



Waste policy options cost benefit analysis

Options to reduce waste emissions
Final Report

18 March 2026



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Preface

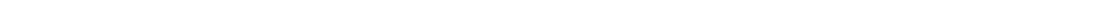
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Summary

A combination of policy changes will be needed to meet New Zealand's emissions budgets

Waste is an important issue for New Zealanders. Although emissions from waste are not the largest contributor, reduction and efficiency improvements can play a key role in reducing domestic emissions. Through New Zealand's second emissions reduction plan (ERP2), the government has committed to reducing by 2030:

- 1 Mt CO₂-e through the Waste Minimisation Fund
- 0.8 Mt CO₂-e through improving organic waste management and landfill gas capture, and
- 0.4 Mt CO₂-e through a regulated product stewardship scheme for synthetic refrigerants.

Through work already underway, there is an estimated gap of 0.7 Mt that needs to be bridged by additional policy interventions.

The Ministry for the Environment (MFE) have identified a long list of 16 policy options to reach the 2030 target. Of these, nine options have been assessed using cost-benefit analysis. MartinJenkins has been commissioned to identify where costs may fall, summarise the types of benefits expected, and indicate whether the overall impact on the economy, environment, and social wellbeing may be positive or negative. As options are also expected to be used in combination with others, MartinJenkins has also assessed what the impact different pairs of policies would have on the overall cost and benefits estimated.

Most options are relatively expensive to implement with costs falling on smaller facility operators

The majority of Class 1 landfills are already equipped with landfill gas capture, and investing in this infrastructure can reduce their ETS obligations and electricity bills if they use the energy, rather than flare it. Many of the policies identified would require other landfill operators to invest in landfill-gas capture, monitoring processes, or ETS credits which represents a significant cash outlay.

While there are some options that we estimate would have a positive impact overall, we note that the net present value (NPV) of individual options is based on the emissions abatement attributed in MFE's modelling, which depends on the ordering of options.

Looking at the modelled second emissions budget (EB2) abatement levels, these total 1.28 Mt CO₂-e across the shortlist of options. The emissions abatement modelling approach relies on an assumed ordering of policy changes. This suggests that MFE may need to proceed with a combination of options in order to meet the 2030 projected abatement in ERP2.

Table 1: Option cost-benefit analysis results summary

Option	Where costs mainly fall	25-year NPV	EB2 abatement
Update the DEF	Facility operators	-\$80m	0.06 Mt CO ₂ -e
Link Unique Emissions Factors to operator evidence	Facility operators	\$837m	0.84 Mt CO ₂ -e
Require broader classes to participate in the ETS	Facility operators	\$23m	0.004 Mt CO ₂ -e
Amend NES-AQ	Facility operators	\$320m	0.1 Mt CO ₂ -e
Require LFG capture at class 1 landfills	Facility operators	-\$15m	0.12 Mt CO ₂ -e



Require LFG capture at landfills with methane	Facility operators	-\$183m	0.02 Mt CO ₂ -e
Fund food waste reduction, diversion, education	Government	-	-
Support TAs' kerbside services	Rate payers	-\$2,866m	0.09 Mt CO ₂ -e
Facilitate businesses to recover food waste	Food businesses	-\$2,188m	0.05 Mt CO ₂ -e

Notes

- 1 'Require broader classes to participate in the ETS' is calculated at 10% of the effect of the reduced emissions from required LFG capture for both organic construction and demolition waste and monofills (landfills with methane) as this assumed to incentivise LFG capture systems (as an alternative to purchasing NZU credits).
- 2 'Fund food waste reduction, diversion, education' uses reverse-analysis to calculate the break-even point which gives a net present value of zero. The required effect size is described later in this report.
- 3 'Support TAs' kerbside services' and 'Facilitate businesses to recover food waste' abatements are based on initial modelling.

Additional government investment may be needed to proceed with resource-intensive options in order to meet targets

The modelling shows a clear mismatch between who bears the costs of action and who receives the benefits. Facility operators, food businesses, and ratepayers face direct and often immediate costs, while the primary beneficiary is the public, through progress towards national emissions targets.

This mismatch reflects a long-standing challenge in emissions management. Historically, emissions-intensive activities have generated private benefits while the broader social and environmental costs have been borne by the public. The modelling makes it clear that emissions are an externality that needs regulating for the full cost to be managed.

While stakeholders will benefit over time from lower emissions, the costs are incurred upfront. This encourages behaviour such as delaying investment, restructuring activities to fall out of scope, or minimising exposure to regulation which would undermine the intended impact of a policy.

The government can contribute to costs through the Waste Minimisation Fund, but MFE will need to ensure that the realised emission reductions aren't being double counted across the fund and the underlying policy mechanism.



About this report

Background

Reducing biogenic methane emissions from the waste sector is a key component of New Zealand's second emissions reduction plan (ERP2), which covers the period from 2026 to 2030. Through ERP2, the Government has committed to achieving 0.8 Mt CO₂-e of emissions reductions from improved organic waste management and landfill gas capture during the second emissions budget period (EB2).

While emissions from the waste sector have been trending downward over time, further reductions are required to meet EB2 and to remain on track for longer-term methane targets. Existing measures, including the New Zealand Emissions Trading Scheme (NZ ETS) and investment through the Waste Minimisation Fund, are expected to contribute to abatement. However, current projections indicate that additional policy interventions will be required to close the remaining gap.

Officials at the Ministry for the Environment (MFE), working with the waste sector, identified a long list of potential policy options aimed at reducing emissions from organic waste disposal and improving landfill gas capture. These options span regulatory and non-regulatory interventions, covering emissions pricing, landfill standards, waste diversion, and supporting behaviour change.

This report presents cost-benefit analysis (CBA) of a selection of these options. The analysis is intended to support policy decision-making and inform consultation by providing a clear view of the likely costs, benefits, and overall impacts of different approaches.

Scope of work

MartinJenkins was commissioned by the Ministry for the Environment to undertake a cost-benefit analysis of waste policy options identified under ERP2. The scope of work focused on options where a regulatory intervention is proposed, alongside selected non-regulatory measures expected to complement regulatory change.

Specifically, the analysis covered options across five broad areas:

1. Improving the effectiveness of the NZ ETS for the waste sector
2. Expanding ETS obligations to additional disposal facilities
3. Increasing the coverage and efficiency of landfill gas capture systems
4. Reducing organic waste and increasing recovery rates
5. Improving the quality of organic waste data and reporting

Not all options identified by MFE were subject to detailed quantitative analysis. Some options were excluded where:

- they are not expected to proceed to consultation, or
- previous analysis already exists, or
- impacts are highly uncertain relative to their likely policy role.

For the options included for analysis, this report:

- identifies where costs are likely to fall
- summarises the types of benefits expected
- quantifies costs and benefits where feasible



- indicates whether the overall impact is likely to be positive, negative, or neutral

As policy options may be implemented in combination, the analysis also considers how pairs of options interact, including whether costs or benefits are likely to overlap, compound, or offset.

CBA approach

The cost-benefit analysis has been undertaken using a proportionate, high level approach, consistent with the purpose of supporting consultation and early policy design rather than detailed implementation planning.

For each option, the analysis followed four main steps:

1. Option definition and outcomes

Each option was clearly defined, including its intended policy mechanism and expected outcomes. This provided a consistent basis for identifying relevant costs and benefits.

