

Domestic Waste Services

Value for Money (S17A) Review 2017

24 October 2017

Contents

Findings	2	Higher landfill levy?	23
Value for money	3	Test value of AC ownership	24
Key findings	4	Current state: funding	25
Recommendations	6	Current state: service delivery	26
Opportunity impacts and dependencies	8	Current service contract commitments	27
Summary of potential value	9	Allocation for value	29
Value enablers	10	Improving value for money	28
Current state	11	Key findings	30
Approach to this review	12	Options analysis	31
Methodology	13	Approach to options analysis	32
Services covered by this review	14	Value proposition #1	34
Some key facts	15	Value proposition #2	37
Value chain	16	Value proposition #3	41
Legislative framework	17	Value proposition #4	47
Practice from other places	18	Value proposition #5	46
Key value drivers	19	Value proposition #6	50
Value delivered	20	Value proposition #7	53
Realising further value	21	Opportunities through improved contracting	56
Current state: governance	22	Appendix	57

Domestic waste

Value for Money (S17A) Review 2017

FINDINGS

Value for money

This review delivers on the section 17A of the Local Government Act 2002 requirement, to:

“... review the cost-effectiveness of current arrangements for meeting the needs of communities within its district or region for good-quality local infrastructure, local public services, and performance of regulatory functions ...

... consider options for the governance, funding, and delivery of infrastructure, services, and regulatory functions...”

These reviews must be undertaken at least every six years.

The purpose of this internal strategic review is to identify strategic opportunities to improve value for money. The value propositions developed in this report provide an indication of the value that could be developed by undertaking certain actions. This report provides orders-of-magnitude estimates of value. The propositions do not explicitly include the costs of implementation. The propositions have been designed to inform council decisions whether to invest in more detailed investigation including business case development and consultation on options.

Reviewing cost-effectiveness highlights the need to look at both effectiveness, or the value, of local government services and their cost. Hence the term ‘value for money’.

The Office of the Auditor-General, in its 2008 Procurement guidance for public entities publication, defines value for money as:

“... using resources effectively, economically, and without waste, with due regard for the total costs and benefits of an arrangement, and its contribution to the outcomes the entity is trying to achieve. In addition, the principle of value for money when procuring goods or services does not necessarily mean selecting the lowest price but rather the best possible outcome for the total cost of ownership (or whole-of-life cost).”

We define value from the viewpoint of the customers of the services. Depending on the service, customers might be specific groups of individuals, households or businesses, or they might be the Auckland public in general.

When we consider value for money, we also look at the public policy reason for the council’s current role and whether that role will continue to be appropriate in the future, given changes in factors like technology, customer expectations, the environment, legal framework, etc.

Key findings

A summary of the review group's findings and recommendations to Auckland Council's Finance and Performance Committee are set out below for their consideration. Further detail is provided in the report.

- Our review found a range of positive indicators that value is being delivered by Auckland Council's domestic waste services. For example, Waste Solutions, the Auckland Council group responsible for waste services, has helped reduce domestic waste and increase its diversion from landfill. It has also made significant operational cost savings compared to what was planned prior to amalgamation. The team is well organised and has good processes. This was recognised with the 2016 Project Excellence Award.
- However, there are questions about the value for money of some planned initiatives, as they seek to reduce waste to landfill as an end in itself, without quantifying the environmental, health and cultural benefits to see if these justify the cost and showing the initiatives provide the biggest environmental, health and cultural bang for buck.
- Looking forward, the review team identified three main areas of opportunities to deliver value for money.

More emphasis on non-domestic waste

- Domestic waste to landfill is only 0.2m tonnes (14%) out of an estimated 1.6m tonnes to landfill per year. To make progress on the Auckland Plan's aspirational goal of "Zero Waste to landfill by 2040", the focus should shift to non-domestic waste, given that segment's size and expected growth.
- Based on current waste patterns and the diversion rates achieved internationally, non-domestic waste going to landfill could potentially be reduced by up to 60% or near 1m tonnes per year by 2027.
- For the achievement of such quantities to be realistic and acceptable, there must be cost-effective waste minimisation and diversion options. Most approaches to reduce, reuse, recycle, recover or treat waste will have a greater financial cost more one way or another. Such additional costs need to be justified, especially in terms of their value in reducing wider environmental, public health and nuisance impacts or addressing mana whenua values.
- The team will need to use a broader set of competencies to influence the waste disposal and diversion behaviours in the non-domestic sector, rather than relying on owning-operating or funding, which are used to control the domestic waste segment.

Greater economic discipline

- There is a need to clarify exactly what "zero waste to landfill" means. This will help avoid the risk that this goal is pursued as an end in itself and without sufficient regard to costs and benefits.
- More rigorous economic cost-benefit analysis and research capability is central to lifting value for money in waste services.

Key findings (cont.)

- Waste Solutions needs to be able to quantify the wider environmental, public health and other impacts of waste being disposed in landfill, understand Aucklanders' willingness to pay for waste minimisation initiatives, and use this data to rank different waste solutions on their cost-effectiveness.
- A modest investment in lifting economic discipline will put the council on a stronger footing when it evaluates, prioritises and justifies the costs of waste minimisation initiatives, particularly those projects that otherwise have low financial benefit cost ratios.
- This investment in evidence would also help clarify whether the council should advocate the case for lifting the landfill levy, as is being contemplated for inclusion in the 2017 Waste Management and Minimisation Plan.
- The issue here is that a higher landfill levy would impose a cost on Auckland households of roughly \$20-49m over the next 10 years. The business sector would also face higher costs in the broad order of \$115m-\$289m (that is a 4 to 11% increase).
- Such impacts could only be justified as value for money if it reflects the wider or 'external' costs of waste going to landfill, or if households say they prefer (and wish to pay for) waste minimisation and diversion as an end in and of itself. Otherwise it is an avoidable cost. Currently, evidence is lacking either way.
- The review team recommends the council require further evidence of net benefits before it proceeds with any further advocacy to convince central government to increase the landfill levy. The Waste Management and Minimisation Plan being developed provides a good opportunity to explain the trade-offs and test Aucklanders' appetite.

A more commercial approach to delivery and contracting of waste services

- The council should consider divesting from non-strategic waste management assets it owns, where these compete with the private market. Alternatively, their operation could be outsourced. The cash benefits are likely only modest, but it could result in better allocation of management risks to the operators, inject commercial discipline in their operations, and free up the council's management time.
- We found that, in the past, the council has not taken advantage of the contestable Waste Minimisation Fund, which is specifically set up to support new waste minimisation initiatives. More recently, Waste Solutions has sought funding for two significant projects it has in the pipeline. But we propose that all new waste initiatives should be required to seek co-funding from this fund, with a target of receiving \$30m from this source over the next 10 years. This could be for projects led by Waste Solutions or those led by business and community groups.
- There are also opportunities to improve the waste services contracting approach, which would reduce contract management costs, and could make them more effective.

Recommendations

It is recommended that council's chief executive undertake the following actions as soon as practicable:

Focus on the total waste stream

1. **Prepare a plan** of actions to advance the Zero Waste objective in the growing non-domestic waste segments and include it in the second Management and Minimisation Plan currently being developed for approval.

Strengthening business disciplines

2. **Review the strategic case** for the council owning and operating waste facilities/services, and prepare a business case which evaluates alternative options for achieving their domestic waste service and policy objectives, including selling non-strategic assets or using long-term lease arrangements, and report back on progress by March 2018.
3. **Immediately introduce a funding principle** that no new waste management or minimisation service or trial is approved without it having:
 - I. first sought significant co-funding support from the contestable Government's Waste Minimisation Fund
 - II. a business case that shows benefits exceed costs by a predetermined margin.

Consider the value of continuing the current community grants for waste initiatives, based on an evaluation of the impacts of grants, given the size of grants and compared to the administration costs

Develop information and guidance, and protocols for advisory support to community organisations and businesses to help them apply to the contestable Government 's Waste Minimisation Fund.

Site waste management plans

4. **Develop, in collaboration with relevant business groups**, simple easy-to-use site waste management plans to support businesses to cost-effectively minimise their waste that goes to landfill, and report back on progress by March 2018.

Recommendations (cont.)

Lift economic discipline

5. **Within the next 12 months:**
 - a. **Develop, and then maintain, an economic evidence base** that quantifies the wider environmental and other damages caused by landfill and whether these costs are already captured in market prices or covered by regulatory requirements, for use in business cases
 - b. **Do market research** to test with households and businesses on what they would be willing to pay or do to achieve additional reductions in waste going to landfill, for use in economic assessments
 - c. **Rank** all of the council's existing and planned waste minimisation and diversion services or initiatives by their cost-effectiveness, to guide implementation priorities and test value-for-money on an ongoing basis
 - d. **Require independent review** of material business cases, to be undertaken by experts with economic or commercial expertise, as part of building internal economic and business capability.

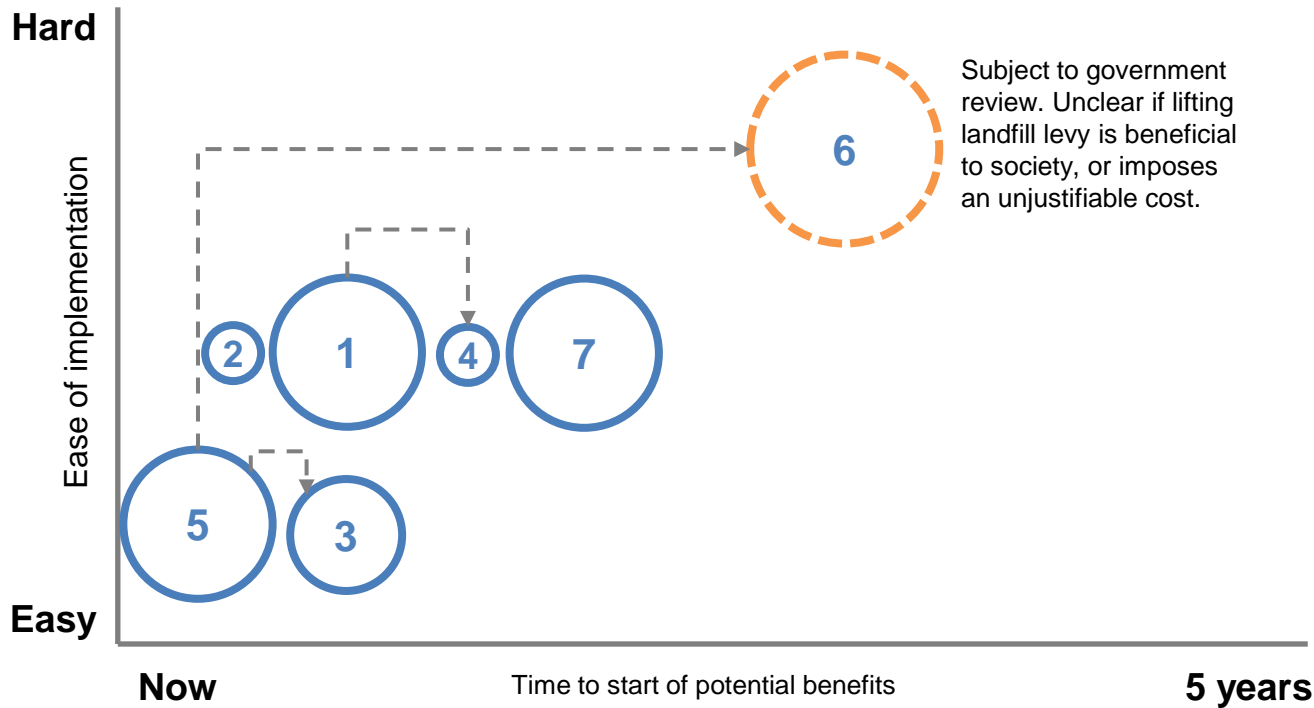
Get more evidence on whether to advance the case to lift the landfill levy

6. **Do further economic research** to ascertain if the introduction of a landfill levy would result in benefits that justify the increase in household and business costs of disposing waste in landfill, and once this research has been done, confirm the council's position on advocating or not for a higher landfill levy.

Consolidated outcome-driven contracts

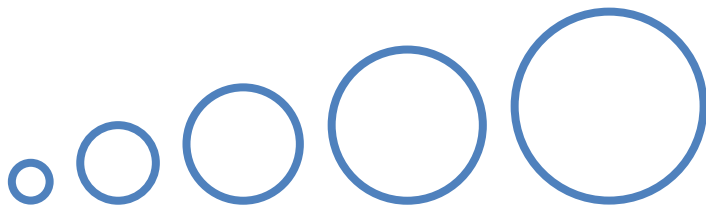
- 7 **Implement outcome-based contracting**, to give waste collectors incentives to also pursue ambitious waste minimisation and diversion targets, such as through enabling innovative retail and advisory services to households and businesses, and report back on progress by May 2019, noting that work is underway to consolidate, bundle, and standardise the waste collection contracts when they are due to be renewed from 2020.

Opportunity impacts and dependencies



Value propositions	
1	Focus on total waste stream
2	Commercial approach to delivery
3	Use Waste Management Fund
4	Site WMPs
5	Lift economic discipline
6	Get more evidence on whether to advance the case to lift the landfill levy
7	Consolidated outcome-driven contracts

Size reflects average score against our criteria, and quantified impacts, if any, as indicated



Summary of potential value

The table below highlights the midpoints of 'order-of-magnitude' estimates of financial impacts of the value propositions. They exclude estimates of how Auckland values the associated reduction in the volume of waste going to landfill (or other environmental, social, cultural or economic benefits), as such estimates require additional research outside the scope of this review. The table shows the impact of each initiative separately; some may overlap.

