects required several consents – granted in a specific order. For example, consents to close roads, move wildlife, allow stormwater discharge and cut vegetation all needed processing at the right time to avoid significant delays. Knowledge of the necessary consents, understanding how to apply for them, and ensuring they were all signed in time was necessary for success.

> *For a wildlife permit, you can only extract lizards up to a certain date. So they hibernate in winter, so you need to do your extraction before the 30th of April.*

## Detailed investigation and planning

Each remediation project includes an initial site investigation, which the Fund does not cover, and another detailed site investigation to identify the extent of contamination. Preparing a detailed site investigation and developing the remedial action plan are critical for accurately scoping the project and finding out the best strategy for remediation. The investigation was a crucial first step for one interviewee.

> *It gave us a pathway towards remediating the site. Simple as that, we had a plan. We knew what we were dealing with. We had defined a solution that was acceptable.*

In two projects, the detailed site investigation identified more contamination than first anticipated.

> *We did several tests, we did tests because it was so unknown for us, this whole contamination. We did tests in May, then we did tests in June, then we did tests in August, because we were finding new information … we realised okay the [contaminated material] goes to a certain extent, and what's happened is the contamination has leached underneath.*

Photo: Signage at Te Raekaihau point during remediation. Source: Peter Cook

All projects appreciated the depth and robustness of the detailed site investigation and remedial action plan. These well-used documents were invaluable to successful remediation within budget.

> *So this remedial action plan here, this is my site one. It's all rough around the edge – it is really important to get that detail. We went through every site in detail, so when we came to the RAP [remedial action plan], the final one, that was really comprehensive.*

## Flexible and responsive project management

While experts carefully prepared a detailed site investigation and remedial action plan, these projects needed flexible and responsive project management. On-site testing by consultants was important to ensure the removal of all contaminants. Similarly, there were instances of slight modifications to the extraction and containment processes once remediation was underway.

> *We changed some of the capping materials to make it easier. For example, the capping around some of the toilets – the RAP [remedial action plan] initially suggested we cap around the toilets with soil, but we changed it during the remediation because we thought that gravel would be better.*

## Commitment to heritage and ecological preservation

Photo: Coastal shot of Awaroa/Godley Head. Source: Department of Conservation

Each of the projects had a clear commitment to heritage and ecological preservation. One site was nominated for an Australasian award for its efforts in retaining the site's heritage. One interviewee noted some ways they did this.

> *Obviously, it's a historic site, so the heritage element was really important throughout the project. For example, around the gun emplacements, we had to cap the soil rather than dig it out and then put in retaining around the capping to keep the square line the military would have had.*

All projects aimed to mitigate the risk caused by contamination and restore the land.

They did this by ensuring there was no evidence of the contamination removal and that the land could be used by local communities, and supportive of ecosystem development over the long term (including generation of sand dunes).

> *We'll bring in a layer of rock and then top soil, and then use local gravels as a mulch, and hopefully there'll be a little bit more material for the type of vegetation we're looking to grow there. We'll also bring in some rocks as well and provide some shelter for plants as well. So it will become more of a beach with vegetation.*

## What would be lost without the funding?

The investment from the Fund, ranging from 40% to 75% of the cost, was crucial for these remediation projects to occur. Two projects would likely not have been completed without this investment, meaning none of the benefits discussed in this case study would have occurred.

> *So I guess if the funding didn't come through, it would probably, potentially, still be closed. That's probably the crux of it.*

Alternatively, if the remediation had proceeded without financial assistance, councils would have had to either assign funds from other budget lines or increase rates for homeowners to secure the necessary funding.

Without remediation, the sites would remain vulnerable to storm events and the spread of contaminated materials and waste, resulting in ongoing costs for temporary protection and clean up, or the sites may have closed to the public.

## Broader learnings

This case describes well executed, successful, remediation projects, with smooth delivery. Our findings identify three key areas of learning:

- the complicated consenting process takes time and is enabled by strong relationships
- the detailed site investigation and remedial action plan are robust and invaluable but need to be flexible enough to adapt when new information surfaces
- relationships need nurturing throughout the process.

The biggest challenge across all projects was navigating the consenting process. The permits and approvals were complex, often need to be granted in a specific order, and sometimes rely on other people. Delays could hold up the work, even for experienced project managers. This was especially true for wildlife permits, if they were not approved in time.

The key takeaway here is that allowing enough time for the consent process is crucial. Similarly, it is important to maintain strong relationships between the project managers and consenting bodies to support the consents as they progress through the process.