2. Cost assessment

Costs were estimated for government, facility operators, councils, businesses, and communities where applicable. Estimates are high-level and reflect:

- capital expenditure (for example, landfill gas infrastructure)
- ongoing operating and compliance costs
- administrative and regulatory costs

3. Benefit assessment

Benefits were identified and, where possible, quantified. These include:

- emissions reductions (valued using standard emissions values)
- environmental benefits beyond emissions
- social and wellbeing impacts where relevant

4. Impact summary and metrics

Results are presented using:

- net present value (NPV)
- benefit-cost ratios (BCRs) over a 10-year and 25-year period
- indicative emissions abatement over EB2 and EB3

All monetary values are expressed in real terms and discounted using standard rate of 2% (with sensitivity testing done at 8% discounting). Results should be interpreted as indicative, rather than precise forecasts.

List of options

In the briefing 'Options to reduce emissions from organic waste' (BRF-6163) to Minister Simmonds, MFE sets out a suite of possible policy options to meet the planned emissions reductions from organic waste management and landfill gas capture set out in ERP2. These options reflect a mix of regulatory and enabling measures and are expected to play different roles in achieving emissions reductions.

In parallel to our research and analysis, MFE have been working to refine these options. To help us prioritise what to focus on, MFE categorised options' clarity in terms of readiness for analysis:

- **High** where an option is considered a strong possibility, with a relatively clear direction



- **Medium** where an option is a good possibility and there is a rough plan for how it would be implemented
- **Low** where an option has potential, but it may deliver low returns relative to the level of work and costs involved to implement
- **Excluded from cost-benefit analysis**, where further thinking is needed on what the option may look like in order to reduce emissions, or where previous analysis already exists.

Table 2: Policy options’ short and full names

Short name	Full name	Clarity
Improving the effectiveness of the NZ ETS for the waste sector		
Update the Default Emissions Factor (DEF)	Improve the accuracy of the NZ ETS DEF, based on expert review of data	High
Link Unique Emissions Factors (UEFs) to operator evidence	Incentivising best practice landfill gas capture performance from high-efficiency operators	High
Expanding the ETS obligations		
Require broader classes to participate in the ETS	Require broader classes of disposal facilities, and resource recovery facilities, to participate in the NZ ETS	Medium
Increasing the coverage and efficiency of landfill gas capture systems		
Require LFG capture for organic C&D waste	Introducing requirements for specific organic construction and demolition waste streams (timber, paper and textile organic products) to be disposed of at landfill sites with LFG capture	Excluded
Amend NES-AQ	Amend the National Environmental Standard for Air Quality (NES-AQ) to best achieve high efficiency landfill gas capture at appropriate sites	High
Require LFG capture at class 1 landfills	Requiring all class 1 landfills to introduce LFG capture	Medium
Require LFG capture at landfills with methane	Requiring all landfills where methane is detected to introduce LFG capture	Low
Reducing organic waste and increasing recovery rates		
Fund food waste reduction, diversion, education	Funding to incentivise action and drive uptake of resource recovery services	Low
Support TAs’ kerbside services	Support Territorial Authorities (TAs) to deliver high quality value for money kerbside services for organic waste	Low
Facilitate businesses to recover food waste	Facilitating options for businesses that produce large quantities of food waste to recover food waste rather than sending to landfill (where diversion opportunities are available)	Low
Government procurement waste minimisation plans	Waste minimisation plans as a requirement of Government procurement (particularly for infrastructure)	Excluded
Policy to support biogas production	Policy to support biogas production	Excluded
Reduce methane generation from composting	Reduce methane generation from composting, such as by introduction of standards describing best practice.	Excluded
Improving the quality of organic waste data and reporting		
Update waste composition data	Updating waste composition data and methodologies	Excluded
Improve our understanding of farm fills	Improving our understanding of farm fills	Excluded
Understand organic diversion infrastructure needs	Improving our understanding of organic diversion infrastructure needs	Excluded



Source: Ministry for the Environment



CBA results

Overview

The cost-benefit analysis indicates that most options involve relatively high costs, with costs primarily falling on landfill operators, food businesses, or ratepayers. In contrast, the majority of quantified benefits accrue at a national level through emissions reductions and progress toward statutory climate targets.

A small number of options show strong benefit-cost performance. In particular:

- Amending the NES-AQ to improve landfill gas capture has a high benefit-cost ratio and delivers emissions reductions at relatively low cost.
- Linking emissions factors to operator evidence and expanding ETS obligations also perform well, with benefits exceeding costs under central assumptions.

Other options have benefit-cost ratios below one, indicating that quantified costs exceed quantified benefits. This does not necessarily imply that these options lack merit. Rather, it reflects:

- high upfront capital costs
- benefits that are difficult to monetise
- benefits that accrue over longer timeframes or primarily to the public rather than to those incurring costs.

Across the full shortlist, modelled emissions reductions total approximately 1.28 Mt CO₂-e over EB2, which indicates that acting on these options will set MFE up well to meet the 2030 projected abatement. The emissions abatement modelling approach relies on an assumed ordering of policy changes. This suggests that MFE may need to proceed with a combination of options to ensure that waste policies deliver the intended outcomes.

Compliance with some policy options requires an upfront investment that may not be feasible for smaller operators. Without additional incentives, subsidies, or co-investment, there is a risk of delayed compliance or avoidance behaviour, particularly for capital-intensive options.

Key considerations

When modelling the emissions reductions, MFE considered the combinations of options, with policy-level results being impacted by the ordering of activities. Lead policies have been modelled as providing relatively large reductions, with other policies considered as further enablers. This approach avoids the risk of overstating emission abatement, but we note that this means that the benefit of a single option reflects an assumed ordering of work.

The abatement numbers for ETS and landfill gas capture have been adjusted over time as the underlying assumptions for the combination of options have changed. The modelling approach also uses conservative assumptions to avoid overstating impact. These assumptions are different to those used to work out the emission target, which means that the effective target could be smaller if the same conservative assumptions applied when assessing options were used.

Benefits calculated for the cost-benefit analysis are based on the assumptions applied at 13 March 2026, with options to reduce organic waste and increase recovery rates using the estimates from the initial briefing paper.



Cost-benefit analysis results

Table 3: Option cost-benefit analysis summary – 10-years, 2% discounting

	Benefits	Costs	NPV	BCR
Update the DEF	\$9m	\$47m	-\$38m	0.20
Link Unique Emissions Factors to operator evidence	\$350m	\$16m	\$334m	21.53
Require broader classes to participate in the ETS	\$4m	\$3m	\$1m	1.33
Amend NES-AQ	\$95m	\$44m	\$51m	2.15
Require LFG capture at class 1 landfills	\$61m	\$95m	-\$34m	0.64
Require LFG capture at landfills with methane	\$24m	\$193m	-\$170m	0.12
Fund food waste reduction, diversion, education	\$29m	\$29m	-	1.00
Support TAs' kerbside services	\$37m	\$81m	-\$45m	0.45
Facilitate businesses to recover food waste	\$781m	\$1,730m	-\$948m	0.45