	Opportunity description	Ref #	Value or (cost) \$M Mid-point estimates over 10 years	Non financial impact	= Direct \$M Benefit delivered to Auckland via the council	+ Indirect \$M Benefit delivered to Auckland via others	Comment
GOVERNANCE	Focus on total waste stream	1	(209)	4.7m tonnes of waste diverted	(24)	(185)	<ul style="list-style-type: none"> Council loses WMF income from landfill levy when volumes drop Businesses face cost to divert waste
	Possible ways to achieve value proposition 1 and associated amount of additional diversion:						
	a. Lift landfill levy – requires more evidence on whether to advance the case	6			Potential increased revenue from WMF	(34) impact on households	<ul style="list-style-type: none"> Would increase cost to households May add costs on business on top of amount indicated under VP1 Increased levy income to the council could offset costs to Aucklanders
	b. Site Waste Management Plans	4					<ul style="list-style-type: none"> Cost to business captured in 1 above
FUNDING	Improve economic discipline	5	Unquantified but positive				
	Make most of Waste Minimisation Fund	3	25		12.5	12.5	<ul style="list-style-type: none"> Contribution from WMF for new initiatives may accrue via Council or others. Assume equal split
SERVICE DELIVERY	Commercial delivery approach	2	Potential small cashflow benefits				
	Consolidated outcome-driven contracting	7	30		30		
			(188)		18.5	(206.5)	

The table indicates:

- Direct financial impacts – actual costs or benefits (cost savings) to Auckland via the actions of the council and CCOs as a result of the initiative
- Indirect impacts – actual costs or benefits to Auckland that will occur through the actions of third parties

Estimates are indicative of the order-of-magnitude of the opportunity, drawing on assumptions from the literature and experiences in other places. The purpose is to establish the case for progressing options and associated business cases. In some cases the evidence is strong; in others the basis for assumptions is more speculative. The individual value propositions provide indicative ranges to illustrate the impact of uncertainty (e.g. +/- 50% of the central assumption).

Value enablers

While the project has identified a number of opportunities to improve cost-effectiveness over time, three 'enablers' stand out as being able to be adopted and reinforced immediately to lift value-for-money performance.

Enabler	Description
<p>Economic discipline</p>	<p>Waste Solutions displays good planning disciplines such as preparing business cases and benefit realisation plans. There has been investment in detailed economic cost benefit analysis for some proposals. However, the review team identified that economic frameworks are not applied consistently.</p> <p>The consistent application of economic cost benefit analysis in developing proposals will give decision-makers better information and reduce the chances of investments and decisions that cost customers or ratepayers money, but do not result in sufficient wider environmental, social, economic, or cultural benefits.</p>
<p>From doing to enabling</p>	<p>During its investigation, the review team found numerous historic and current instances in the 2012 Waste Management and Minimisation Plan and in discussions with the Waste Solutions team, of a clear preference for owning or funding waste infrastructure and services as a way to control the waste stream. This includes subsidising facilities by not charging market rentals for the land, or levying waste generators.</p> <p>The team should apply the council's insourcing/outsourcing framework to test whether its holdings remains consistent with the council's framework. Also the shift of focus to the far larger non-domestic waste segment will require a greater emphasis on other approaches to influence behaviours.</p>
<p>Contracting for value</p>	<p>The majority of costs are contracted to external providers and the Waste Solutions team has aligned existing contracts to end in 2020. The re-tendering of these contracts creates a number of opportunities to standardise contracts, bundle services (by type, geographically), simplify contract management, increase the length of contracts and create the appropriate commercial tension,</p> <p>Executed well this is a key enabler in the waste services delivering the right service for the right price and should result in reduced domestic waste costs (both contracted and council contract-management costs) while at the same time providing choice to Auckland on their service provider.</p>

Domestic waste

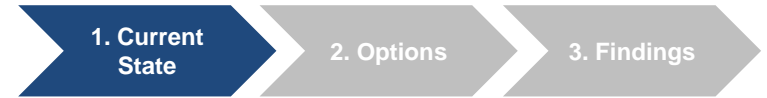
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CURRENT STATE

Approach to this review

We did this review of the current state around a clear methodology seeking to understand the current operating approach and framework. This report is a summary of the current state findings. We have assessed the current drivers of value, and the issues and the challenges in delivering the services to identify and document value delivered and any improvement opportunities.

We did this review in three parts:



As part of our evidence-based approach we draw on a range of sources:



What we did:

- Engaged with staff from the council's Waste Solutions team for information, expert reports, and their operational and strategic knowledge
- Reviewed waste management and minimisation plans, financial reports and selected literature
- Reviewed the national waste policy and legal settings and solid waste market assessments
- Drew on consultancy reports that reviewed performance and international practices
- Tested our emerging thinking with subject matter experts

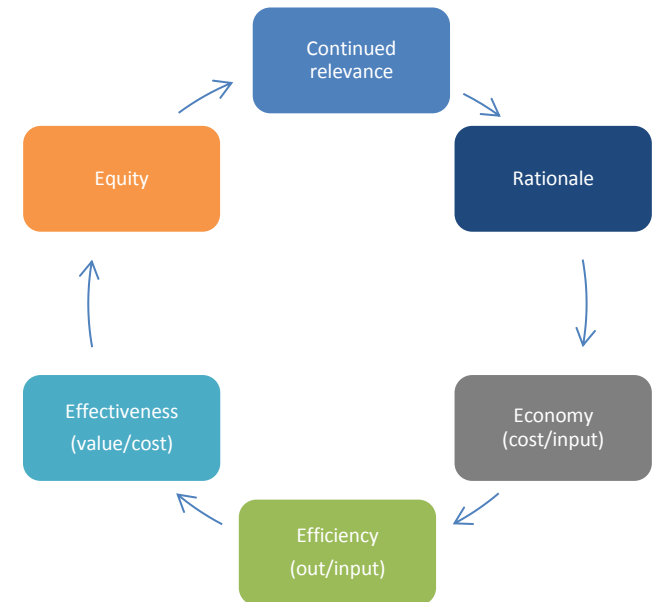
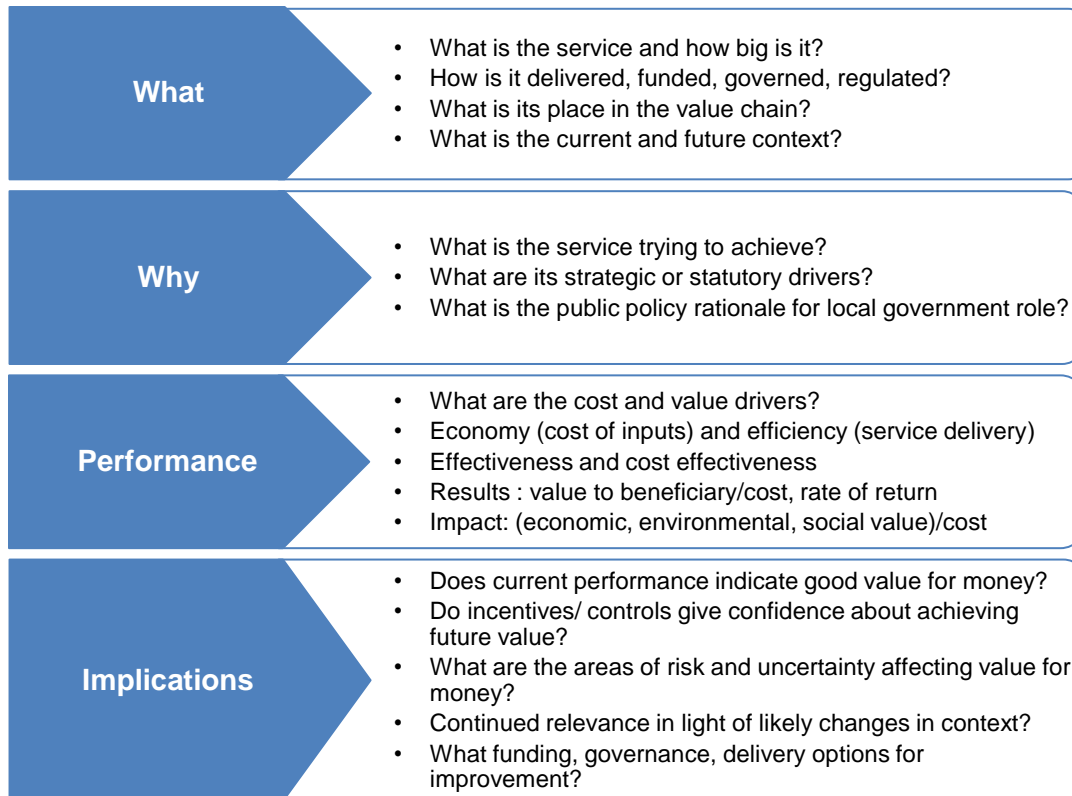
A four-week current state assessment effort has led us to identify a list of challenges, issues and opportunities for further testing during the second part of the review

Our methodology uses a fact-based approach

We applied our standard framework of questions to the review. The method involves testing current service arrangements, as well as asking if their rationale is still sound and fit for the future.

We then focused in on specific challenges, issues and opportunities that we found most relevant for service delivery in the future.

Questions



Services covered by this review

This assessment should be read in conjunction with the review's terms of reference.¹

The value for money review is a strategic assessment to identify value opportunities that justify further investment in detailed business case development.

The review of domestic waste services checks whether the approach to Auckland Council delivering domestic waste management services is cost-effective, and contributes toward the council's long-term goal of Zero Waste by 2040.

Auckland Council arranges, or provides, a range of domestic solid waste services throughout Auckland, including:

- collection, recovery, recycling, treatment and disposal services of domestic inorganic and organic matter through a mix of contracted services and private provision
- waste management and minimisation facilities (some of which are owned and operated by the council)
- activities such as education and public awareness raising (e.g. Zero Waste Zone learning centre for schools and community groups, Marae-based waste diversion projects – Te Pare Kore Ki Tāmaki, and information sources for businesses, and e-newsletters).

Services differ across Auckland's regions, even though progress has been made towards standardisation since amalgamation. Waste Solutions is the Auckland Council group responsible for arranging waste services.

Auckland Council has legislative requirements for waste: the Local Government Act defines solid waste as a core service. The Waste Minimisation Act 2008 requires territorial authorities to encourage effective and efficient waste management and minimisation. Auckland Council is not required to provide waste collection, sorting, processing or disposal services itself. Auckland Council has adopted a goal of Zero Waste to landfill by 2040.²

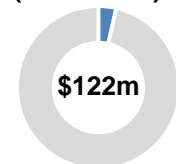
The terms of reference do not cover non-domestic waste (waste produced and managed by businesses and industry). That waste is addressed through other means and legislation (page 7). But it needs to be considered as part of assessing whether the focus of council's resources continues to be appropriate in light of the council's Zero Waste goal.

Comparison to total council spend 15/16:

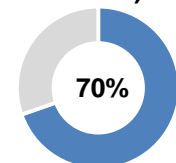
**Capital spend
15/16
(total \$1.3b)**



**Operating spend 15/16
(total \$3.5b)**



**Rates-funded
(\$5.43 per \$100
rates)**



Some key facts³

144kg
annual average
per capita refuse
(June 2017)

14%
domestic waste
as share of all
waste to landfill

\$121m
annual council
expenditure

95
permanent,
fixed term,
contracted
and temp staff

\$35m
non-rates
revenue

-30%
target reduction in
total waste per
capita to landfill
by 2027

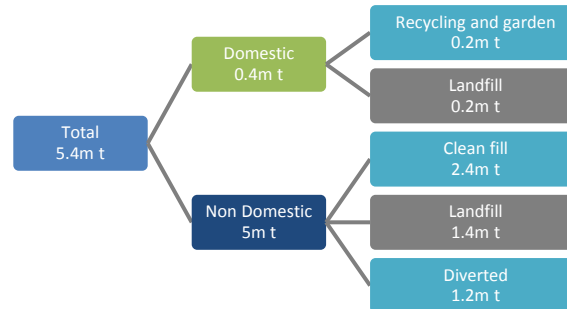
+31%
domestic
forecast rise in landfill
2015-40 without further action

+81%
non domestic
volumes

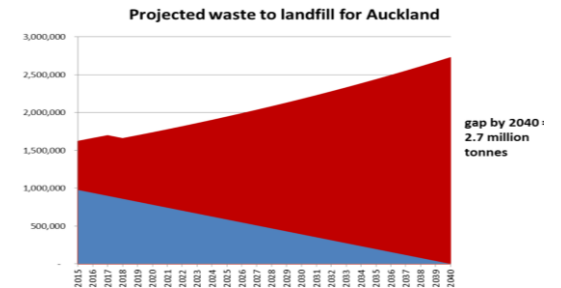
Auckland's domestic waste volumes compare well in the New Zealand context ...

City comparison	Kg pc pa	Year
Christchurch	110	2011
Auckland	144	2017
Tauranga	182	2013
Wellington	183	2010
Taupo	206	2014/15
Hastings District	212	2013
Rotorua	214	2012

... but because domestic waste is only a small part of total waste ...



... progress towards the Zero Waste goal is a significant challenge



The funding structure varies across Auckland, but is moving to greater consistency. Where the refuse service is rates-funded, there is no financial incentive to minimise waste, and small generators of waste subsidise large generators of waste.

