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HUTT CITY
TE AWA KAIRANGI

Business Case Report

Kerbside Collections

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Executive summary

A review of Hutt City Council's refuse and recycling services has been undertaken using the Treasury's Better Business Case (BBC) process. The review also considered the role of recycling drop-off stations and the opportunity to introduce a kerbside organics collection service.

Based on this assessment, the recommended approach for kerbside recycling collection is to move to a 2-stream recycling service, providing households with a 240L wheelie bin for mixed recycling and a 45L crate for glass, both collected fortnightly. Alongside this, the provision of recycling drop-off stations should be reduced from five to two, with the new recycling drop-off stations restricted to locations where drop-off can be supervised when open. Kerbside recycling and the recycling drop-off stations would continue to be funded through rates.

For the kerbside refuse collection service, the recommended approach is a rates-funded wheelie bin collected weekly, available in different sizes to match household needs, with an option to opt-out of the rates-funded service, and a move to pay-as-you-throw (PAYT) when technology enables. Depending on the availability of suitable and cost-effective technology, a PAYT bin service could be a workable alternative to a rates-funded service. This could be confirmed via a procurement process for renewal of Council's kerbside collection services. The PAYT option could be tested in terms of technical feasibility and costs in comparison to the rates-funded bin.

A kerbside organics collection service is not proposed at this point in time. Further analysis of carbon emissions from organics services and learnings from Wellington City's food waste collection trial will be used to inform a decision on this service at a future time.

The recommended options will improve health and safety outcomes, reduce windblown litter and animal strike, and divert more waste from landfill. For an average household, a rates-funded service can deliver both a refuse collection and recycling collection service for less cost than a private refuse collection service alone and is therefore more affordable. Offering the option of smaller bin sizes, opting out and a move to PAYT when technology enables, provides a cost-effective option for smaller households and those that produce less waste.

In order to successfully implement the recommended approach, the following actions are proposed, and a possible timeline is provided:

- Consult with community on proposed service changes for refuse collection, recycling collection and recycling drop-off stations, e.g. through 2020 Annual Plan consultation.
- Undertake procurement for new kerbside refuse and recycling collection services (run in parallel, but only released to market after 2020 Annual Plan deliberations complete, i.e. release to market July 2020, awarded December 2020).
- Based on procurement outcomes, inform community of cost of service changes, e.g. through consultation on 2021-2031 Long Term Plan.
- Mobilise and roll out new kerbside refuse and recycling collection services (mobilise from January 2021 and commence new services July 2021, at the earliest).
- Progressively decommission recycling drop-off stations following introduction of new kerbside recycling collection service (from July 2021 onwards).

Introduction

Morrison Low was commissioned by Hutt City Council to review the provision of kerbside collection services by completing a business case that considered options for future kerbside collection services. This review was undertaken alongside two other service reviews: resource recovery centre provision, and hazardous waste management. Morrison Low followed the New Zealand Treasury's Better Business Case (BBC) process, which is good practice for public sector decision-making.

The aim of the approach is to provide objective analysis and consistent information to decision-makers, enabling them to make smart investment decisions for public value.[1] It is an ideal tool for the public sector to make long-term decisions regarding service delivery. It looks at financial measures but in a weighted, balanced context with four other factors (strategic, economic, commercial and management) as detailed in Figure 1.

Figure 1: The Better Business Case Approach

This report provides an overview of the process followed to develop the BBC, but the key decision-making document that summarises the findings of the BBC assessment with respect to the five cases above is the one-page BBC Summary provided in Appendix 1. In addition, supporting information is provided in the remaining four appendices. The full list of appended documents is:

- Appendix 1 – Better Business Case Summary
- Appendix 2 – Investment Logic Map (ILM)
- Appendix 3 – Longlist options assessment
- Appendix 4 – Financial modelling for Economic Case
- Appendix 5 – Hutt City Council Terms of Reference

[1] https://treasury.govt.nz/information-and-services/state-sector-leadership/investment-management/better-business-cases-bbc

BBC assessment methodology

The following steps have been undertaken to complete the BBC:

- Project initiation meeting and review of background information, including waste data and financial information and previous studies looking at Council's kerbside collection services.
- Investment Logic Mapping (ILM) workshop with stakeholders representing council staff, staff from neighbouring Upper Hutt City Council, and the existing kerbside collection service provider Waste Management. The ILM identified issues and opportunities with the current services provided. The collections ILM is attached in Appendix 2.
- Development of strategic objectives to address the issues and opportunities from the ILM workshop. These objectives were able to be standardised across the three waste services reviews.
- Completion of the strategic case for change including issues and opportunities to be addressed, the legal context, and for each of the objectives: the scope of the review, the anticipated benefits and risks, and key performance indicators.
- Development of a longlist of options for kerbside collection services and assessment of these options against the strategic objectives and critical success factors. Critical success factors are common to all BBCs and include alignment with Council objectives, supplier capability and capacity, value for money and affordability, and achievability with Council's resources. The options assessed covered the full range of available options across the dimensions shown in Figure 2. The longlist assessment is provided in Appendix 3.