Table 4: Option cost-benefit analysis summary – 25-years, 2% discounting

	Benefits	Costs	NPV	BCR
Update the DEF	\$9m	\$89m	-\$80m	0.11
Link Unique Emissions Factors to operator evidence	\$874m	\$37m	\$837m	23.53
Require broader classes to participate in the ETS	\$26m	\$3m	\$23m	7.88
Amend NES-AQ	\$422m	\$102m	\$320m	4.15
Require LFG capture at class 1 landfills	\$144m	\$158m	-\$15m	0.91
Require LFG capture at landfills with methane	\$140m	\$323m	-\$183m	0.43
Fund food waste reduction, diversion, education	\$29m	\$29m	-	1.00
Support TAs' kerbside services	\$102m	\$187m	-\$85m	0.55
Facilitate businesses to recover food waste	\$1,819m	\$4,007m	-\$2,188m	0.45



Table 5: Option cost-benefit analysis summary – 25-years, 8% discounting

	Benefits	Costs	NPV	BCR
Update the DEF	\$7m	\$53m	-\$46m	0.13
Link Unique Emissions Factors to operator evidence	\$430m	\$20m	\$410m	21.80
Require broader classes to participate in the ETS	\$11m	\$3m	\$8m	3.45
Amend NES-AQ	\$182m	\$54m	\$128m	3.39
Require LFG capture at class 1 landfills	\$73m	\$103m	-\$30m	0.71
Require LFG capture at landfills with methane	\$58m	\$204m	-\$146m	0.28
Fund food waste reduction, diversion, education	\$24m	\$25m	-\$1m	0.97
Support TAs' kerbside services	\$50m	\$99m	-\$49m	0.50
Facilitate businesses to recover food waste	\$954m	\$2,107m	-\$1,153m	0.45

Option assessments

The following tables show the 10-year results for each option (at 2% discounting), plus the 25-year total abatement estimate used for the 25-year benefits, costs, and overall results in the above summary table.

Update the DEF

Improve the accuracy of the NZ ETS default emissions factor, based on expert review of data

Benefits	Costs	Results
<p>Total: \$9m</p> <ul style="list-style-type: none"> Government: \$9m Facility operators: \$0 Other businesses: \$0 Community: \$0 	<p>Total: \$47m</p> <ul style="list-style-type: none"> Government: \$0.2m Facility operators: \$47m Other businesses: \$0 Community: \$0 	<p>BCR: 0.20</p> <p>NPV: -\$38m</p> <p>EB2 abatement: 0.06Mt</p> <p>EB3 abatement: 0.02Mt</p> <p>Total 25-year abatement: 0.08Mt</p>

Option assessment – Update the DEF

This option improves the accuracy of emissions reporting by better aligning ETS obligations with actual landfill waste composition, strengthening regulatory integrity and fairness by reducing cross-subsidisation and likely improving public trust in the ETS.

On its own, the option delivers limited emissions reductions and is best understood as a foundational improvement rather than a standalone solution, particularly as it works in conjunction with linking UEF use to operator-provided evidence.

Implementation is relatively straightforward, requiring regulatory updates only, with minimal administrative burden and no need for new infrastructure or technology, and could be progressed quickly given recent waste composition data has already been collected.



The costs fall primarily on landfill operators, who may face higher ETS liabilities if the DEF increases, but stakeholders have indicated to MFE that this change is a key prerequisite for encouraging greater uptake of UEFs, although some industry resistance is possible if the option is perceived as increasing compliance costs without clear environmental or operational benefits.

Modelling assumptions – Update the DEF

Quantified benefits

Benefit Type	Direct Benefits	Associated Indirect Benefits	Model assumptions
Value of social benefits associated with emissions abatement	Economic and environmental benefits associated with reducing greenhouse gas emissions (for example, the avoided cost of reducing an equivalent volume of emissions elsewhere).	More accurate DEF ensures ETS obligations reflect real emissions. Operators can forecast ETS costs more accurately, supporting improved planning and investment decisions.	<p>EB2 Emissions abatement FY2027-FY2030 Value: \$120 per tonne (CBAX, Shadow Emissions Value CO₂ - central price path (Present – 2030)) Lag: 1 year Duration: 1 year Volume: 25,000 tonnes per year FY2027 to FY2030</p> <p>EB3 Emissions abatement FY2031-FY2035 Value: \$155 per tonne (CBAX, Shadow Emissions Value CO₂ - central price path (2030 – 2050)) Lag: 1 year Duration: 1 year Volume: 20,000 tonnes per year FY2031 to FY2035</p>

Quantified costs

Stakeholder	Cost driver	Model assumption
Central Government	Staffing to revise regulations and guidance (fixed term resourcing)	<p>Time period: July 2026 to June 2027 Volume: 1 FTE (for 12 months) Rate: \$180,000 per annum including overheads Cost type: Opex</p>
Landfill / Facility Operators	Cost of ETS credits if DEF increases	<p>Time period: Ongoing from FY2027 Volume assumptions: 700 kg of waste produced per person per annum. 1 million people sending waste to landfill without gas capture. Assumed policy impact: 25% increase in DEF - half of this defrayed over five years by operational changes (without capital investment). Rate: Assumed to require credits costing \$50/t CO₂-e Cost type: Opex</p>

Link UEFs to operator evidence

Incentivising best practice landfill gas capture performance from high-efficiency operators

Benefits	Costs	Results
<p>Total: \$350m</p> <ul style="list-style-type: none"> Government: \$350m Facility operators: \$0 Other businesses: \$0 Community: \$0 	<p>Total: \$16m</p> <ul style="list-style-type: none"> Government: \$2m Facility operators: \$14m Other businesses: \$0 Community: \$0 	<p>BCR: 21.53 NPV: \$334m EB2 abatement: 0.84Mt EB3 abatement: 1.95Mt Total 25-year abatement: 7.63</p>

Option assessment – Link UEFs to operator evidence

This option incentivises improved performance by rewarding landfill operators with lower ETS obligations where they achieve better gas capture and monitoring outcomes, which has been a key request from the sector. By strengthening the link



between performance and liability, it may encourage innovation and investment in landfill gas infrastructure and data systems, supporting more informed planning and investment decisions. The option also improves fairness by more closely aligning ETS liabilities with actual operational performance.

However, implementation is more complex than updating the DEF, requiring regulatory changes, clear evidence standards, and ongoing verification, and smaller operators may face technical and cost-related compliance challenges that could result in uneven uptake. For these reasons, this option is best implemented alongside updates to the DEF, which provide a more robust baseline for its operation.

Modelling assumptions – Link UEFs to operator evidence

Quantified benefits

Benefit Type	Direct Benefits	Associated Indirect Benefits	Model assumptions
Value of social benefits associated with emissions abatement	Economic and environmental benefits associated with reducing greenhouse gas emissions (for example, the avoided cost of reducing an equivalent volume of emissions elsewhere).	Value of social benefits associated with emissions abatement	<p>EB2 Emissions abatement FY2027-FY2030 Value: \$120 per tonne (CBAX, Shadow Emissions Value CO₂ - central price path (Present – 2030)) Lag: 1 year Duration: 1 year Volume: 25,000 tonnes per year FY2027 to FY2030</p> <p>EB3 Emissions abatement FY2031-FY2035 Value: \$155 per tonne (CBAX, Shadow Emissions Value CO₂ - central price path (2030 – 2050)) Lag: 1 year Duration: 1 year Volume: 20,000 tonnes per year FY2031 to FY2035</p>