2017/18	ACC	MCC	NSCC	WCC	RDC	FDC	PDC
Refuse	117.02	117.02					
Base charge (for recycling, inorganic, HGI Subsidy)	101.63	101.63	101.63	101.63	101.63	101.63	101.63
Total	218.65	218.65	101.63	101.63	101.63	101.63	101.63

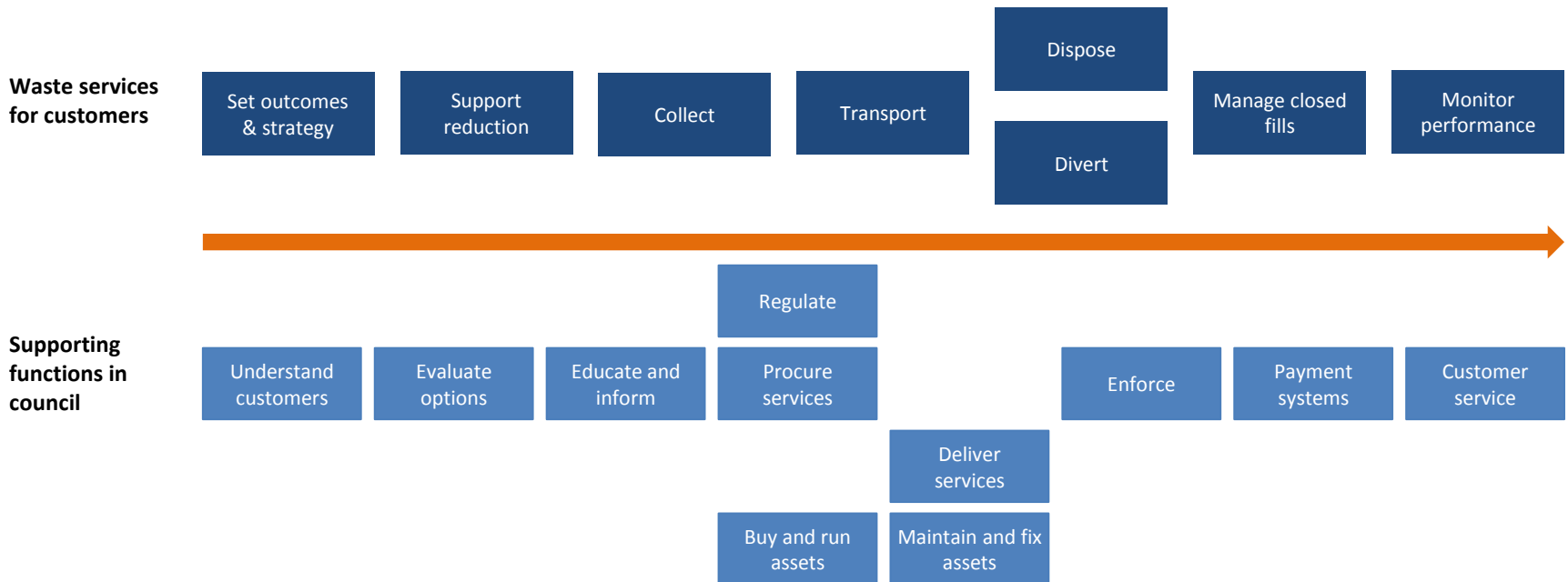
In Auckland, there is technically still scope to divert waste from landfill

SLR 2016	All waste	H/holds
Auckland	57%	36%
Austin	34%	40%
Adelaide		80%
Brisbane	56%	25%
San Francisco	80%	60%
Copenhagen*	98%	99%

Value chain

We examined the value chain to understand the interconnected parts that deliver outcomes for Auckland. We saw that the domestic waste service has a strong plan with implementation tactics, such as procurement plans and a portfolio of interventions that linked logically to the objective of effective and efficient waste services.

The service performance monitoring environment is data rich and the organisation has a good understanding of the environment it operates in.

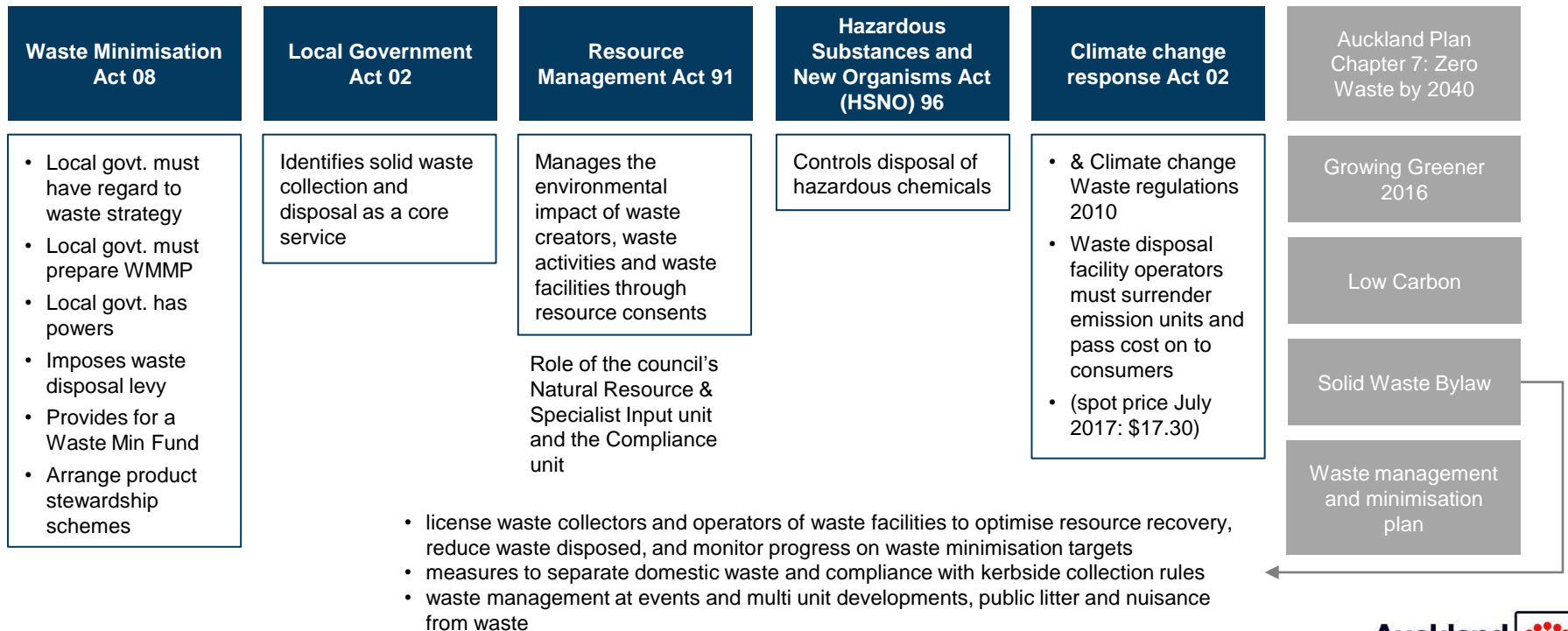


Legislative framework

A key policy reason for local government's role in domestic waste is to minimise the public nuisance and the risks to public health and the environment from domestic waste. Under the Waste Minimisation Act, the council must promote effective and efficient waste management and minimisation.

The council has choices on how its responsibilities are best executed.

NZ Waste Strategy 2010: to reduce harm from waste, and to improve efficiency of resource use



Examples of practice from other places⁴

Internationally, priorities for waste management are driven by local circumstances. However, priorities of high performing cities include:

- environmental – waste minimisation, efficient resource use, management of household organic waste
- socio-economic – opportunities for public involvement and engagement
- operational – developing infrastructure/processes to maximise resource recovery.

Diversion of waste from landfill is often driven by legislation that includes landfill levies, obligatory targets for resource recovery, and other policies. In those cities, landfill disposal costs are significantly higher than those in Auckland. Waste treatment facilities are often funded from a mix of levy, public and private funds and divert putrescible waste and refuse from landfill.

Cost considerations alone do not appear to have been given the highest priority by the high performing cities. Deliverability, risks and local transport impacts are other, lesser considerations.

Summary of leading practice internationally:

- Two stream recycling collection services to improve recyclables quantity, quality and yield e.g. separate food waste collection, separate glass collection.
- Controlling collection frequencies and receptacle sizes to drive behavior. Influences funding model choice e.g. more rates funding.
- Increased health and safety awareness – reduced use of refuse bags, review of facility design.
- Bylaw regulation that supports waste minimisation (e.g. licensing system)
- Offering customer choice e.g. bags or bins, organics opt-out.
- Social procurement developing momentum.

Councils' practices in service delivery and contract models for waste collections and facilities are changing:

- Traditionally own facilities and contract out operation, collection, haulage and disposal services.
- Increasing use of partnerships between council and other parties (councils or private sector) to develop landfills and other facilities.
- Some opting-out of owning, operating and funding services and facilities, leaving this to a regulated private sector e.g. Kapiti, Tauranga, Waitaki. Can be challenging, particularly in terms of service coverage.
- Moving from traditional, highly-specified contracts to collaborative, outcome-based models to leverage commercial expertise.

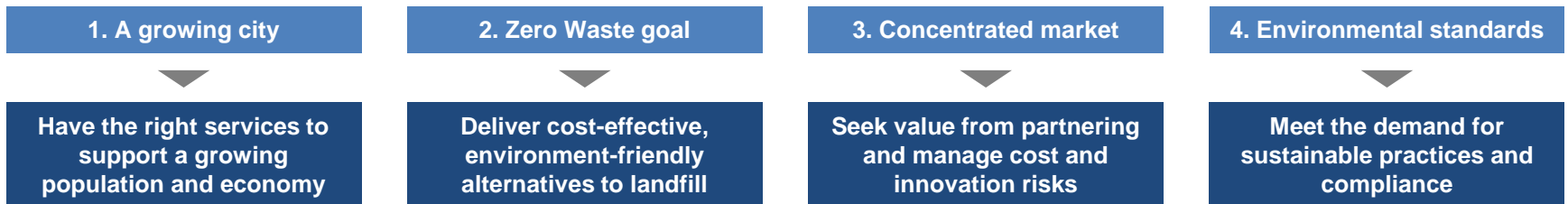
There is no single model of governance, funding, and delivery of waste collection and infrastructure assets in New Zealand:

- New Plymouth – private sector provides facilities under contract, council manages 'public good area' only. Contractor operates and manages facility and tolls council waste. Shared collection services for the region.
- Kapiti – council provides no services or infrastructure. Private sector delivers services under licensing system
- Waikato and Bay of Plenty Councils – collaborating on the development of standard solid waste bylaw and waste operator licencing conditions.
- Waimakariri – proposing customer choice of bins or bags for refuse; option to opt out of organics.
- Wellington, Dunedin, Christchurch – two stream recycling services. Wellington and Dunedin provide separate glass recycling. Christchurch offers organics collection.
- Timaru – private sector 'preferred partner' contract that includes three-bin collection service and 20-year materials recovery and composting system.
- WasteNet Southland – shared service agreement for three councils, governed by a joint committee. Collection services and transfer stations operated under one regional contract. Landfill owned and operated by private sector, with WasteNet charging local landfill levy.
- Private sector moving to vertically integrate their service offering, with increased focus on diversion and working with community sector.

Key value drivers

We identified four **key** cost and value drivers for domestic waste services, shown below. There are other drivers (e.g. technological change, and increased cultural diversity) that change how services are best provided, by making new services feasible or changing customer demand for how services are delivered. Value is further reinforced through recognising kaitiakitanga – in terms of guardianship of the environment with Maori as tangata whenua and kaitiaki.

We looked at eight key questions as part of our current state assessment of value.



Questions

1. What are the trends in costs and service levels of domestic waste services and compared to those in other cities?

2. What have been the gains from amalgamating the waste services, and from efficiency initiatives since?

3. What progress has been made on the Zero Waste target and are we on track?

4. What business case and procurement processes are used to drive value in investment choices and procurement?

5. How do we measure the (cost-)effectiveness of waste management and minimisation, compared to landfill disposal (and its operational and environmental costs)?

6. Who is best to own and operate waste management and minimisation services in future?

7. How does the waste management and minimisation plan influence council's other regulatory functions and services?

8. What is the trend in customer satisfaction as an indicator of value provided?

We found significant value has been delivered

Over the past four years per capita domestic waste to landfill has fallen, and services are being aligned across Auckland and expanded. Customer satisfaction is up and at targeted levels. The cost of kerbside collection is comparable to private alternatives (based on \$ per litre of bag or bin capacity), and compares well to other local authorities.

There is a clear strategy to align services with rates funding for recycling and inorganic waste collection, and user pays for refuse. The council is aiming to keep its cost of waste services below \$260 per household per year. However, operating cost per household has been rising.

- Operating cost savings of \$165m (29%) from 2012 to 2016, when comparing actual to what was planned prior to amalgamation.⁵
- Household waste has decreased 10% since 2012 to 144kg per household, and rates of diversion have increased. This compares favourably with other NZ cities.
- New waste diversion initiatives are evaluated using recognised business case processes, but there are opportunities to strengthen the economic evaluation of the **value** of diversion to Aucklanders.
- Procurement processes are good, and there is a procurement plan that is logically aligned to the waste management plan.
- The council's total operating cost of waste and per household has been rising as services are expanded and aligned. The waste-related rates funding increased by 6% per household over the period 2012-2017, less than the average 15% increase in the general rates.
- The cost of refuse service funded by the council is comparable to private sector alternatives, and less expensive for residents than some of private sector offerings (on a \$ per litre capacity basis).⁶
- Due to the delay in implementing urban food waste and user pays charging, the 110kg kerbside collection target has been deferred from 2018 to 2020.
- The Waste Solutions team was recognised for the delivery of the inorganic waste project with the Project Excellence Award in 2016.
- Waste Solutions is proactively engaging with mana whenua and mataawaka in developing the next waste minimisation plan. Supported on their political advisory group by a member of the Independent Maori Statutory Board. They support marae and whanau and communities in achieving a Zero Waste outcome.
- Waste Solutions is assuming a leadership role in advocacy to central government around waste solutions.
- Despite the gains, **total** waste per capita is rising, reflecting the impact of economic activity as a driver of (non domestic) waste to landfill. Total tonnes per capita grew from 0.8 in 2010 to 1.0 in 2017, or +25%.
- We cannot draw definitive conclusions about the cost-effectiveness of the waste diversion services. These are justified by how much waste they are expected to divert. But, to establish value for money, we need to understand whether the extra financial costs are justified by the value of social, environmental, and health impacts.
- The limits to minimising waste to landfill need to be acknowledged. Landfill is one of the lowest cost options compared to waste reduction and diversion (e.g. recycling, incineration, biological treatments such as composting, recovery and reuse of materials). This is even after allowing for environmental impacts, given the requirements on modern fills.
- In parts of Auckland where refuse is still rates-funded, there is no financial incentive to reduce waste, and those who generate only little waste are disadvantaged. Planned changes should address this.

Challenges and issues in realising further value

We identified eight issues and matching challenges to achieving value for money in delivering domestic waste services.

Challenges

Issues

Council domestic waste activity can only influence a small part of the aspirational Zero Waste outcome.

Council has not used all the policy levers available to it to influence the waste market to achieve Zero Waste.