All these remediation projects benefited from early and comprehensive site testing to identify the type and extent of contamination. This information was used to create the

remediation strategy, which became a valuable source of knowledge and guidance for the remediation process. However, at two sites new information, discovered after preparing the remedial action plan meant plans required adaptations. Successful implementation of the changes required a close connection to the site, and with the consultants and contractors carrying out the work.

These projects involved a wide range of interested parties. The relationships between project managers and key stakeholders are crucial, and it is important to assign time to foster and preserve them. Strong relationships allowed project managers to adapt and create solutions to problems that arose along the way. The shared desire to remediate the land was typically a fundamental basis of these relationships, not only to remove the contamination but also to ensure the site could again contribute positively to the community.

# Broader learnings for the Funds

# Introduction

The broader learnings from the case studies involving the three Funds can be summarised into key themes:

- Creating opportunities that wouldn't otherwise exist is crucial for unlocking potential and driving meaningful change.
- Building strong relationships is essential for collaboration, trust and long-term success.
- Enhancing stewardship/kaitiakitanga that adds lasting value and resilience to local communities.
- Contributing to environmental regeneration plays a vital role in improving ecosystems and sustainability.
- When used well, the Waste Disposal Levy can be a powerful tool for encouraging positive behavioural change and waste management practices.

# Creating opportunities

Businesses, government agencies, councils and charitable trusts appreciate the Funds' support for scaling and continuous improvement in building waste diversion and recycling infrastructure. New Zealand is also working to scale up its waste diversion and recycling infrastructure to meet international waste minimisation requirements and obligations. As these cases show, the Funds allow this to occur in various ways.

A key finding is that there's no single 'silver bullet' regarding addressing waste minimisation. Real progress requires a range of activities happening at multiple places within the waste system across scales, with organisations working together to achieve change, leading to greater efficiency, productivity and scale. Without support from the Fund, many businesses would be unlikely to invest in large-scale infrastructure, as the return on investment would take too long. Also, councils may struggle to assign or justify rates revenue to remediate sites.

# Building strong relationships

Fund recipients found managing complex stakeholder groups challenging but essential. Strong relationships create the foundation for open, constructive conversations. If issues arise or outcomes fall short of expectations, having those relationships in place means businesses, government agencies, councils and charitable trusts can address problems collaboratively with various stakeholders and partners and adapt as needed. These relational approaches appear to underpin the long-term success of the initiatives.

Diverse and sometimes conflicting perspectives exist in areas like organic waste and remediating contaminated sites. For example, in organics, while some favour building large-scale facilities, others emphasise the importance of community-led solutions.

Navigating these differing values and views requires relational skill and a deep understanding of the broader waste system.

Site remediation involves navigating complex consenting processes in the right order. Good relationships enable access to the right people, with the right expertise, at the right time to get the necessary consents in place.

In construction and demolition projects, Fund recipients commented on the need to work together to find waste minimisation solutions. This was particularly the case when they engaged with stakeholders.

> *Everything is relationship based … [Originally], I thought it was about doing a great job.*

Overall, in writing these cases, we found the people involved are doing a good job of balancing these complexities. They're not just managing logistics. Success in these initiatives also involves managing relationships and expectations through communicating the intent and values of the projects. This relational kind of work is ongoing. It's not a one-off engagement; it requires continuous effort to maintain trust and alignment over time.

## Stewardship/kaitiakitanga

We (the researchers) were struck by the passion of the Fund recipients and their shared intention to leave places better than they found them. That was a guiding principle seen across the Fund recipients, whether it was a local initiative or a large-scale infrastructure project. The Fund recipients' focus was not only on delivering outputs but on creating lasting, positive change.

These efforts are grounded in a deep sense of responsibility. With the support of the Funds, the businesses and councils behind the projects can think longer term. They're not just focused on immediate results – they aim to regenerate environments, strengthen communities, and contribute to a healthier environmental future. In essence, they want to leave the planet in a better state than when they started.

## Recovery and regeneration

Recovery and regeneration were powerful threads running through all these projects. In the organic waste examples, the Fund supported diverting waste from landfills, reducing emissions, and transforming waste into something valuable. The mindset of asking, "How can we create value from waste and keep it in the resource-efficient and productive economies longer?" was central to the approaches. This was also evident in more commercially driven areas, like construction and demolition waste sorting and processing – there was a strong focus on doing more than the minimum.

In site remediation too, regeneration is evolving. Fund recipients focused on cleaning up a site and restoring it, enhancing it, and making it usable for the future. For example,

this meant improving soil quality so that plants could thrive or designing landscapes to reduce the risk of coastal erosion, thus protecting against future inundation.