Quantified costs

Stakeholder	Cost driver	Model assumption
Central Government	Staffing to revise regulations and guidance (ongoing resourcing)	Time period: Ongoing from FY2027 Volume: 1 FTE Rate: \$180,000 per annum including overheads Cost type: Opex
Central Government	Specialist input (one off)	Time period: FY2027 Volume: N/A Rate: \$250,000 Cost type: Opex
Landfill / Facility Operators	Resource to meet requirements (ongoing)	Time period: Ongoing from FY2027 Volume: 18 facilities assumed to need new resource Rate: \$100,000 for contracted specialist support needed each year Cost type: Opex



Require broader classes to participate in the ETS

Require broader classes of disposal facilities, and resource recovery facilities, to participate in the NZ ETS

Benefits	Costs	Results
Total: \$4m <ul style="list-style-type: none"> Government: \$4m Facility operators: \$0 Other businesses: \$0 Community: \$0 	Total: \$3m <ul style="list-style-type: none"> Government: \$0.2m Facility operators: \$3m Other businesses: \$0 Community: \$0 	BCR: 1.33 NPV: \$1m EB2 abatement: 0.004 Mt EB3 abatement: 0.03 Mt Total 25-year abatement: 0.24 Mt

Option assessment – Require broader classes to participate in the ETS

This option extends ETS obligations to a wider range of landfills and recovery sites, improving equity across the waste sector and strengthening the carbon price signal to encourage further emissions reductions.

However, it would introduce new administrative and compliance costs for smaller operators, many of whom have limited experience with the ETS. These additional costs could flow through to higher disposal charges and, in some cases, lead to site closures or consolidation, particularly in rural or under-resourced areas.

In turn, this could have implications for emergency and disaster waste management, reducing resilience during extreme weather events where access to larger landfills is constrained or disrupted. Transitional support may therefore be required to mitigate cost impacts and manage risks to sector capability and resilience.

Modelling assumptions – Require broader classes to participate in the ETS

Quantified benefits

Benefit Type	Direct Benefits	Associated Indirect Benefits	Model assumptions
Value of social benefits associated with emissions abatement	Economic and environmental benefits associated with reducing greenhouse gas emissions (for example, the avoided cost of reducing an equivalent volume of emissions elsewhere).	Improved reporting and capture uptake.	<i>Placeholder assumption of EB2:0.03 Mt and EB3: 0.05 Mt abatement</i> EB2 Emissions abatement FY2027-FY2030 Value: \$120 per tonne (CBAX, Shadow Emissions Value CO ₂ - central price path (Present – 2030)) Lag: 1 year Duration: 1 year Volume: 7,500 tonnes per year FY2027 to FY2030 EB3 Emissions abatement FY2031-FY2035 Value: \$155 per tonne (CBAX, Shadow Emissions Value CO ₂ - central price path (2030 – 2050)) Lag: 1 year Duration: 1 year Volume: 10,000 tonnes per year FY2031 to FY2035

Quantified costs

Stakeholder	Cost driver	Model assumption
Central Government	Staffing to support communications (fixed term resourcing)	Time period: July 2026 to June 2027 Volume: 1 FTE (for 12 months) Rate: \$180,000 per annum including overheads Cost type: Opex
Landfill / Facility Operators	Specialist input	Time period: FY2027 Volume: Consultancy support assumed for 32 open class 2 facilities Rate: \$100,000 per facility Cost type: Opex



Amend NES-AQ

Amend the National Environmental Standard for Air Quality (NES-AQ) to best achieve high efficiency landfill gas capture at appropriate sites

Benefits	Costs	Results
<p>Total: \$95m</p> <ul style="list-style-type: none"> Government: \$95m Facility operators: \$0 Other businesses: \$0 Community: \$0 	<p>Total: \$44m</p> <ul style="list-style-type: none"> Government: \$4m Facility operators: \$41m Other businesses: \$0 Community: \$0 	<p>BCR: 2.15</p> <p>NPV: \$51m</p> <p>EB2 abatement: 0.1Mt</p> <p>EB3 abatement: 0.64 Mt</p> <p>Total 25-year abatement: 3.76 Mt</p>

Option assessment – Amend NES-AQ

Current thinking is that this option would be implemented through changes to landfill gas capture regulations to extend coverage to Class 1 and 2 landfills, as well as industrial monofill facilities accepting putrescible waste, alongside the introduction of a 60 percent gas capture efficiency standard.

This approach delivers high emissions reduction by mandating improved gas capture at large landfills and offers good benefits relative to costs, with moderate implementation costs and substantial estimated social and environmental benefits. In addition to emissions abatement, it enhances energy recovery potential and is likely to improve local air quality, odour control, and health outcomes.

The option would require regulatory changes and infrastructure upgrades, particularly for newly covered Class 2 sites, although most Class 1 facilities already have gas capture systems in place. Its effectiveness may be reduced over time if other policies, such as increased organics diversion, lower the volume of organic waste entering landfills.

Overall, the option is likely to be well received by the public and would be a central component of any effective emissions reduction package.

Modelling assumptions – Amend NES-AQ

Quantified benefits

Benefit Type	Direct Benefits	Associated Indirect Benefits	Model assumptions
Value of social benefits associated with emissions abatement and behavioural change	Economic and environmental benefits associated with reducing greenhouse gas emissions (for example, the avoided cost of reducing an equivalent volume of emissions elsewhere).	Reduced fugitive methane and improved compliance.	<p>EB2 Emissions abatement FY2027-FY2030</p> <p>Value: \$120 per tonne (CBAX, Shadow Emissions Value CO₂ - central price path (Present – 2030))</p> <p>Lag: 1 year</p> <p>Duration: 1 year</p> <p>Volume: 175,000 tonnes per year FY2027 to FY2030</p> <p>EB3 Emissions abatement FY2031-FY2035</p> <p>Value: \$155 per tonne (CBAX, Shadow Emissions Value CO₂ - central price path (2030 – 2050))</p> <p>Lag: 1 year</p> <p>Duration: 1 year</p> <p>Volume: 360,000 tonnes per year FY2031 to FY2035</p>



Quantified costs

Stakeholder	Cost driver	Model assumption
Central Government	Staffing to revise regulations and guidance (fixed-term resourcing)	Time period: FY2027 to FY2030, then moves to council Volume: 2 FTE Rate: \$180,000 per annum including overheads (total of \$360,000 for 2 FTE each year) Cost type: Opex
Local Authorities	Staffing to monitor compliance (ongoing resourcing)	Time period: FY2031 onwards Volume: 2 FTE (contracting across all councils) Rate: \$180,000 per annum including overheads (total of \$360,000 for 2 FTE each year) Cost type: Opex
Local Authorities	New measurement equipment	Time period: FY2027 Volume: 17 environmental monitoring entities (11 regional councils, 6 unitary authorities) Rate: \$20,000 per monitoring entity Cost type: Capex
Landfill / Facility Operators	Higher LFG capturing costs	Time period: Ongoing from FY2027 Volume: 80% of the 41 class 1 landfills are assumed to have LFG capture systems that are affected and 80% of 16 Class 2 sites Rate: Additional cost estimated at US\$80,000 per year in 2015. Cost type: Opex

Require LFG capture at class 1 landfills

Requiring all class 1 landfills to introduce LFG capture

Benefits	Costs	Results
Total: \$61m <ul style="list-style-type: none"> Government: \$61m Facility operators: \$0 Other businesses: \$0 Community: \$0 	Total: \$95m <ul style="list-style-type: none"> Government: \$0.09m Facility operators: \$95m Other businesses: \$0 Community: \$0 	BCR: 0.64 NPV: -\$34m EB2 abatement: 0.12 Mt EB3 abatement: 0.36 Mt Total 25-year abatement: 1.24 Mt

Option assessment – Require LFG capture at class 1 landfills

This option improves consistency by mandating gas capture at all large landfills, including those that are currently exempt. However, it delivers modest additional emissions reductions beyond amending the NES-AQ, while imposing significantly higher costs (as it is more prescriptive than the NES-AQ option).