Council is involved in providing services where there is a working market.

Zero Waste is a clear outcome, but it is unclear what investment is acceptable to achieve it.

There is a clear plan for domestic waste service delivery but are the services at an efficient price point?

The domestic waste service development lifecycle (from concept to delivery) is slow e.g. food waste collection and service standardisation.

We don't have all the measures to monitor service effectiveness.

Operating costs per tonne of total domestic waste arising has been rising by 4% per year.

Making a strategic and operational shift in the Zero Waste plan to increase council influence in the commercial and industrial waste service segments.

Managing cost, quality, and innovation risks that exist when just few large providers dominate service delivery.

Understanding the value the community places on the benefits of working toward the Zero Waste aspiration.

Finding cost-effective ways to make alternative waste solutions more attractive than landfill disposal.

Bringing the community along to accept and adopt solutions that impose costs on households or require them to change behaviour for the greater good.

Understanding the environmental and social cost of waste and finding ways to measure the effectiveness of services.

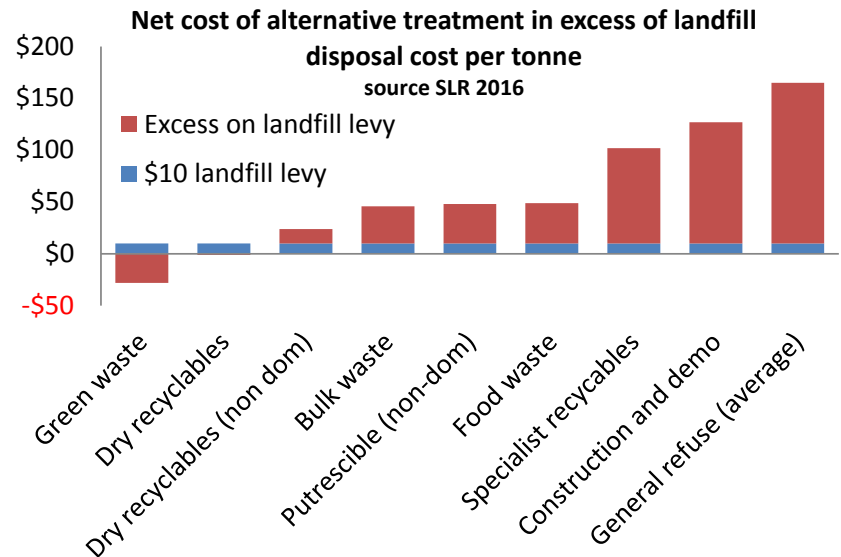
Ensuring that expansion of services is justified by the economic and environmental benefits to households.

Current state: governance

There is a clear strategy and accountability. The focus to date has been on aligning domestic waste services across Auckland, and developing domestic waste diversion services. But the focus needs to shift to cover non-domestic waste.

It would also be helpful to have a quantified measure of the wider environmental costs that can be avoided through diversion, when making the business case for new initiatives.

- Waste Solutions is aware of the need to expand its focus to now include non-domestic waste in its next Waste Plan. The council can use a range of tools (e.g. powers in the Solid Waste Bylaw, and resource consenting) to manage diversion in the total waste stream. The value opportunity is to align the work of its team and other units that administer these tools with the Zero Waste goal.
- There is a significant investment and effort in gathering data on the sector. This is a great foundation. What is currently missing is a quantified measure of the environmental, social and human health cost of waste that is disposed to landfill. Without this, it is difficult to evaluate the ongoing value of waste management and reduction initiatives. This information is an important part of the planning toolkit, because most future initiatives that would reduce waste will cost more than landfill disposal (whether paid for from rates or out-of-pocket). See chart.



A higher landfill levy will help the move to Zero Waste, but change will take time and there are unresolved questions

A review of international best practices commissioned by Auckland Council finds that a central government-imposed landfill levy has been the most powerful economic lever internationally to achieve the diversion of waste from landfill.⁷

The council should not wait for government to change the levy as that process will take time, and has an uncertain outcome. Instead, it should use its own resources and regulatory powers (e.g. standards setting) to advance diversion in the domestic and non-domestic waste stream.

The review of international best practice indicated the following minimum landfill levy rates (currently \$10) are required to raise landfill costs, to make waste diversion services financially competitive:

- \$50 per tonne to achieve diversion of organic waste from landfill
- \$125 per tonne to achieve diversion of refuse from landfill.

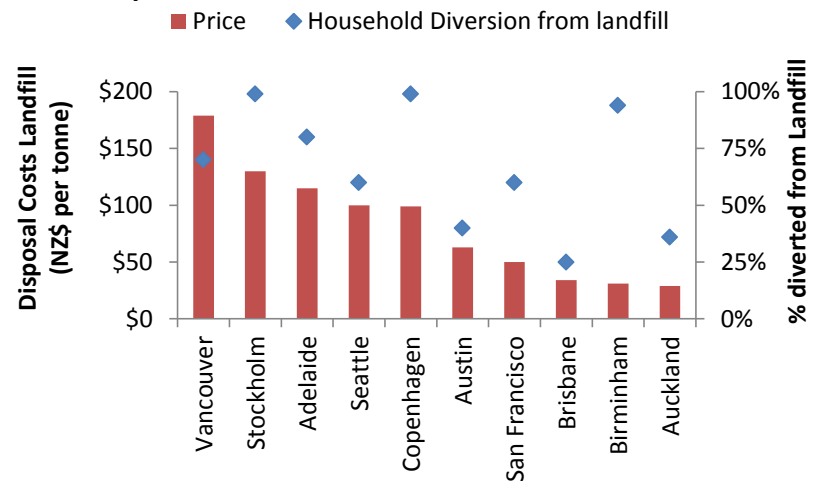
It also showed that the impact of increasing the levy depends on a range of other policies and services being in place to support change. In other words, it may not be the levy that caused the reduction in waste to landfill.

A higher levy would increase financial costs to households and businesses if they do not reduce waste. They could reduce waste but that also represents a cost, and possibly the wider community if illicit dumping of waste increases.

The draft Waste Assessment proposes advocacy to lift the levy.

The value for money question is whether the benefits of reduced waste to landfill in terms of the associated environmental, health and social impacts would outweigh these extra costs. Past work by Covec raises questions about this, and the Australian Productivity Commission in a review of the waste sector supports the use of other tools, questioning the economic efficiency of landfill levies.⁸

Disposal Cost to Landfill vs Household diversion



The chart suggests that the higher the cost of landfill disposal, the greater the proportion of waste that is diverted from landfill.

The highest diversion cities use incineration. Incineration relies on waste as fuel, which is inconsistent with NZ's Waste Minimisation Strategy and the government's target that 90% of power generation comes from renewable sources

There is an opportunity to test the value of the council continuing to own and operate waste infrastructure

Council contracts refuse, recycling and inorganic collection.

The Council also owns and operates transfer, recycling, and resource recovery stations, alongside private providers. The rationale for Council involvement, and how it is involved, should be reviewed to ensure it is the best solution for ratepayers.

As part of the 2012 Waste Management and Minimisation Plan, the preferred approach was for the council to own and operate some waste management facilities.

Auckland Council should evaluate if it needs to be involved in a market where it competes with the private sector. There may be an opportunity to free up funds and management time and risk by selling these facilities, and to rely on procurement and other techniques to let the market deliver these services and drive value.

We also found that \$25m or 21% of the operating cost relates to corporate overheads, on top of the \$8.7m (7%) business overheads.

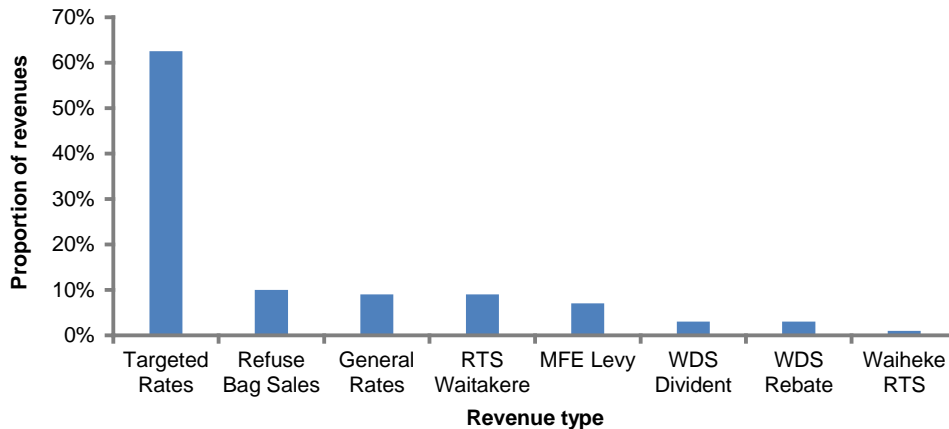
Understanding these overhead costs, their appropriateness, and their allocation is outside the scope of this review. Instead, the components of these corporate costs will be reviewed separately, as part of the value for money reviews programme.

	Council	Private	Notes - from Waste Assessment ⁹
Transfer stations	2	11	Waste Management and EnviroNZ control the operation of 7 of the 11 privately owned transfer stations.
Community recycling centres	3	0	Waiuku, Helensville, Devonport
Recycling depot	1		Whangaparāoa
Diverted materials facilities	0	22	It is estimated that these private facilities collectively divert in excess of a million tonnes of waste from landfill each year
Materials recovery facility	1	4	VISY processes largest volume of household recyclables
Consented clean + managed fills	0	100	Approx 2.4 MT of material disposed p.a. (1.3m cleanfill & 1m managed)
Food waste treatment facility	0	7	Private sector currently diverts an estimated 140,000 tonnes of organic waste annually
Food waste processing facility	0	8	
Landfills	1 plus JV share	4	1.6 million tonnes pa

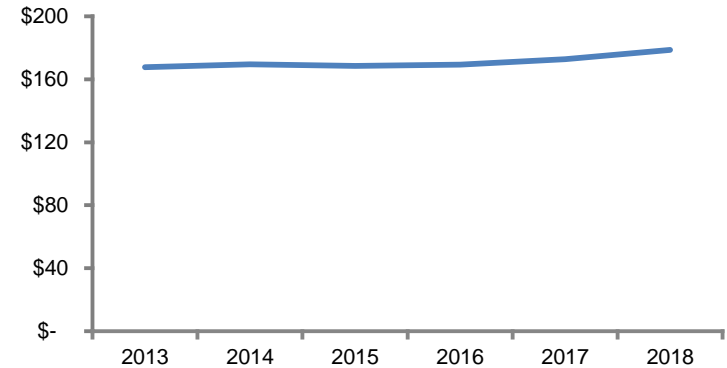
Current state: funding

The funding structure of the domestic waste services is almost aligned across Auckland's regions. Refuse services will expand user pays across the whole of Auckland by 2020. The targeted rate for recycling and inorganic collection will remain. The alignment of funding sources (including user pays) and reducing domestic waste volumes have contributed to the growth in the rate-funded component to be smaller than the overall rates increase over the past five years.

Targeted rates still the main source of revenue for domestic waste services, including for refuse (16/17)



Rates funding for domestics waste services per household



A question for the next part our review is to explore whether there is an opportunity to speed up alignment of user pays for refuse and the implementation of food waste services, while managing affordability, especially in south Auckland and other less affluent areas.

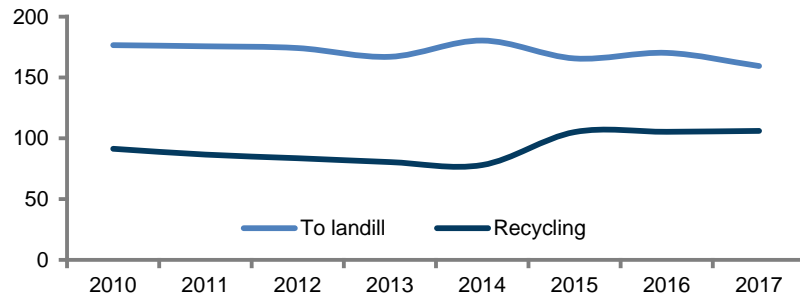
The pros and cons of user pays for other rate-funded services where there is or could be private provision should be also explored.

Current state: service delivery

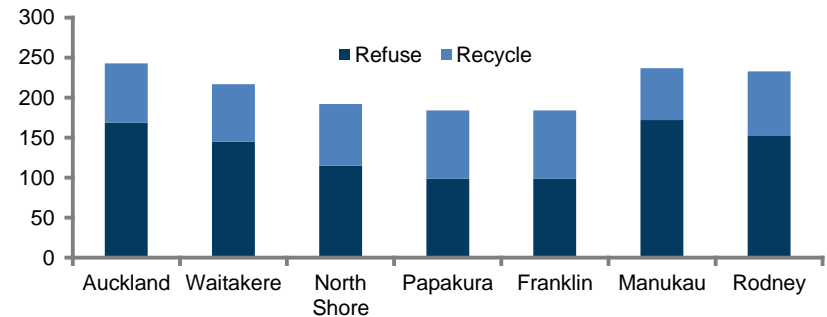
Domestic waste per Auckland household (and per person) is reducing as intended, but achievement of goals will depend on the implementation of food waste collection and user pays across the region. These are currently being progressed. Customer satisfaction has improved reflecting service changes that were well received by customers.

There is variation in the volume of refuse per capita across Auckland. These differences are correlated with whether or not the local area has a user-pay refuse service.

Kilos per person per year



Household refuse and recycling per capita – 2015/2016



Council	Refuse	Recycling	Organic or green waste	Funded
Christchurch City Council	●	●	●	Rates + User Pays
Dunedin City Council	●	●	●	Rates + User Pays + Targeted Rates
Tauranga City Council	●	●	●	User-pays
Auckland Council	●	●	●	Rates + User Pays + Targeted Rates
Wellington City Council	●	●	●	Rates + User Pays

The range of waste solutions provided in Auckland are largely consistent with other NZ cities.

Current service contract commitments

There is a plan to align procurement of the different domestic waste services. This is part of the actions in the Waste Management and Minimisation Plan endorsed by the Environment and Community Committee in May 2017.