Ultimately, the Funds have helped recipients shift from a damage control mindset to one of longer-term stewardship. Instead of treating waste and degradation as problems to be managed, Fund recipients see them as opportunities to create assets – or places that are not only safe but beautiful, functional and resilient for generations to come.

## Waste Disposal Levy

The study also surfaced useful feedback for future policy work. The Ministry has a powerful tool to influence waste-related behaviours: the Waste Disposal Levy. It plays a critical role in shaping decisions about whether materials are sent to landfills or diverted for recycling and reuse. Education is key to supporting appropriate behaviour change along with the levy.

Fund recipients told us that some customers – particularly those with more traditional mindsets – still prioritise cost over environmental impact, opting for landfill if it's the cheaper option. This highlights a gap in awareness or incentive regarding the broader consequences of waste disposal. In the case of plastics like PVC and HDPE, the current levy is not yet seen as a strong driver to encourage diversion from transfer stations. Therefore, while the levy is effective in some areas, it may not be sufficient to shift behaviour across all material types.

There are also concerns about unintended consequences. If the levy increases too quickly or is set too high, some Fund recipients thought it could create perverse incentives, such as illegal dumping. Striking the right balance is key. The levy must be strong enough to encourage positive change but carefully calibrated to avoid adverse side effects.

## Final thoughts

These cases describe how the Funds create value in multiple ways. Investing in infrastructure is important, as is remediation of contaminated sites. But the true value in these investments lies in the multifaceted and holistic approach taken by the Funds in managing waste remediation, reduction, recycling and reuse.

The Funds, as they are currently set up and positively experienced by the participants, are a key mechanism to build infrastructure, remediate land and reduce environmental, human and reputational risk. The clear benefits being derived from the Funds support their ongoing use by the Ministry.

# Methodology

# Methodology

## Context

The Ministry administers a suite of funds. The Waste Minimisation Fund – Te Pūtea Whakamauru Para and the Plastics Innovation Fund – Te Tahua Pūtea mō te Kirihou Auaha support infrastructure investments for waste resource recovery and finding new uses for waste. The Contaminated Sites and Vulnerable Landfill Fund – Tahua mō ngā Pae Hawa me ngā Ruapara helps fund remediation of contaminated sites.

In summary the Funds are of the following scale:

- Waste Minimisation Fund – $173.7 million invested since 2010. From FY24/25 $30 million per year will continue to be invested via the Fund.
- Plastics Innovation Fund – the Fund started in November 2021 and is now closed, with investment continuing via the Waste Minimisation Fund. The Fund approved investment of $24.3 million across 24 projects.
- Contaminated Sites and Vulnerable Landfill Fund – $60.6 million invested since 2003 (including investment Contaminated Sites Remediation Fund). From FY 24/25 $20 million per year will continue to be invested via the Fund.

## Designing the case studies

The researchers designed the case studies to discover how the three Funds create benefits – rather than to test an existing theory. We developed three "key cases" (Thomas, 2021). Key cases are "good examples" of the area of focus – the benefit of the Funds.

Each case explores the workings of the different projects and how the funding contributed to key outcomes – such as reducing waste to landfills, lowering emissions, and remediating contaminated land or vulnerable landfills. We used an exploratory approach, allowing insights to emerge around the Funds' environmental, social and cultural impacts. Relevant economic outcomes from our interviews are also included in these case studies when appropriate and feasible. [7]

- Case One: Construction and Demolition waste: The focus was using the Waste Minimisation Fund and an earlier Plastics Innovation Fund to reduce waste to landfill, by recycling and reusing resources.
- Case Two: Organics waste: The focus was using the Waste Minimisation Fund to reduce waste to landfill, and recycle and reuse resources

- Case Three: This case looked at Contaminated Sites and Vulnerable Landfill Fund projects and an earlier Contaminated Sites Remediation Fund project that sought to reduce or contain contamination.

[7] These cases examine the economic impacts evident for the specific projects, whereas the *Investing in minimising waste: An impact assessment* (MartinJenkins, 2025) assesses economic impacts overall.

In assessing applications for the Waste Minimisation Fund and the (now closed) Plastics Innovation Fund, the Ministry prioritised the following waste streams for investment: construction and demolition, organics, plastics from commercial sources and packaging, kerbside recyclables and special projects (Davies, O'Hare, & Yee, 2024).

Therefore, the projects selected for these cases were drawn from those categories. We sought projects that were completed, or very close to completion, and where we could speak with people who had been involved in the projects (as some had occurred several years ago).