Smaller landfills, in particular, may face disproportionate financial and technical challenges in meeting the requirements, which could affect the viability of small regional sites that are important for local access and disaster resilience.

Given these trade-offs, the option may be better positioned as a contingency measure if other policies do not deliver sufficient emissions reductions to meet targets.

Modelling assumptions – Require LFG capture at class 1 landfills

Quantified benefits

Benefit Type	Direct Benefits	Associated Indirect Benefits	Model assumptions
Value of social benefits associated with emissions	Economic and environmental benefits associated with reducing greenhouse	Improved compliance.	EB2 Emissions abatement FY2027-FY2030 Value: \$120 per tonne (CBAX, Shadow Emissions Value CO ₂ - central price path (Present – 2030) Lag: 1 year



Benefit Type	Direct Benefits	Associated Indirect Benefits	Model assumptions
abatement and behavioural change	gas emissions (for example, the avoided cost of reducing an equivalent volume of emissions elsewhere).		Duration: 1 year Volume: 25,000 tonnes per year FY2027 to FY2030 EB3 Emissions abatement FY2031-FY2035 Value: \$155 per tonne (CBAX, Shadow Emissions Value CO ₂ - central price path (2030 – 2050)) Lag: 1 year Duration: 1 year Volume: 60,000 tonnes per year FY2031 to FY2035

Quantified costs

Stakeholder	Cost driver	Model assumption
Central Government	Staffing to revise regulations and guidance (fixed term resourcing)	Time period: July to December in 2026 Volume: 1 FTE (for six months) Rate: \$180,000 per annum including overheads (total cost \$90,740 based on number of days) Cost type: Opex
Landfill / Facility Operators	Upgrade costs	Time period: FY2027 Volume: 24 of the 41 class 1 landfills are assumed to not have LFG capture systems. Rate: Assumed to be \$2m per landfill Cost type: Capex
Landfill / Facility Operators	Ongoing system operating costs	Time period: Ongoing from FY2027 Volume: 24 of the 41 class 1 landfills are assumed to not have LFG capture systems. Rate: Annual operating costs are estimated at \$250,000 per year per landfill Cost type: Opex

Require LFG capture at landfills with methane

Requiring all landfills where methane is detected to introduce LFG capture

Benefits	Costs	Results
Total: \$24m <ul style="list-style-type: none"> Government: \$24m Facility operators: \$0 Other businesses: \$0 Community: \$0 	Total: \$193m <ul style="list-style-type: none"> Government: \$0.09m Facility operators: \$193m Other businesses: \$0 Community: \$0 	BCR: 0.12 NPV: -\$170m EB2 abatement: 0.02 Mt EB3 abatement: 0.16 Mt Total 25-year abatement: 1.26 Mt

Option assessment – Require LFG capture at landfills with methane

This option seeks comprehensive methane control by extending coverage to all landfills with detectable emissions, regardless of size.

As with requiring LFG capture at Class 1 landfills, it delivers only marginal additional emissions reductions at very high cost, making it one of the least cost-effective of the options considered.

Implementation would be complex, with significant challenges around monitoring, enforcement, and technical feasibility for smaller sites. As a result, this option is best viewed as a long-term backstop that might be considered only if absolutely necessary to meet emissions targets, rather than a pragmatic or near-term policy solution.



Modelling assumptions – Require LFG capture at landfills with methane

Quantified benefits

Benefit Type	Direct Benefits	Associated Indirect Benefits	Model assumptions
Value of social benefits associated with emissions abatement and behavioural change	Economic and environmental benefits associated with reducing greenhouse gas emissions (for example, the avoided cost of reducing an equivalent volume of emissions elsewhere).	Improved compliance.	<p>EB2 Emissions abatement FY2027-FY2030 Value: \$120 per tonne (CBAx, Shadow Emissions Value CO₂ - central price path (Present – 2030)) Lag: 1 year Duration: 1 year Volume: 75,000 tonnes per year FY2027 to FY2030</p> <p>EB3 Emissions abatement FY2031-FY2035 Value: \$155 per tonne (CBAx, Shadow Emissions Value CO₂ - central price path (2030 – 2050)) Lag: 1 year Duration: 1 year Volume: 100,000 tonnes per year FY2031 to FY2035</p>

Quantified costs

Stakeholder	Cost driver	Model assumption
Central Government	Staffing to revise regulations and guidance (fixed term resourcing)	<p>Time period: July to December in 2026 Volume: 1 FTE (for six months) Rate: \$180,000 per annum including overheads (total cost \$90,740 based on number of days) Cost type: Opex</p>
Landfill / Facility Operators	Investment in LFG capture system	<p>Time period: FY2027 Volume: 16 class 2 landfills (3a), 25 industrial monofils, plus the 20% of the 41 class 1 landfills assumed not to have LFG capture systems (3c) Rate: Assumed to be \$2m per landfill Cost type: Capex</p>
Landfill / Facility Operators	Ongoing system operating costs	<p>Time period: Ongoing from FY2027 Volume: 16 class 2 landfills (3a), 25 industrial monofils, plus the 20% of the 41 class 1 landfills assumed not to have LFG capture systems (3c). Rate: Annual operating costs are estimated at \$250,000 per year per landfill Cost type: Opex</p>

Fund food waste reduction, diversion, education

Funding to incentivise action and drive uptake of resource recovery services

Benefits	Costs	Results
<p>Total: \$29m</p> <ul style="list-style-type: none"> Government: \$17m Facility operators: \$0 Other businesses: \$0 Community: \$13m 	<p>Total: \$29m</p> <ul style="list-style-type: none"> Government: \$20m Facility operators: \$0 Other businesses: \$9m Community: \$0 	<p>BCR: 1.00 NPV: \$0 EB2 abatement: N/A EB3 abatement: N/A Total 25-year abatement: N/A</p>

Option assessment – Fund food waste reduction, diversion, education

The emissions impact is difficult to estimate and less reliable as a primary mitigation measure, although evidence from previous food waste campaigns suggests that measurable behaviour change is possible. As a result, quantified benefits for this



option are based on reverse analysis, as the extent to which food waste would be diverted from landfill is uncertain. This results in an artificially neutral ROI of 1, which requires 1,505 tonnes of food waste to have been prevented from going to landfill.

The option has a low regulatory burden and is likely to be well received by the public, making it a useful complementary measure rather than a core policy lever.

In addition to potential emissions benefits, it offers wider social value through food rescue, community engagement, and possible improvements in food security.