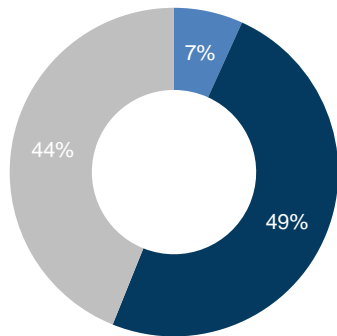
The speed and logistics of this change process is linked to contract terms, with a major opportunity targeted in 2020. At this point there may also be an opportunity to consolidate services, and try different contracting models, to lower costs, improve quality, and promote innovation.

Services provided	Contract term
Domestic kerbside recycling	For North West: 2016 - 2023 (Extns 2+1) For Central East & South: 2017 - 2024 (Extns 2+1)
Domestic refuse collections	For North West 2005 - 2018, requesting extension to 2021. For Central East & South : 2013 - 2020
Inorganic collections	Region wide : 2015- 2019 (Extns 1)
Materials Recycling Facility	Expiry 2024
Refuse disposal contracts	Expiry 2025

Are council resources allocated to generate the greatest value?

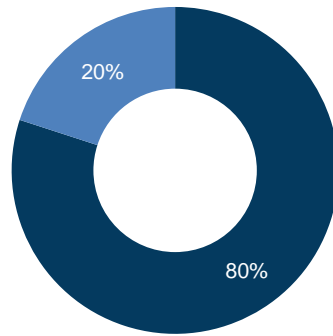
- Following a comprehensive restructure in 2015 to align resources to the current Waste Plan, most of the Waste Solutions team are focused on domestic waste.
- Domestic waste accounts for 14% of the total Auckland waste volumes, and non-domestic waste to landfill is forecast to grow at nearly twice the rate of domestic waste.
- The value for money question is whether in future these resources can add more value if it were become more focused on the total waste stream.

**Current waste composition
(5.4 million tonnes 2016)**



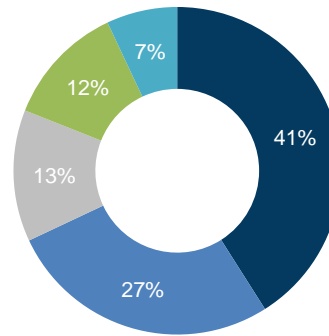
- Domestic
- Non Domestic
- Clean Managed Fill

**Estimated allocation of
Waste team to waste segments**



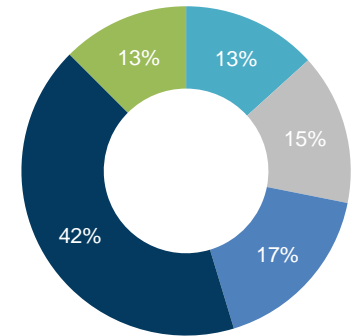
- Domestic
- Non domestic

**Expenditure in 2017
\$121m**



- Refuse Service
- Recycling Service
- Inorganic Service
- Litter & Streetscape Service
- Other

**Waste team allocation by
functions**



- Waste Contracts & Compliance
- Waste Enterprise & Refuse
- Resource recovery
- Customer Enhancement
- Waste Planning & WMMP

Opportunities to improve value for money

This current state assessment has identified potential value improvement opportunities.

The next part of the report will assess the potential value, risks, implementation, and the timing and sequencing of the opportunities.

#		Opportunity
1	Governance	Concentrate the next Waste Management and Minimisation Plan on the total waste stream. Mana whenua should be actively involved in developing plan.
2	Delivery	Strengthen the range of public policy tactics used by the council, such as greater use of all tools in the Solid Waste Bylaw and using the resource and building consenting processes more effectively, to minimise waste and grow the volume of waste diverted.
3	Delivery	Explore the value of re-balancing of domestic waste service resources toward the larger and growing non-domestic waste stream to achieve waste objectives.
4	Delivery	Evaluate greater commercialisation of waste management and minimisation services and outsourced delivery models, and other operating models, to reallocate risk and to use private sector initiative and capital to drive value.
5	Governance	Improve the council's understanding of the quantified value of the wider environmental (and social, economic and cultural) pay-off from avoiding landfill disposal, to then use in planning and evaluation of waste services.
6	Delivery	Advance the case for central government to adjust the landfill levy to increase the cost of disposal and encourage diversion, subject to work to understand the value to ratepayers in terms of wider environmental, health, social and economic impact.
7	Delivery	Review standard resource and building consent conditions with a view to strengthening requirements that consent holders have a waste management and minimisation plan that is consistent with the Zero Waste goal.
8	Governance	Rigorously test the public's and business appetite for further options to divert waste (domestic and non domestic), given the increasing cost profile.
9	Funding	Explore further opportunities to use MFE's contestable Waste Minimisation Fund to fund waste minimisation services and encourage private sector support.
10	Funding	Progress the opportunities presented when the current collection contracts expire in 2020. There is a plan to align contracts to city areas, and that point there is an opportunity to contract for consolidated, outcome-focused services.

Note, an improvement opportunity can impact more than one of the S17A review categories of governance, funding and service delivery.

Key findings

- The domestic waste services are informed by a clear strategy. The implementation plan and operations are well-aligned. Procurement processes and competition among providers give confidence about economy in waste collection.
- There is evidence of implementation of the Auckland Plan's Maori Responsiveness Framework through recognition of kaitiakitanga and positive initiatives such as Te Pare Kore Ki Tamaki (zero-waste Marae)
- Customer satisfaction with the service has risen, and progress has been made toward the Zero Waste goal.

However, there are several areas where value-for-money could be improved.

Ensure all the social costs and benefits are included when justifying investments

Operating costs are increasing as waste diversion services expand. These services may be effective, but the value to Aucklanders (and thus efficiency) of increasing diversion has not necessarily been established. Further work should be considered to establish the wider environmental social, economic and cultural cost (or externalities) of landfill. For example, work by Covec for the Ministry for Environment in 2012 suggested the 'externality' may be in the \$1-\$19 range.

Review of resource allocation

The current focus of waste solutions is on domestic waste, while the size and growth in non-domestic waste is many times larger. Attention needs to shift there, and it will require the ability to use a broader set of policy and commercial tools. The group has already made some moves in this direction, and this needs to be supported.

Evaluate the "own & operate" model for facilities

The council operates as a competitor of other waste service providers in Auckland, including as owner-operator of waste transfer and diversion facilities. The need and value of involvement should be revisited, and compared to the cost and impact of other ways to 'manage' the market to achieve cost-effective outcomes for rate-payers.

Domestic waste

Value for Money (S17A) Review 2017

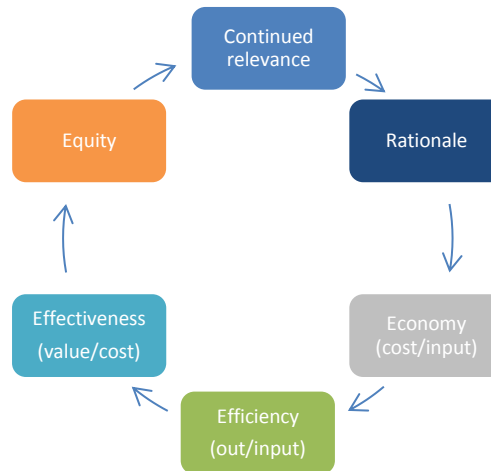
OPTIONS ANALYSIS

Approach to options analysis

In the **current state** report we identified a number of improvement opportunities for waste.

In this second part, we have analysed these opportunities to understand the value that would be delivered by acting on these key improvement opportunities, and provide orders-of-magnitude estimates.

In this second part of the report we evaluate the ongoing relevance of governance, funding and service delivery arrangements and alternative options.



Our critical success factors draw on the Better Business Case framework

Strategic fit (strategic case)

Does the option progress the outcomes the council is pursuing, and fit with the council's role?

Value for money (economic case)

Do benefits to Aucklanders exceed costs?
Does the option provide:

- clear accountability
- transparency
- compatible incentives
- risk allocation to where best managed
- proportional admin and compliance costs

Equity (social case)

Does the option promote a strong inclusive and equitable society, and share costs appropriately?

Feasibility (commercial case)

Can the option be commercially viable?

Affordability (financial case)

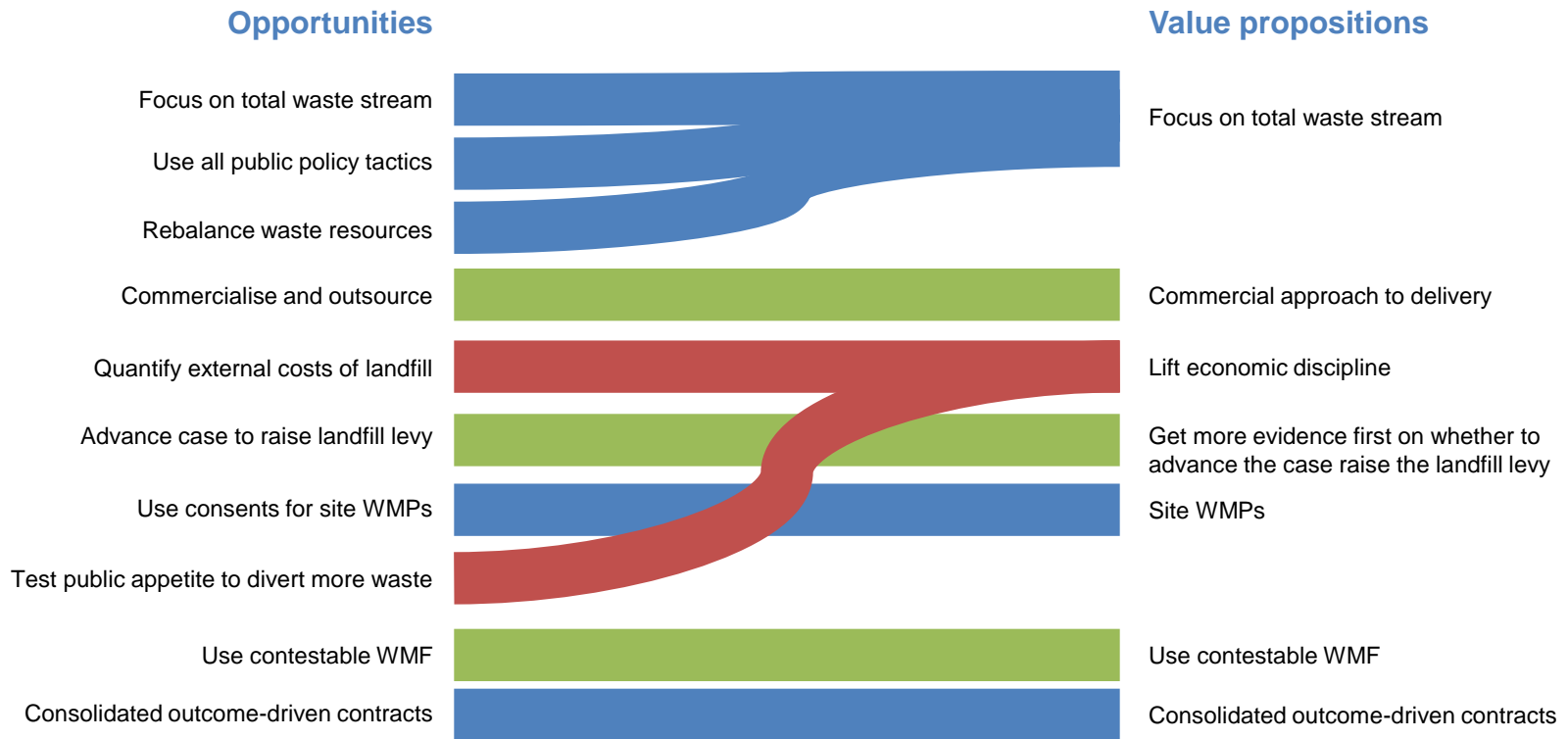
Do options fit Auckland Council's financial objectives and constraints?

Competency (management case)

Has the council the competencies to execute?

In the current state report we identified 10 improvement opportunities. As we were assessing those, we combined some of them to arrive at seven focused value propositions.

We combined opportunities where they were clearly closely related, so that combined assessment was the most appropriate approach.



Value proposition #1: focus on the total waste stream

IF

... to achieve the Auckland Plan's goal of Zero Waste to landfill by 2040, we re-focused the next Waste Management and Minimisation Plan from domestic waste only (0.2m tonnes to landfill) to also address the bigger and faster growing non-domestic waste going to landfill (currently 1.4m tonnes), where this is cost-effective to do so ...

BY

- The council including in its new Waste Management and Minimisation Plan (being completed by June 2018) a detailed council action plan for the non-domestic waste segments
- Waste Solutions re-balancing its resources from managing domestic waste toward non-domestic waste; for example on completion of domestic waste projects such as refuse bin roll-out, food waste roll-out, and collection contract alignment all by 2020
- Waste Solutions ranking all services that its teams are delivering by their impact and cost-per-tonne-diverted, so that activities with the lowest return can be stopped in favour of waste diversion initiatives with higher returns
- Council using a broader range of public policy tactics (other than owning/operating or funding) to change or manage household and business waste habits, such as education and information, incentives, consenting, and regulation

THEN we will achieve:

- The re-allocation of 20% (\$1.5m) of Waste Solutions resources to focus on non-domestic waste to landfill by 2021
- Additional reductions of over 1m tonnes per year by 2028 in line with the Zero Waste target and international achievements, if diversion tactics are justified by the benefits relative to the costs
- Confidence, through a transparent ranking process, that resources are prioritised to waste reduction initiatives with the greatest impact per dollar invested

Net estimate	Council -\$24m (PV -\$17m) Business -\$185m (PV -\$129m)
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Ease of implementation	Moderate
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Timing	1+ years
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Overall rating	Must do
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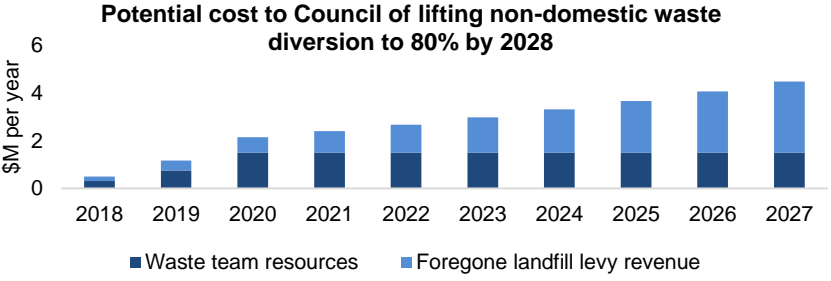
Focusing on the larger and faster-growing commercial waste stream will help move the Council towards achieving its aspirational Zero Waste objective.