Because projects often focus on a specific area, and that would not show the breadth of impact from funding, we selected several projects from different organisations to show the working of each Fund. In total we selected 14 projects to illustrate how the Funds contribute to meaningful outcomes for New Zealanders. In total, they represent $12.96 million investment from the Ministry and an additional $14.34 million from Fund recipients – $27.3 million overall. These comprised:

- six projects across four organisations for the Construction and Demolition case
- five projects across four organisations for the Organics case
- three projects from three organisations for the Contaminated Sites and Vulnerable Landfill case.

We were more interested in the cumulative benefits from the projects than on the individual results. We also wanted to ensure that we wrote the cases in a way that protected commercially sensitive information for businesses receiving the Funds.

# Data gathering and analysis techniques

### Recruiting and engaging with participants

Initial contact with potential participants was made by Ministry staff who were already known to them, where possible. These staff members used an introductory email prepared by the researchers to invite participation in the study. No participants chose to opt out at this stage, and we had a 100% response rate.

The Ministry then provided the research team with the contact details and roles of those who agreed to be interviewed. The research team engaged participants in ethical and culturally appropriate ways, guided by a four-phase consent process to ensure informed participation at every stage. When organisations requested privacy for some aspects, accommodations were made. All data was stored and managed in accordance with ethical standards.

### Interview process

In developing up the semi-structured interview guide, we drew on the intervention logics as well as the key qualitative and strategic benefits of the Funds identified in the *Waste levy review: An assessment of outcomes and recent performance of the waste levy investments* (Davies, O'Hare, & Yee, 2024).

The research team conducted all interviews using a semi-structured format. A total of 13 interviews were completed with 16 participants between 6 May 2025 and 26 May 2025, with all those invited agreeing to take part:

- Construction and Demolition Case: 4 interviews.
- Organics Case: 5 interviews involving 8 participants.
- Contaminated Land and Vulnerable Landfills Case: 3 interviews.

Participants were generally key people who had been involved with each project. Interviews were conducted either on the phone or online. Initial interviews were around 60 - 90 minutes and supplementary interviews were shorter, around 30 minutes.

All interviews were recorded and transcribed for analysis. While none of the participants requested transcripts, they did express interest in reviewing the final case study before it was shared with the Ministry.

### Additional data sources

A wide range of other data sources were also used to inform the case studies, including:

- Ministry for the Environment administrative data for each project, such as Fund overviews, deeds of funding, project milestone reports and project completion letters
- project-specific materials provided by participating organisations, including planning documents, reports and photographs
- website content from both the Ministry and project organisations
- social and traditional media coverage, when available
- official statistics, when relevant and accessible
- companion report to this project *"Investing in minimising waste: An impact assessment"* (MartinJenkins, 2025) including findings from the literature review, the outcome logic models and economic reporting
- previous evaluations and annual reports related to the Funds: *Te Arotakehanga o te Pūtea Whakamauru Para/ Waste Minimisation Fund Evaluation* (Barton, MacIntyre, & Stupple, 2020), *Waste levy review: An assessment of outcomes and recent performance of the waste levy investments,* Davies, O'Hare, & Yee, 2024); *Efficiency and effectiveness review of Levy and Funds administration,* (KPMG, 2024).

This diverse set of sources allowed for a comprehensive and well-rounded understanding of each case.

Amendment July 2026: Total waste generated calculations: The total tonnage of waste generated differed between the Beca (2025) data and the Zero Waste Network (2021) data. The most up-to-date waste tonnage figures are available through the Ministry for Cities, Environment, Regions and Transport's *Waste Statistics Dashboard* (n.d.) and are recommended by the Ministry for future analysis and reporting.

## Analysis and synthesis approach

Interview data was coded and analysed, and findings from other sources were integrated. This included comparing our findings with feedback from MartinJenkins on

potential economic benefits identified through their work (MartinJenkins, 2025), to assess the alignment between their work and ours.

All data sources were then synthesised in preparation for the sense-making process. We built a comprehensive and well-rounded understanding of each case by triangulating data sources. The case studies draw on multiple project examples to explain the types of activities supported by each Fund. For each case, we examined the projects from different organisations in parallel – identifying common themes and patterns where they emerged – while also using individual projects to highlight specific benefits or unique outcomes. This approach allowed us to capture both the shared impacts across the projects and the distinct contributions of each one.

We then held a 90-minute online sense-making workshop with key Ministry staff involved with the Funds. This session helped refine our understanding and informed the development of the final report.

## Reporting

All three researchers were involved in writing the report. Again, this helped triangulate the findings between the cases, ensuring our final learnings reflected all projects.

Fund participants who agreed to be interviewed all had the chance to comment on the draft, confirm information regarding diversion rates was accurate, and see their complete case rather than just aspects relating to their organisation, so they could give informed consent to take part. They also provided the photographs used in this report.

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