Modelling assumptions – Fund food waste reduction, diversion, education

Quantified benefits

Benefit Type	Direct Benefits	Associated Indirect Benefits	Model assumptions
Avoided disposal costs	Cost reductions from preventing/ diverting food waste from landfill.	Lower landfill methane intensity and improved circular outcomes.	Value: \$3.85/kg of organic waste diverted (\$7.70 at 50% success rate) Duration: 1 year Lag: 1 year Volume: Would need to divert 1,505t of organic waste each year of the programme (FY2027 to FY2030) to break even, including the assumed food rescue benefits below. For context, 216,000t of food is landfilled each year.
Food rescue & related social benefits	Increased edible food rescue and redistribution, improving food security. Food rescue, community composting, and local education programmes strengthen community networks and social capital.	Enhances social resilience, wellbeing, and local leadership.	Value: \$0.40 for every \$1 invested in food rescue programmes (\$3.38 at 12% success rate) Duration: 1 year Lag: No lag Volume: \$1.5m of costs each year

Quantified costs

Stakeholder	Cost driver	Model assumption
Central Government	Staffing to revise regulations and guidance (ongoing resourcing)	Time period: Ongoing from FY2027 Volume: 1 FTE Rate: \$180,000 per annum including overheads Cost type: Opex
Central Government	Spending on grants, subsidies, and campaigns	Time period: FY2028 to FY2030 Volume: N/A Rate: Assumed to be \$6.7m total Cost type: Opex
Businesses/ NGOs	Co-investment for operating costs	Time period: Ongoing from FY2028 Volume: N/A Rate: Assumed to be 50% of government investment – \$500,000 per year Cost type: Opex



Support TAs' kerbside services

Support Territorial Authorities (TAs) to deliver high quality value for money kerbside services for organic waste

Benefits	Costs	Results
Total: \$37m <ul style="list-style-type: none"> Government: \$37m Facility operators: \$0 Other businesses: \$0 Community: \$0 	Total: \$81m <ul style="list-style-type: none"> Government: \$1m Facility operators: \$0 Other businesses: \$0 Community: \$80m 	BCR: 0.45 NPV: -\$45m EB2 abatement: 0.09 Mt EB3 abatement: 0.2 Mt Total 25-year abatement: 0.89 Mt

Option assessment – Support TAs' kerbside services

This option involves supporting expansion of kerbside organics collections and associated processing infrastructure across New Zealand, delivering broader benefits such as improved soil health and extended landfill lifespans.

While the option delivers a low short-term return on investment, it has the potential to generate significant long-term emissions reductions as coverage increases and diversion behaviour becomes embedded. However, it has relatively high implementation costs, which would be borne primarily by local communities.

Modelling assumptions – Support TAs' kerbside services

Quantified benefits

Benefit Type	Direct Benefits	Associated Indirect Benefits	Model assumptions
Value of social benefits associated with emissions abatement	Economic and environmental benefits associated with reducing greenhouse gas emissions (for example, the avoided cost of reducing an equivalent volume of emissions elsewhere).	Improved access to kerbside services.	EB2 Emissions abatement FY2027-FY2030 Value: \$120 per tonne (CBAX, Shadow Emissions Value CO ₂ - central price path (Present – 2030)) Lag: 1 year Duration: 1 year Volume: 22,500 tonnes per year FY2027 to FY2030 EB3 Emissions abatement FY2031-FY2035 Value: \$155 per tonne (CBAX, Shadow Emissions Value CO ₂ - central price path (2030 – 2050)) Lag: 1 year Duration: 1 year Volume: 40,000 tonnes per year FY2031 to FY2035

Quantified costs

Stakeholder	Cost driver	Model assumption
Central Government	Staffing to revise regulations and guidance (fixed-term resourcing)	Time period: FY2027 to FY2030 Volume: 2 FTE Rate: \$180,000 per annum including overheads (total of \$360,000 for 2 FTE each year) Cost type: Opex
Communities	Green waste fees for households / cost of at home composting	Time period: Ongoing from FY2027 Volume: Of the 2 million households, 5% are assumed to be reached by the programme. Rate: \$100 per household per year Cost type: Opex



Facilitate businesses to recover food waste

Facilitating options for businesses that produce large quantities of food waste to recover food waste rather than sending to landfill (where diversion opportunities are available)

Benefits	Costs	Results
Total: \$781m <ul style="list-style-type: none"> Government: \$19m Facility operators: \$0 Other businesses: \$0 Community: \$763m 	Total: \$1,730m <ul style="list-style-type: none"> Government: \$1m Facility operators: \$0 Other businesses: \$1,728m Community: \$0 	BCR: 0.44 NPV: -\$9,641m EB2 abatement: 0.05 Mt EB3 abatement: 0.1 Mt Total 25-year abatement: 0.45 Mt

Option assessment – Facilitate businesses to recover food waste

This option targets a significant emissions source by requiring large food waste producers to divert organic waste away from landfill.

While it imposes relatively high compliance costs on businesses, there are longer-term opportunities for operational efficiencies and reputational benefits as practices adapt.

The effectiveness of the option will depend on the availability of appropriate processing infrastructure and the presence of clear, well-defined regulatory requirements. Although it is likely to be publicly popular, it may face resistance from industry unless supported by phased implementation and complementary measures to ease the transition.

Modelling assumptions – Facilitate businesses to recover food waste

Quantified benefits

Benefit Type	Direct Benefits	Associated Indirect Benefits	Model assumptions
Value of social benefits associated with emissions abatement	Economic and environmental benefits associated with reducing greenhouse gas emissions (for example, the avoided cost of reducing an equivalent volume of emissions elsewhere).	Lower landfill methane and improved circular outcomes.	EB2 Emissions abatement FY2027-FY2030 Value: \$120 per tonne (CBAx, Shadow Emissions Value CO ₂ - central price path (Present – 2030)) Lag: 1 year Duration: 1 year Volume: 12,500 tonnes per year FY2027 to FY2030 EB3 Emissions abatement FY2031-FY2035 Value: \$155 per tonne (CBAx, Shadow Emissions Value CO ₂ - central price path (2030 – 2050)) Lag: 1 year Duration: 1 year Volume: 20,000 tonnes per year FY2031 to FY2035
Food rescue & associated social benefits	Increased edible food rescue and redistribution, improving food security. Food rescue, community composting, and local education programmes strengthen community networks and social capital.	Enhances social resilience, wellbeing, and local leadership.	Value: \$0.40 for every \$1 invested in food rescue programmes (\$3.38 at 12% success rate) Duration: 1 year Lag: No lag Volume: \$2.16m of costs each year



Quantified costs

Stakeholder	Cost driver	Model assumption
Central Government	Staffing to revise regulations and guidance (fixed-term resourcing)	Time period: FY2027 to FY2030 Volume: 2 FTE Rate: \$180,000 per annum including overheads (total of \$360,000 for 2 FTE each year) Cost type: Opex
Food Businesses	Food recovery costs (sorting, processing, distribution)	Time period: Ongoing from FY2028 Volume: 1,800 productive hours per year. 0.5 FTE working to recover food per business across 10% of 20,000 food businesses in scope. Rate: \$30/h of work. Cost type: Opex



Option combinations

As ERP2 emissions targets are unlikely to be met through a single policy change, this report also considers how options interact when implemented together.

Overall, the findings suggest that a package of policies will be required to deliver the targeted emissions reductions than reliance on any one regulatory change alone. It is important to consider how different sets of options will impact the combined costs and benefits expected.

Impact on costs

In combination, pairs of options may result in:

- **Higher combined costs** where options require additional systems or processes to be delivered together.
- **Lower combined costs** where administrative or regulatory functions can be shared across options.
- **No change to combined costs** where the cost of one option does not impact the cost of another option.