Assessment	
Criteria	Comment
Strategic fit	Aligns with the council's Zero Waste aspirational goal and focuses team on largest waste stream.
Value for money	Focuses on policy objective.
Equity	Funding will need to shift from targeted rate to general rate as team focus shifts to commercial waste activity.
Feasibility	Different focus and approach than currently adopted by long lead time to build capability.
Affordability	Neutral. Alternative is to achieve cost saving from domestic waste team.
Competency	Different skill sets may be required than currently exist in waste solutions team but should be able to be sourced.

Results

Summary of financial costs and benefits

- Gradual reallocation of 20% of Waste Solution's current resources to focus on non-domestic waste
- Gradual achievement of up to an additional 1m tonnes diverted from landfills per year by 2028, or up to 4.8 million tonnes over 10 years.
- Associated benefits are offset by:
 - cost of council resources (\$1.5m per annum)
 - loss of landfill levy 'refund' from government at \$5 per tonne (midpoint \$24m over 10 years)
 - unknown extra cost to council of any initiatives
 - changes in costs incurred by businesses to minimise or divert waste needs further research but might indicatively range between \$66-404m (midpoint 185m, +22%, PV\$129) over 10 years



Note: timing refers to time to start of implementation and potential benefits

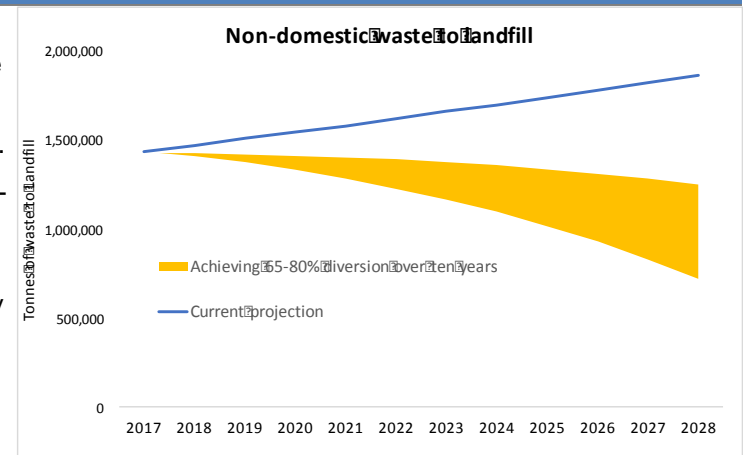


Key risks and constraints

- Risk of talent loss through change process and current staff not having the necessary experience.
- Risk to customer satisfaction ratings, if re-focussing of staff negatively affects contractor performance and service levels.
- Risk that unfocused activity may not adequately influence the commercial waste stream.
- Unknown at this point if or how costs can be recovered, or whether environmental or other gains from diversion are worth the additional costs.
- Risk that cost to minimise or divert additional non-domestic waste exceeds cost of disposal in landfill.
- Waste diversion may be a low priority for business, compared to project delivery, and capacity constraints may hinder participation.

Key assumptions

- Reallocate 20% (\$1.5m) of waste solution's current resources to focus on the non-domestic waste stream by 2020. Alternatively, the council may look to save this cost or re-deploy resources to other activities.
- Focus moves to commercial waste stream without affecting household services.
- Assume current diversion of 48% of non-domestic waste rises by between 65%-80% by 2028, so diverted tonnes rises from 1.3m tonnes now to up to 2.9m in 2028 (feasibility of 80% in NZ context and timeframe needs validation).
- Assume 60% of non-domestic waste goes to landfills that are subject to the levy (based on total landfill levies received by Crown).¹⁰
- A tonne of landfill diverted reduces landfill levy receipts from Crown by \$5.
- Assume most businesses already divert their waste from 'dirty' landfill where this is economic to do so. Assume that, with education and support, maybe 10-20% of additional diversion can be done at no additional cost.
- Assume additional diversion increases costs by \$50-\$100+/tonne over and above landfill disposal cost (SLR 2016). These data need validation.
- 10 year cost range of \$66-404m, with a central scenario of \$185m.



Value proposition #2: commercial approach to delivery

IF

... we stop owning and operating waste facilities, and potentially the funding of waste services, in areas where there is private provision and a contestable market, without risking cost-effective delivery of waste services and waste minimisation outcomes...

BY

- Reviewing and challenging in detail the strategic case for the council's involvement in owning and operating domestic waste services and the underlying assets e.g. transfer station
- Subject to business case justification, Auckland Council subsequently selling assets (or using long term lease arrangements) where it does not need to own the asset to achieve service or policy objectives, but can use other approaches, such as information, contracts, or regulation
- Waste Solutions implementing other public policy tactics, including information, incentives, consent conditions, and regulation and enforcement, to deliver the waste outcomes provided by these services

THEN we will achieve:

- The release of capital and operating spending requirements (quantum to be determined)
- Reduction in costs and improvements in service over time, as council-owned and operated waste services are exposed to commercial incentives and expertise
- Reduced council exposure to management and ownership risks, allowing it to focus on promoting policy outcomes

How it works The majority of waste infrastructure is owned by the private sector. Auckland Council owns some waste facilities, which include legacy issues. Refuse and recycling bins are also owned by the council. The Auckland waste market is dominated by two large vertically integrated operators – Waste Management and EnviroNZ – who own and operate collection services, transfer stations, and landfill sites. The council's role in owning and operating facilities was considered as part of the 2012 Waste Management and Minimisation Plan.

Net estimate	Positive cash flow impact likely. More detailed work required
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Ease of implementation	Moderate
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Timing	12+ months
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Overall rating	Could do
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Opportunities exist to take a more commercial approach and for the council to assess what assets and services it should own/provide and which are best left to the commercial market. More analysis is required to quantify this opportunity and to understand the risks of changing the current approach.

Assessment	
Criteria	Comment
Strategic fit	All council-owned infrastructure should be assessed against the council's insource/outsource principles.
Value for money	<ul style="list-style-type: none"> Unable to assess at this stage. Modelling of opportunities should be completed to assess impact on cash flow.
Equity	Improvements in value will benefit all ratepayers.
Feasibility	No commercial barriers to constructing a deal. Requires valuation.
Affordability	Unable to assess at this stage.
Competency	Council CCO Panuku Development Auckland with appropriate external support has the expertise to realise the benefit.

Results
Summary of financial costs and benefits
<ul style="list-style-type: none"> Council currently owns domestic rubbish bins. These could be sold to collection contractors who are then responsible for them. At \$100 per household, the council has \$50m invested in bins which require administration. This impost could be transferred to contractors to manage with ownership of bins transferring when contracts change. Assess waste services against the council's insource/outsource principles for council ownership of assets / provision of services: <ul style="list-style-type: none"> Waste Disposal Services JV (Whitford landfill) Waitakere Transfer Station. In some cases, the council is providing waste sites at no or reduced rent. A more transparent and appropriate approach would be to charge market rent and provide, if appropriate, a grant. The council could also consider selling its domestic refuse business to commercial market (supported by appropriate bylaw control).

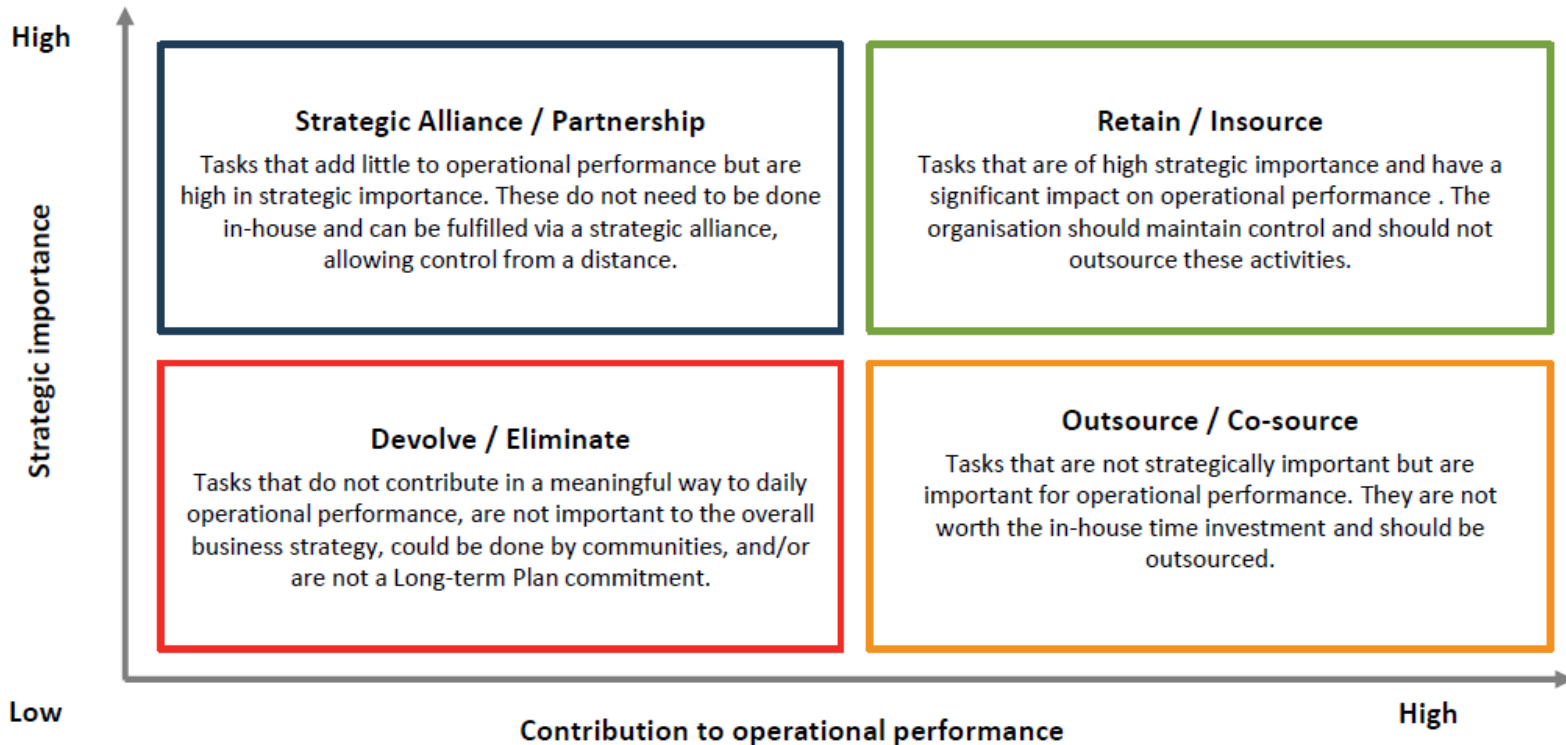
Key risks and constraints

- Requires the ability to construct a deal for the infrastructure that is attractive the market and the council. This needs further valuation work.
 - Reduces control over the operation of the facilities, so may need to supplement potential sale with other ways to promote waste minimisation and diversion objectives and service standards.
-

Key assumptions

- Effective market exists for assets should the council determine it is appropriate to sell them.
 - No adverse impact in price to Aucklanders and quality of services.
-

Services and asset ownership should be assessed against the insource/outsource framework below, which was developed as part of the Council operating model.



Value proposition #3: use the Waste Minimisation Fund

IF

... as part of applying greater commercial nous, we increased our efforts to apply to the contestable Waste Minimisation Fund (WMF) through the MFE to support new waste minimisation trials and initiatives, and to encourage private sector investment ...

BY

- Auckland Council adopting a principle that no new waste minimisation service or trial is approved without it :
 - having first sought significant co-funding support (say 50%) from the Waste Minimisation Fund*, and
 - having a robust business case that show benefits exceed costs by a significant margin.
- Supporting community organisations e.g. marae and businesses to develop business cases and applications for central government's Waste Minimisation Fund.
- Considering ceasing to provide grants to community groups directly and direct them to the apply to WMF in the first instance.

THEN we will achieve:

- A reduction of \$2.5m-3.5m annually in the cost to Aucklanders of funding new waste minimisation initiatives.
- Reduced risk that initiatives are ineffective or too costly relative to their environmental, health, social and economic impacts, because of independent external scrutiny of proposals.
- A driver to develop the economic tools and evidence needed for business cases that can compete with other calls on the contestable Waste Minimisation Fund.

How it works Aucklanders contribute, through landfill levies, to a Waste Minimisation Fund. Auckland Council receives a population-based share of half of this fund which it applies to waste minimisation activity (currently \$6m per annum). In addition, there is currently \$12m annually made available through a contestable fund for national and local initiatives.

Auckland Council has not accessed this source of co-funding. Auckland-based initiatives only received \$6m funding since commencement in 2010, which on a population basis is \$23m short (though some national schemes funded by the WMF also benefit Auckland). The Waste Solutions team currently have requests in for WMF funding for two significant projects it has in the pipeline.

Auckland Council currently uses \$500k of its population-based funding for making grants, which organisations could seek through the WMF.

Net estimate	Target \$30m alternative revenue over 10 years (PV \$22m)
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Ease of implementation	Easy
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Timing	0-6 months
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Overall rating	Must do
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There is an opportunity to apply to the contestable central government waste minimisation fund to seek co-funding for new waste minimisation initiatives and trials. The council should also consider if it is good value for money and appropriate to potentially duplicate the central government scheme by also providing waste minimisation grants.

Assessment	
Criteria	Comment
Strategic fit	Good alignment with waste minimisation legislation and policy, and the council's objective of developing alternative revenue streams.
Value for money	Introduces a further incentive to increase the commercial and economic rigour and quality of business cases.
Equity	Gains shared by all ratepayers.
Feasibility	Option is commercially viable.
Affordability	Business cases should already be prepared for new initiatives, so minimal additional cost.
Competency	The council has expertise to implement.

Results
Summary of financial costs and benefits
<ul style="list-style-type: none"> Potential \$2m - \$3m per annum (\$15-\$22m present value) should be targeted from the WMF either by the council applying direct, or by it supporting community organisations to prepare applications. This would (temporarily) reduce service costs to Aucklanders. Auckland Council administers and provides grants up to a total of \$500k per annum for some very small (and some large) waste initiatives. There is a question of their value in terms of impact and administrative costs. For large grants it risks duplication with the WMF. Auckland Council should direct organisations to apply to the WMF instead in the first instance, and assess if the gains from smaller initiatives can justify their administration costs. (A further potential saving of up to \$5.5m over 10 years, or \$3.7m PV). Note In May 2017, Auckland Council submitted an application for \$9m of funding for enhancing the resource recovery network (67% of estimated cost). Under this value proposition, the work should only proceed if say 50% of activity is funded from the WMF; or if the application failed, the work should be re-considered and progress only if there is a robust business case showing benefits exceed costs by a significant margin. Improving commercial discipline in the application may assist the council to be more successful in the future.

Key risks and constraints

- MFE note they do not necessarily accept applications from local authorities, although they have done so in the past. Auckland Council should support business and community organisations applying in their own right.
 - While the WMF criteria are broader, we have been advised that in practice MFE put weight on nationally significant projects, potentially leaving a gap for support for smaller local initiatives. But care needs to be taken that expected impacts justify the value of grants and administrative cost
 - Auckland Council may not wish to target the same waste management and minimisation outcome areas as MFE, which could limit which local projects would be supported (though alignment with the national waste strategy is assumed).
 - Funding from the WMF is contestable, so there is no guarantee of success.
-

Key assumptions

- MFE will accept applications from Auckland Council for access to the fund, or alternatively Auckland Council will support community groups and businesses to prepare applications from the fund.
 - Auckland Council has capability to lodge successful applications with WMF.
 - There will be a stream of new waste management and minimisation initiatives that would be eligible to apply for contestable WMF support.
-

Value proposition #4: site waste management plans

IF

... we used standard resource and building consent conditions and default plans so that consent holders have easy-to-use site waste reduction plans that are consistent with the Zero Waste goal ...

BY

- Waste Solutions establishing whether there is evidence that mandated, rather than voluntary, site waste management plans (said to be a 'game changer' for construction waste diversion) as a consent condition would be cost-effective, given current practices.
- If the evidence shows that promoting site waste management plans can result in net benefits, then Waste Solutions developing clear, evidence-based policy principles, guidance and default consent conditions that the building and resource management consenting teams can use.
- Waste Solutions doing this work collaboratively with the relevant market segments e.g. construction, retail, other businesses to ensure guidance and conditions are feasible and cost-effective, complement existing national approaches, and do not add unwarranted regulatory costs.

THEN we will achieve:

- A higher proportion of non-domestic waste that is amenable to diversion being diverted, from an estimated 48% (1.3m tonnes) today to potentially 80% in the future (2.8m tonnes).

Net estimate	Potential for net benefits
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Ease of implementation	Moderate
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Timing	Review in 2018
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Overall rating	Proceed with caution
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Requiring construction activity to have waste minimisation plan will increase the diversion rates of construction waste. This can result in net benefits if the analysis causes firms to increase diversion voluntarily, making it likely that benefits to them exceed the costs.

Assessment	
Criteria	Comment
Strategic fit	Consistent with Zero Waste goal. Construction & demolition (40% of landfill waste) is focus in next Waste Management & Minimisation Plan.
Value for money	<ul style="list-style-type: none"> Waste data show that firms already have, and act on, incentives to minimise and divert waste. UK review found that mandating plans imposed compliance costs without changing behaviours or outcomes, and reverted back to voluntary plans.¹¹ Council already partnering with industry, and providing information via its website and renew.org.nz. National resources on BRANZ.
Equity	May impact disproportionately on smaller projects.
Feasibility	Consider promoting uptake by making it cheaper/faster to get consents with approved waste plans.
Affordability	Part of business as usual. Test for increased compliance costs if mandating.
Competency	Extension of business as usual.

Results
Summary of financial costs and benefits
VP#1 showed there was potential for an additional 1m tonnes diverted in 2027, +60% on what it is currently projected to be.
Site Waste Minimisation Plans are one way of achieving this.
Diversion would reduce non-domestic sector cost of disposal at landfill (at around \$50 per tonne), but other costs would be incurred.
There already is an active recycling, reuse, and clean fill market already in place. In general the bigger operators already have waste plans.
Logically then, additional diversion is currently not cost-effective for many commercial and industrial firms. (This aligns with SLR May 2017 p26 which indicates cost of alternative to landfill >\$100/t.) ¹²
However, it is likely that with education, easy-to-adopt default plans, assistance and other “nudges”, a portion of firms (particularly smaller ones) will be able to start or increase their diversion cost-effectively. Their share (and net cost of diversion) is unknown.

Key risks and constraints

- Risk of duplication, as guidance material already exists e.g. renew.org.nz. Such plans are not new to large firms, e.g. in construction, but small firms are harder to reach cost-effectively.
- Mandating site waste management plans in the UK has been found to impose compliance costs without significantly changing waste behaviours, and the risk is that costs exceed environmental benefits.
- The approach should support, and make it easier for, businesses to implement a waste management plan, and avoid putting in place higher hurdles.
- Achievement of 80% diversion rates found in other jurisdictions involved supporting measures, such as landfill bans, significantly increased landfill levies, and services (such as incineration) that may not be in place, or economically viable or socially acceptable in New Zealand

Key assumptions

- Linked to VP#1 which showed:
 - 80% potential diversion rate of non-domestic waste going to landfill, based on achievement in other jurisdictions
 - Potentially additional 1.1m tonnes per year diverted by 2028, if current diversion rate of 48% is lifted to 80% by 2028. Would reduce non-domestic landfill by 60% to 0.7m tonnes in 2028.
 - excludes the 2.4m tonnes that currently is disposed off in cleanfill sites.
- Site Waste Management Plans are just one of the key interventions to divert waste e.g. construction industry.
- Voluntary diversion as a result of completing plans implies that the benefits to the firm (reduced landfill costs, revenue from recycled or recovered materials, sustainability reputation, etc) outweigh the costs of diversion.
- The provision of information and support means that administration costs are minimal and justified by the changes in behaviour.

Value proposition #5: lift economic discipline

IF

... we improved our understanding of, and quantified, the wider environmental (and social, economic, cultural) benefits from avoiding landfill disposal, to be used in the planning and evaluation of waste services, given the increasing cost profiles of further waste diversion initiatives relative to landfill ...

BY

- Waste Solutions developing and maintaining an evidence base on the quantity of environmental and other damages that are caused per tonne of landfill, and their value.
- Waste Solutions (and other groups) applying this evidence when preparing business cases in the future, so the return on initiatives and services can be compared and ranked more readily and consistently.
- Using this approach also to assess the full economic costs and benefits of existing initiatives, including to check the planned expansion of the Community Recycling Centres before it proceeds.
- Auckland Council consulting with the public on the draft WMMP with a clear list and explanation of the proposed actions, and their costs and benefits in total and as cost-per-tonne diverted.
- Waste Solutions doing robustly designed market research to test with households and business what they would be willing to pay or do to achieve additional reductions in landfill.

THEN we will achieve:

- Confidence that the value of services (including their broader impacts) exceed the costs (in rates, user fees, or other costs) of delivering them
- An evidence base to give confidence in the long-term cost implications of waste diversion projects and that councils ongoing economic commitment are directed to waste diversion projects and services with the highest net benefit (or return on investment) to Aucklanders.
- Clarity on how much Aucklanders value waste reduction, and how much they would be willing to pay for additional waste minimisation services.

Net estimate	Small outlay can help avoid costly policy errors
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Ease of implementation	Easy
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Timing	6-12 months
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Overall rating	Should do
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Improving the economic discipline will result in improved decision making and ensuring all factors are considered.

Assessment	
Criteria	Comment
Strategic fit	Consistent with NZ Waste Strategy and aim of efficient and effective waste reduction.
Value for money	<ul style="list-style-type: none"> Improves transparency and rigour. Gives better evidence on cost-effectiveness of proposals and justification of costs.
Equity	Firmer ground for policies with intergenerational effects. Higher waste costs would impact lower income groups relatively more.
Feasibility	Can procure expert services to support delivery.
Affordability	Small outlay to build capability, do within existing budgets; can help avoid costly policy mistakes.
Competency	<ul style="list-style-type: none"> Know how to build in-house capability, support, and processes over time. Concept can be extended to cover all business of Auckland Council.

Results
Summary of financial costs and benefits
<p>Costs \$<500k set up, ongoing within BAU budget</p> <ul style="list-style-type: none"> Set up cost of evidence base, est. \$250k. Undertake specialist consumer research and procure choice modelling, est. < \$250k.
<p>Benefits: avoided costs >>\$m over time</p> <ul style="list-style-type: none"> Improved discipline around large spending/investment decisions Case study 1: See landfill levy proposal: <ul style="list-style-type: none"> Will help clarify if the extra cost of \$134-\$338m to households and businesses over 10 years is an indicator of potential value, namely the size of environmental costs being incurred that could be avoided (before intervention costs), or just additional cost. Case study 2: food waste collection: <ul style="list-style-type: none"> Adds a \$29m per annum cost (\$17m cost + \$12m lower revenues)¹³ Indicative business case shows benefit-cost ratio of less than 0.4, so justification relies on unquantified benefits.

Key risks and constraints

- May result in new insights and evidence that could indicate need to revisit past policy choices.
 - Once set up, requires continuous improvement and expansion of evidence base over time, so needs champions and accountability.
-

Key assumptions

- Estimates of set-up of evidence base and choice modelling are estimates based on knowledge of market. These can be tested as part of a procurement process.
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Value proposition #6: get more evidence on whether to advance the case to lift the landfill levy

IF

... we did further analysis to confirm whether an increase in the landfill levy can be justified on the basis that Aucklanders value the reduction in waste being disposed to landfill and increase waste diversion more than the increase in cost, before deciding whether to advocate an increase in the landfill levy ...

BY

- Waste Solutions commissioning economic research to:
 - quantify the wider environmental, health, and social costs of landfill that are not already captured in market prices or covered by regulatory requirements
 - confirm that the landfill levy is the most efficient additional instrument to minimise waste.

- Waste Solutions subsequently completing the business case that confirms increasing the landfill levy is an economically sound strategy, for endorsement of a consistent and agreed position by Auckland Council.

- Auckland Council using this as the basis to provide a persistent and rational voice in Wellington policy circles on its position, e.g. as central government reviews the future direction of the waste disposal levy as announced in the July 2017 review.

THEN we will achieve:

- Confidence that the increase in landfill levy (from \$10 to \$50 or \$125 per tonne, or on average an extra \$10-30 extra per household per year) is justified, if it reflects actual wider social costs of waste created by Aucklanders.

- Confidence that alternatives to landfill are based on efficient pricing of landfill, rather than being subsidised by a levy that is set too high or too low, both of which would be a poor outcome.

- A stronger reputation for sound evidence-based joint central and local government policy, and effective government engagement.

Net estimate	Cost to Aucklanders est. \$236m Revenue to council est. \$235m
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Ease of implementation	Hard
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Timing	3-5 years
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Overall rating	Get economic evidence first
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Council should first investigate the merits of increasing the levy, and only if it stacks up (so that the additional costs are justified by the environmental and other benefits) advocate for an increase in the landfill levy to encourage alternative diversion activity.

Assessment	
Criteria	Comment
Strategic fit	Consistent with NZ Waste strategy and supports Zero Waste goal.
Value for money	<ul style="list-style-type: none"> Not clear there is economic evidence for increased landfill levy. Additional work to confirm or amend position will: <ul style="list-style-type: none"> improve transparency and rigour give better basis to assess cost-effectiveness of future proposals increase effectiveness of policy advocacy.
Equity	Neutral, although avoiding difficult to justify costs may benefit lower income groups particularly.
Feasibility	Expert services readily available for contracted or in-house delivery.
Affordability	Increase in council revenue could be used to offset the increased landfill costs to businesses and households.
Competency	Likely requires external expertise (initially at least). Methods well-known.

Results		
Summary of financial costs and benefits		
Initiative	Cost	Comment
Raise landfill levy from \$10 to \$50-125 per tonne	\$134-338m over ten years	Households +\$20-49m, Business +115-289m. Council receives similarly sized increase in income from higher levy. Council levy income rises by similar amount. Compares to one estimate of 'external costs' of \$1-19 per tonne. ¹⁴ If correct, then raising levy cannot be justified in economic terms.
Economic review	\$200k one-off	One-off cost to establish wider environmental social economic cultural cost of landfill and finalise business case.
Policy liaison	\$250k	\$250k annual, assuming assignment of public relations expert with Wellington presence.

It is unclear if the additional cost \$134-\$338m over 10 years (+4 to 11%) indicates the value of environmental and other cost of waste that could be avoided (before costs of doing that), or is simply an additional cost.

Key risks and constraints

- It is uncertain whether the current practice of Government returning 50% of landfill levies to local authorities would continue if the landfill levy was significantly raised
- Improved evidence may mean some services that are in place or being planned can no longer be justified because they lack sufficient environmental or public health benefits that might justify a higher cost than sending waste to landfill.
- Lack of data creates significant uncertainty around the high level estimates presented here.
- Risk of illicit dumping of waste if price rises significantly and no affordable alternatives.