The analysis indicates that combinations involving improvements to ETS settings, and enhanced landfill gas capture requirements are generally complementary, with limited overlap in costs and a higher likelihood of additive emissions reductions.

Impact on benefits

Similarly, pairs of options may result in:

- **Higher combined benefits** where there are synergies between two options, making them deliver more together than the sum of their parts.
- **Marginal additional benefits** where two options deliver, in part, the same benefits to the same stakeholders but in different ways, so the combined benefits double-counts some impacts.
- **No change to combined benefits**, where the options deliver distinct benefits that do not amplify or offset each other.

Combinations involving multiple behaviour change or diversion initiatives show greater uncertainty. Their effectiveness depends heavily on funding levels, implementation design, and supporting infrastructure. Without adequate support, there is a risk that expected benefits are not realised, or that unintended behaviours undermine emissions outcomes.

We anticipate that option pairs would have the following impact on total costs and benefits.



	Update the DEF	Link Unique Emissions Factors to operator evidence	Require broader classes to participate in the ETS	Amend NES-AQ	Require LFG capture at class 1 landfills	Require LFG capture at landfills with methane	Fund food waste reduction, diversion, education	Support TAs' kerbside services	Facilitate businesses to recover food waste
Update the DEF		Lower combined cost Offset monitoring and policy setting costs	Higher combined cost Demand pressure on specialist skills	Lower combined cost Offset monitoring and policy setting costs	Lower combined cost Offset monitoring and policy setting costs	Lower combined cost Offset monitoring and policy setting costs	Same combined cost	Same combined cost	Same combined cost
Link Unique Emissions Factors to operator evidence	Same combined benefits (as benefits related to both 1a and 1b)		Lower combined cost Offset monitoring and policy setting costs	Lower combined cost Offset monitoring and policy setting costs	Lower combined cost Offset monitoring and policy setting costs	Lower combined cost Offset monitoring and policy setting costs	Same combined cost	Same combined cost	Same combined cost
Require broader classes to participate in the ETS	Higher combined benefits Accurate pricing applied across more emitting sites	Higher combined benefits Stronger incentives for newly covered sites			Same combined cost	Same combined cost	Same combined cost	Same combined cost	Same combined cost
Amend NES-AQ	Higher combined benefits Accounting accuracy plus independent operational abatement	Higher combined benefits Minimum standards plus performance rewards	Higher combined benefits Direct abatement plus extended price signal		Same combined cost Cost will depend on ratio with LFG currently	Lower combined cost Double up of capex	Same combined cost LFG requirements not yet impacted by food waste diversion	Same combined cost	Same combined cost
Require LFG capture at class 1 landfills	Higher combined benefits DEF accuracy complements new physical capture	Marginal additional benefits Capture drives abatement; tiering reallocates	Marginal additional benefits Overlap at larger sites	Marginal additional benefits Overlap at larger sites		Lower combined cost Double up of capex	Same combined cost	Same combined cost	Same combined cost
Require LFG capture at landfills with methane	Marginal additional benefits Smaller sites, limited incremental abatement	Marginal additional benefits Limited scope for performance gains	Lower combined benefits Calculated on the same basis for the same sites	Marginal additional benefits Residual emissions only	Marginal additional benefits Small or legacy sites only		Same combined cost	Same combined cost	Same combined cost
Fund food waste reduction, diversion, education	Higher combined benefits (over time) Diversion lowers residual emissions	Higher combined benefits (over time) Lower methane loads improve outcomes	Higher combined benefits (over time) Lower methane loads improve outcomes	Higher combined benefits (over time) Price signals reinforce diversion	Higher combined benefits (over time) Lower methane generation	Higher combined benefits (over time) Diversion reduces methane generation		Lower combined cost More efficient if run as a programme	Lower combined cost More efficient if run as a programme
Support TAs' kerbside services	Higher combined benefits (over time) Diversion lowers residual emissions	Higher combined benefits (over time) Diversion reinforces performance signals	Higher combined benefits (over time) Diversion reinforces performance signals	Higher combined benefits (over time) Structural diversion complements ETS	Higher combined benefits (over time) Diversion complements capture	Higher combined benefits (over time) Diversion reduces methane generation	Same combined benefits Overlapping waste streams		Lower combined cost More efficient if run as a programme
Facilitate businesses to recover food waste	Higher combined benefits (over time) Upstream diversion complements DEF	Higher combined benefits (over time) Reduced landfill inputs improve capture	Higher combined benefits (over time) Reduced landfill inputs improve capture	Higher combined benefits (over time) Reduced volumes under ETS pricing	Higher combined benefits (over time) Reduced load improves effectiveness	Higher combined benefits (over time) Diversion reduces methane generation	Same combined benefits Education & regulation target similar sources	Same combined benefits Kerbside and business diversion overlap	
Impact on benefits – to first confirm emission reduction calculations									

Impact on costs



Target combinations of options

MFE have modelled the emissions abatement as a combination of options, with specific policy results being impacted by the order in which they are considered. These options can overlap to drive emissions reductions in different ways across different types of waste facilities.

Below are three different packages of options MFE may consider.

Option 1

Improving the effectiveness of the ETS for the waste sector	Expanding the ETS obligations	Increasing the coverage and efficiency of landfill gas capture systems
Effective January 2027: <ul style="list-style-type: none"> Update the DEF Link UEF to operator 	Effective 2030: <ul style="list-style-type: none"> Require broader classes to participate in the ETS 	Effective January 2028 <ul style="list-style-type: none"> Amend NES-AQ (5% yearly efficiency increases)

Taken together, this package delivers the strongest overall emissions abatement and cost-effectiveness of the modelled options, with high cumulative benefits and strong alignment with ERP2 targets.

The three components are complementary, with minimal cost duplication and largely additive benefits. The DEF and UEF changes strengthen emissions accounting and sharpen performance incentives, while the NES-AQ drives direct, on-the-ground operational abatement. The phased introduction of the NES-AQ efficiency standard supports manageable implementation, and the delayed expansion of the ETS to 2030 helps reduce near-term compliance pressure on smaller operators.

While the combined approach spreads costs over time and across stakeholders, including facility operators and government, some transitional support may still be needed to ensure timely uptake and avoid compliance delays.

Option 2

Improving the effectiveness of the ETS for the waste sector	Expanding the ETS obligations	Increasing the coverage and efficiency of landfill gas capture systems
Effective January 2027: <ul style="list-style-type: none"> Update the DEF Link UEF to operator 	Effective 2028: <ul style="list-style-type: none"> Require broader classes to participate in the ETS 	N/A

This package focuses on strengthening the ETS framework through improved emissions factors and broader coverage, with strong benefit-cost performance driven largely by the high BCR of the UEF option. While the DEF option has a low standalone BCR, it plays an important enabling role by improving baseline accuracy and perceived fairness, which in turn supports uptake of UEFs.



Expanding the ETS improves equity and coverage, but delivers a more modest and delayed emissions impact, with most benefits accruing in EB3 and beyond.

Overall, this package is administratively lighter than Option 1, but the absence of direct operational abatement from the NES-AQ means it risks being insufficient to meet EB2 targets without short-term gains from supporting policies to reduce organic waste and increase recovery rates.