Key assumptions

- Assumes government changes policy and levy increased over three years from 2021.
- Increase in levy to \$50-\$125 reduces refuse volumes by 7-18% as households respond to price impact (based on the upper bound of price responsiveness estimates from the literature).¹⁵
- Similar price elasticity assumed for businesses currently sending non-domestic waste to landfills that are subject to the levy. (Our initial estimate is that this captures 60% of non domestic waste that goes to landfill - see VP#1).
- Extra cost of landfill to households over ten years amounts to \$20m-\$50m, and \$115-289m to businesses. Combined midpoint of 236m (NPV \$153m). These costs rise if price elasticity is smaller, and vice versa.
- Auckland Council is repaid half of landfill levy collected in its area: midpoint estimate \$235m. This creates an opportunity to offset the costs to households and businesses.
- Excludes deadweight loss of taxation, if the increased landfill levy corrects the market price in order to account for harm from waste (otherwise raise costs by 20%).¹⁶
- Implicit assumption is that the cost of reducing or diverting waste for households and businesses that respond to the increased landfill price is no greater than the current cost of landfill. If this assumption is wrong, then costs are understated.
- **Note:** the impacts are based on current waste projections; if non-domestic waste reduces as a result of other initiatives introduced under value proposition #1, then the additional impact of raising the landfill levy will be less.

Value proposition #7: consolidate outcome-driven contracts

IF

... we structure the collections contracts, when they are being aligned and consolidated after the current contracts expire in 2020, to ensure providers' incentives are aligned with the objective to reduce waste to landfill ...

BY

- Introducing incentives for waste collectors to achieve ambitious waste diversion targets, e.g. through innovative ways to provide retail and advisory services to households and businesses.*
- Using the consolidation of contracts as a way to drive customer satisfaction (e.g. quality, choice) up and costs down.
- Ensuring the contracting approach delivers sufficient contestability to motivate value and improvement, and by avoiding large entry and exit costs.

THEN we will achieve:

- Reduced contracting cost and resulting in more cost-effective waste management and minimisation by 2021.

* The analogy is paying health providers to keep the population healthy and minimise the number of hospital visits or prescriptions, rather than paying health providers when they treat sick people

Net estimate	\$3.4m - \$6.5m per annum from 2021
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Ease of implementation	Moderate
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Timing	12+ months
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Overall rating	Must do
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A number of opportunities exist to improve the value for money from contracting when the current waste contracts expire in 2020.

Assessment	
Criteria	Comment
Strategic fit	Aligns to council objective of achieving best value for ratepayers.
Value for money	Positive value for money opportunity.
Equity	Equitable to all recipients of waste service.
Feasibility	Feasible to implement.
Affordability	Cost should reduce to ratepayers.
Competency	New competency, but can be built/sourced.

Results
Summary of financial costs and benefits
<ul style="list-style-type: none"> Value will be improved by <ul style="list-style-type: none"> establishing the correct commercial tension standardisation of contracts simplification of reporting and performance management transfer of responsibility to the contractors. Currently \$80m of services are contracted out. The true value of this opportunity will only be established through a competitive procurement process but can expect to reduce costs by 3-5% (\$2.4m-4m) if the correct tensions exist in the contract from when they are renewed in 2020. Staff managing contracts are approximately 1:1 in ratio of the contracts managed. A reduction in contracts and increasing the ratio to 1: 2/3 will realise a further \$1m to \$1.5m.

Key risks and constraints

- The Auckland waste market is characterised by two large vertically integrated providers which may impact the council's ability to influence.
 - Reduction in service if contract specifications not correct.
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Key assumptions

- That the waste market will be receptive to changed approach to contracting from council.
 - Adoption of new contract approaches process can reduce costs by 3-5%.
 - New contracting approaches enable a higher contract-to-staff contract management model.
-

Opportunities through improved contracting

#	Contracting opportunity	Expected benefit
1	Implement consistent HSEQ (Health, Safety, Environment, Quality) plans and simplify reporting requirements <ul style="list-style-type: none"> • Council contracts require H&S Plans, TMPs, QA Plans, but every contract is different. • Efficiencies from consistent and streamlined monthly reporting and meetings against consistent contract requirements. • Consistent and streamlined audit requirements against each contract. • Consequent reduction in officer time for review contractor information, audits, monthly reports, contractor meeting requirements. 	<ul style="list-style-type: none"> • Reduced contract management costs.
2	Simplify performance measures <ul style="list-style-type: none"> • Current KPIs are prescriptive and require analysis of large data sets which is labour intensive and resource hungry to administer – is it adding value? 	<ul style="list-style-type: none"> • Reduced contract management costs.
3	Standardise form of contract and schedule of prices <ul style="list-style-type: none"> • Currently a mix of NZS3910:2010, NZS3917 and bespoke waste contracts. • Time savings from operating under one form of contract, consistent payment processes and monthly reporting. 	<ul style="list-style-type: none"> • Reduced contract management cost.
4	Specify longer contracts <ul style="list-style-type: none"> • Reduced procurement frequency and hence cost to undertake procurement exercises. • Cost savings from longevity e.g. discounts as contractors achieve better asset utilisation. • Better ability for contractor to invest in the services to be provided. 	<ul style="list-style-type: none"> • Reduced direct contract costs. • Savings in contract costs.
5	Increase contractor responsibility for customer service requests and enforcement <ul style="list-style-type: none"> • Shift more responsibility onto contractor who delivers service to address customer requests. • Reduce council's role in enforcement. 	<ul style="list-style-type: none"> • Increased direct costs offset by decreased contract management and enforcement costs.
6	Realign and rationalise contracts by bundling services differently and reviewing collection area boundaries <ul style="list-style-type: none"> • From 2020, consistent services across region, enabling realignment and rationalisation of contracts and associated contract management resources. • Bundling waste with organics to reduce tonnage variability. • Bundling waste with recycling to increase resource utilisation. • Bundling all collections to increase resource utilisation and reduce tonnage variability. • Bundling collections in rural areas to increase resource utilisation – trucks, drivers and contract management. 	<ul style="list-style-type: none"> • Reduced direct contract cost (trucks, drivers, contract management). • Reduced contract management cost. • Reduced procurement cost.

Appendix

Glossary

Term	Definition
Annual Plan (also known as Annual Budget)	The plan that sets out what the council will be working to achieve in a financial year, how it will spend its money, the level of service to be provided, and the level of rates and other revenue required to fund that spending.
Asset	An item of value, usually of a physical nature, that has a useful life of more than 12 months and has future economic benefits over a period of time. Infrastructural assets provide the basic facilities, services and installations needed for a community or society to function, such as stormwater drainage pipes. Non-infrastructural assets are the organisation's other assets that provide either administrative or operational functions, such as computer software.
Auckland Council/the council	The local government of Auckland established on 1 November 2010. The council is made up of the Governing Body, 21 local boards, and the council organisation (operational staff).
Cleanfill	Any landfill that accepts only material that, when buried, will have no adverse effect on people or the environment.
Commercial activities	Retail, information and communication, finance and insurance, and other service sectors. These sectors typically can afford relatively higher land prices/rents, and locate well in town centres.
Council-controlled organisation (CCO)	A company or other entity under the control of local authorities through their shareholding of 50 per cent or more, voting rights of 50 per cent or more, or right to appoint 50 per cent or more of the directors. Some organisations may meet this definition but are exempted as council-controlled organisations.
Depreciation	The charge representing consumption or use of an asset, assessed by spreading the asset's value over its estimated economic life. Depreciation includes amortisation of intangible assets unless otherwise stated.
Diverted material	Anything no longer required for its original purpose and, but for commercial or other waste minimisation activities, would be disposed of or discarded.
Domestic waste	Waste from households.
Development contributions	Contributions from developers, collected to help fund new infrastructure required by growth, as set out in the Local Government Act 2002. This can be a financial contribution or provision of services or an asset of the same value.
Governance	The norms, values, rules and processes to ensure accountability for managing public affairs in a manner that is lawful, transparent, participatory, inclusive and responsive. Governance means thinking about strategic issues, rather than the day-to-day running of council services.
Governing Body	The Governing Body is made up of the mayor and 20 councillors. It shares its responsibility for decision-making with the local boards. It focuses on the big picture and on Auckland-wide strategic decisions. Because each ward may vary in population, some wards have more than one councillor.
Grants and subsidies	Revenue received from an external agency to help fund an activity or service that the council provides.
Gross operating expenditure	Total without deductions of depreciation and finance costs.
Household	One or more people usually resident in the same dwelling, who share living facilities. A household can contain one or more families or no families at all, but consist of unrelated people, related people, or a person living alone.

Glossary

Term	Definition
Infrastructure	The fixed, long-lived structures that facilitate the production of goods and services and underpin many aspects of quality of life. Infrastructure refers to physical networks, principally transport, water, energy, and communications
Landfill	A disposal facility as defined in section 7 of the Waste Minimisation Act 2008, excluding incineration.
Long-term plan/LTP (also known as the 10-year budget)	This document sets out the council's vision, activities, projects, policies, and budgets for a 10-year period.
Local boards	There are 21 local boards which share responsibility for decision-making with the governing body. They represent their local communities and make decisions on local issues, activities and facilities.
Local Government Act 2002 (LGA 2002)	Legislation that defines the powers and responsibilities of territorial local authorities such as Auckland Council.
Local Government (Rating) Act 2002 (LGRA)	Defines how territorial local authorities such as Auckland Council can assess and apply their rating policy.
Managed fill	A disposal site requiring resource consent to accept well-defined types of non-municipal waste (e.g. low-level contaminated soils).
Organic waste	Refers to food waste (or kitchen waste) and green waste (or garden waste).
Panuku Development Auckland (PDA)	A CCO combining Waterfront Auckland and ACPL to work as a single outward facing entity in the development of the region.
Rates	A charge against the property to help fund services and assets that the council provides.
Targeted rates	A targeted rate is a rate set to fund activities where greater transparency in funding is desired or where the council considers the cost should be met by particular groups of ratepayers, as they will be the prime beneficiaries of the activity.
Value for Money (VFM)	Using resources effectively, economically, and without waste, with due regard for the total costs and benefits of an arrangement, and its contribution to the outcomes the entity is trying to achieve.
Waste	Any matter, whether liquid, gas or solid, which is discharged, unwanted or discarded by the current generator or owner as having little or no economic value, and which may include materials that can be reused, recycled or recovered.
Watercare	Watercare Services Limited, a CCO responsible for water and waster services and infrastructure.
WMMP	Waste Management and Minimisation Plan, aiming at an aspirational goal of Zero Waste, helping people to minimise their waste and create economic opportunities in doing so.

Footnotes

1. Auckland Council, 20 June 2017, Terms of reference: Value for Money Review: Domestic Waste Services. See also Auckland Council's Finance and Performance Committee minutes for 21 March 2017 at http://infocouncil.aucklandcouncil.govt.nz/Open/2017/03/FIN_20170321_AGN_6792_AT.PDF
2. Auckland Council, the 2012 Auckland Plan, <http://theplan.theaucklandplan.govt.nz/aucklands-environment/>
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4. SLR global environmental solutions, 2017, Waste Management Options Review and Modelling, report to Auckland Council, and associated documents and presentations, local governments' websites, and subject matter expert input
5. Auckland Council's Long-term plan 2012-2022, see http://www.aucklandcouncil.govt.nz/EN/planspoliciesprojects/plansstrategies/Long_term_plan/Pages/Home.aspx
6. Listed prices for domestic waste collection services on the websites of various providers in Auckland, June 2017
7. See SLR reports, *op cit*.
8. Covec, 2012, Economic Factors of Waste Minimisation in New Zealand, report for the Ministry for Environment, and Productivity Commission, 2006, Waste Generation and Resource Efficiency, <http://www.pc.gov.au/inquiries/completed/waste/report>
9. Auckland Council 2017 Waste Assessment (unpublished draft)
10. Derived from 2015/16 levy revenues, Ministry for Environment, 2017, Review of the effectiveness of the waste disposal levy 2017 page 10
11. DEFRA, 2013, Review of Site Waste Management Plans Regulations 2008, Impact Assessment https://consult.defra.gov.uk/waste/site_waste_management/supporting_documents/SWMPs%20IA%20final.doc
12. SLR reports, *op cit*.
13. Auckland Council Solid Waste, 2013, Indicative Business Case Organics Collection & Processing v 1.4, table 12 para 93
14. Covec, *op cit*.
15. Bel & Gradus, 2016, Effects of unit-based pricing on household waste collection demand: a meta-regression analysis, Resource and Energy Economics Vol 44 (<http://www.sciencedirect.com/science/article/pii/S0928765516000269>); Eunomia, 2017, The New Zealand Waste Disposal Levy, potential impacts of adjustments to the current levy rate and structure, report for a consortium of public and private organisations; Covec *op cit*.
16. NZ Treasury, 2015, Guide to social cost benefit analysis, para 40, <http://www.treasury.govt.nz/publications/guidance/planning/costbenefitanalysis/guide>

We wish to thank the following people who were either interviewed or participated in discussions relating to this review.

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Andres Duncan	Manager Financial Policy
Tracy Xu	Financial Analyst
Peter Cunningham	Head of PW & Tech Services Procurement
Channa Weerasinghe	Financial Advisor
Daniel Mayo-Turner	Procurement Systems Lead

Waste Resources

- Auckland Council, Annual Report 2011, 2012, 2013, 2014, 2015, 2016
- Auckland Council, Long Term Plan 2015-2025 [Long-term Plan and Annual Plan](#)
- Auckland Council, Long Term Plan 2010-2019 [Long-term Plan and Annual Plan](#)
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- Covec, 2007, Recycling: cost benefit analysis, www.mfe.govt.nz
- Covec, 2012, Economic factors of waste minimisation, www.mfe.govt.nz
- Kerbside & private waste collection services NZ wide comparison
- Lawrie Road Article and AC's Expressions of interests for renewed lease [Herald](#)
- Ministry for Environment, Waste Minimisation Fund – Ministry for the Environment: Projects Funded Geographically, downloaded July 2017
- SLR, 2017, Waste management options review and modelling

Other internal sources

- Food Waste Processing and Collection Service, Business Case, Project Execution Plan, RFP, Food Waste Trial Contract, Procurement plan
- Waste Minimisation Fund application – Commercial recycling
- Organisational Chart – Waste Team FTE's, contractors <https://orgchart.aklc.govt.nz>