Option 3

Improving the effectiveness of the ETS for the waste sector	Expanding the ETS obligations	Increasing the coverage and efficiency of landfill gas capture systems
N/A	N/A	Effective January 2028 <ul style="list-style-type: none"> • Amend NES-AQ (5% yearly efficiency increases)

The NES-AQ option is an impactful single measure for emissions abatement, delivering substantial methane reductions over 25 years with a strong BCR. It achieves this through improved landfill gas capture (as an alternative to requiring landfill gas capture), with moderate implementation costs and significant co-benefits, including improved air quality and opportunities for energy recovery. However, without complementary ETS measures such as UEFs or DEFs, the policy may miss opportunities to incentivise continuous performance improvement and ensure accurate emissions reporting.

As a standalone option, NES-AQ is a strong candidate for early implementation, but it is likely to need to be paired with other measures to fully deliver ERP2 targets and address equity and behavioural incentives across the sector.



Appendix 1: Glossary

Benefit–Cost Ratio (BCR)	A measure comparing the present value of benefits to the present value of costs to indicate whether a policy option delivers net benefits.
Biogenic methane	Methane emissions produced from the decomposition of organic material, including food and green waste.
Business Case Analysis (CBA)	An analytical approach that assesses the costs and benefits of policy options to support evidence-based decision-making.
Carbon dioxide equivalent (CO₂-e)	A standard unit that expresses the climate impact of different greenhouse gases relative to carbon dioxide.
Class 1 landfill	A landfill that accepts municipal solid waste and is typically larger and subject to more stringent regulatory requirements.
Class 2 landfill	A landfill that generally accepts less putrescible waste than Class 1 landfills and may have more limited infrastructure.
Default Emissions Factor (DEF)	The standard emissions factor used in the NZ ETS to estimate landfill methane emissions when no site-specific data is applied.
Discount rate	The rate used to convert future costs and benefits into present-day values in a cost-benefit analysis.
Emissions Budget 2 (EB2)	New Zealand’s second emissions budget period, covering the years 2026 to 2030.
Emissions Budget 3 (EB3)	New Zealand’s third emissions budget period, covering the years 2031 to 2035.
Emissions Trading Scheme (ETS)	New Zealand’s market-based system for pricing greenhouse gas emissions and incentivising emissions reductions.
Fugitive emissions	Unintended emissions, such as methane escaping from landfill surfaces or infrastructure rather than being captured.
Industrial monofill	A landfill that accepts waste from a single industry or specific industrial processes, often including putrescible material, and is regulated separately from municipal landfills.



Landfill gas (LFG)	A mixture of gases, primarily methane and carbon dioxide, generated by the decomposition of organic waste in landfills.
Landfill gas capture	Systems used to collect and destroy or utilise methane generated in landfills to reduce emissions.
Net Present Value (NPV)	The difference between the present value of total benefits and total costs over the assessment period.
National Environmental Standard for Air Quality (NES-AQ)	Regulations that set minimum standards to manage air quality impacts, including landfill gas capture requirements.
New Zealand Unit (NZU)	The tradable unit used in the NZ ETS, representing one tonne of carbon dioxide equivalent.
Organic waste / Putrescible waste	Biodegradable waste material such as food, garden waste, paper, timber, and textiles.
Shadow price of carbon	An estimate of the societal cost of greenhouse gas emissions used for appraisal purposes rather than market pricing.
Unique Emissions Factor (UEF)	A site-specific emissions factor based on measured waste composition or landfill gas capture performance.
Waste diversion	Activities that reduce the amount of waste sent to landfill, such as composting, recycling, or food rescue.
Waste Minimisation Fund (WMF)	A government fund that supports projects to reduce waste and improve resource efficiency.
Windrow composting	A composting method where organic material is piled into long rows that are periodically turned to promote decomposition.



Appendix 2: Consideration of other options

The remaining options have been excluded from the cost-benefit analysis as either further work is needed to scope out the possible policy change, or the option has been discounted as a possibility in the short-term.

We have estimated the costs for each, using placeholder assumptions where necessary, to support MFE with discussions on design and future decision making. These amounts are in real dollars (at 31 December 2025). No discounting has been applied. Costs are illustrative only and will need to be revisited once these options are further refined.

Require LFG capture for organic C&D waste

Introducing requirements for specific organic construction and demolition waste streams (timber, paper and textile organic products) to be disposed of at landfill sites with LFG capture

This option has been excluded from the cost-benefit analysis. Further thought is needed for this option, noting the potential complexity with what is included in the scope of 'organic' waste, for example, treated timber which is organic but contains toxic chemicals so is non-compostable.

There is another challenge associated with how this policy would be monitored and enforced – there will be difficulties in verifying compliance due to the mixed nature of C&D waste streams and the lack of standardised tracking systems for organic content in demolition materials – which could make the costs exceed the possible benefits.

Estimated cost: \$461m over 25 years

Government procurement waste minimisation plans

Waste minimisation plans as a requirement of Government procurement (particularly for infrastructure)

This option was identified to indirectly increase organic waste recovery by leveraging the commercial weight of government contracts. Waste minimisation plans were discounted as an option to proceed with for meeting EB2 targets as results may be relatively small with moderate costs from added compliance burden on providers. Further work is needed to make sure the process would be easy to implement, effective in reducing emissions, and not adversely impact processes that ensure quality, cost-effective services are being procured.

This option may still offer strategic value in signalling government leadership and by influencing market behaviour, particularly in sectors like construction, where organic waste can be significant.

Estimated cost: \$0.1m with work on new guidance completed in a year



Policy to support biogas production

This has been identified as an area for potential action, but further work is needed to determine what the policy would look like. The intention is to incentivise innovation relating to biogas and organic waste recovery, with the anticipated emissions abatement to be modelled if the option progresses.

This option could complement other measures by creating demand for diverted organic waste.

Estimated cost: \$1.4m with work on the data review, framework development and policy advice being completed over four years

Reduce methane generation from composting

Reduce methane generation from windrow composting, such as by introduction of standards describing best practice

While the initial option that was proposed focused on windrow composting, this has since been reframed as composting generally to go wide, such as by introducing standards describing best practice. This option aims to indirectly reduce methane and increase organic waste recovery, ensuring that all diversion options are maximising emissions abatement so MFE can more confidently fund composting applications to the Waste Minimisation Fund, but further work is needed in developing how this policy would be implemented.

This option could support the effectiveness of diversion measures by ensuring that composting processes do not themselves become unintended methane sources.

Estimated cost: \$1.4m with work on the data review, framework development and policy advice being completed over four years

Update waste composition data

This was identified as one of three options for improving the quality of organic waste data and reporting. Work to update waste composition data and methodologies will be helpful for monitoring and further policy setting (underpinning other options such as DEF updates and UEFs) but would not directly reduce emissions.

Estimated cost: \$4.5m over 25 years for ongoing work setting frameworks, gathering data, and publishing results

Improve our understanding of farm fills

Like updating waste composition data, improving our understanding of farm fills is an enabler for decision making and planning further policy responses to reduce emissions, but would not directly contribute to meeting the targeted reduction.

Estimated cost: \$1.4m with work on the data review, framework development and policy advice being completed over four years



Understand organic diversion infrastructure needs

Like updating waste composition data, improving our understanding of organic diversion infrastructure needs is an enabler for decision making and planning further policy responses to reduce emissions, but would not directly contribute to meeting the targeted reduction.

This option will be relevant if food waste and organic material diversion options are implemented in future, as it will help identify regional gaps and investment priorities for the relevant infrastructure.

Estimated cost: \$1m for external research over two years



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