Figure 2: Longlist option dimensions

- Review of the longlist assessment at a workshop with key stakeholders.
- Meetings with project steering group members after completion of the strategic case and following review of the longlist assessment to update them on progress.
- Shortlisting of options and an economic assessment of these shortlisted options that included a financial assessment (Net Present Value, NPV) and non-financial assessment (Multi Criteria Assessment, MCA) to identify the preferred option. The NPV analysis for the shortlisted options is provided in Appendix 4.
- For the preferred option, completion of the commercial, financial and management cases.
- Completion of a brief covering report detailing the BBC methodology and outcomes.

The project has been completed to meet the project requirements set out in Council's Terms of Reference, attached in Appendix 5.

Strategic case – the case for change

The current contract for Council's kerbside collection service ends in the third quarter of 2019 albeit work is currently underway to extend this contract, with a re-tender ahead of this (the recommended extension is to June 2021). This contract also includes the provision of four recycling drop-off points in Kelson, Wainuiomata, Alicetown and Naenae. A fifth recycling drop-off point is available to the community at Waste Management's Seaview transfer station on a commercial basis, i.e. this station is not funded by Council. There is an opportunity to review the services ahead of re-tendering the contracts. A review of Hutt City Council's refuse bylaw is also currently underway and could support any service changes. Note that the bylaw may be a regionally consistent bylaw to achieve better outcomes across the Greater Wellington Region.

Council's current kerbside collection services are discussed in the following sections.

Refuse collection

A weekly user-pays bag collection service is provided to both urban residential and commercial customers. Customers can put out as many (or as few) bags as they have paid for. Waste companies also provide private refuse wheelie bin services directly to customers (i.e. non-Council service).

Experience throughout New Zealand has shown that customers tend to prefer bins to bags for refuse collection because they are more convenient, easier to use, less prone to animal strike and generally less odorous.

In Lower Hutt, residents (that have the ability to pay or willingness) have taken up private wheelie bin services and consequently Council's market share, although stable, sits at around 30%. The service is currently self-funding and realising a surplus of approximately $400,000 for Council per year. However, experience in other parts of New Zealand shows that further reductions in market share (e.g. following key changes in the market) may result in the service being less cost-effective. To respond to this, Council could increase the price of its rubbish bags to cover the funding shortfall. However, this may incentivise more customers to move to a wheelie bin service as the cost difference between rubbish bags and a private wheelie bin narrows.

Bag collection services have been identified as higher risk from a worker health and safety perspective than bin collection services due to the need to exit the vehicle to complete the collection, manual handling of bags, and exposure to sharps. The health and safety risks of different collection methodologies are outlined in the discussion paper in Appendix 6.

Recycling collection

A weekly kerbside collection service is provided to residential customers only. The service is a kerbside sort of 55L[2] crates.

[2] In the past, 45L crates were rolled out, but the current size of crates sold by Council is 55L. The current share of smaller vs larger crates is not known.

Throughout New Zealand councils have found that customers prefer wheelie bins for their recycling collection services because the materials are not impacted by wind and rain and the greater capacity enables customers to recycle more[3]. Hutt City Council continues to see recyclables disposed of in their refuse service despite a recycling service being provided[4]. This has been shown to reduce with wheelie bin recycling services.

However, the improved convenience of wheelie bins is balanced by the need for post-collection sorting in a processing facility and the inability to detect contamination until wheelie bins are lifted. Overall, these two factors result in greater contamination of recyclables in wheelie bin services – albeit there are means to manage this such as checking bin contents ahead of collections (bin audits), cameras on trucks to identify non-compliant households, and providing feedback to them, or withdrawing bins as a last resort. The separation of glass from other recyclables has been shown throughout the country to address a large proportion of the contamination and reduction in recycling quality that results from mixed recycling wheelie bin collections.

Recycling crate services have higher worker health and safety risks than wheelie bins due to the need for workers to exit trucks, manually handle crates, and handle recyclables, including sharps (e.g. broken glass).

In addition, recycling crates, due to their design and lack of effective means to retain recyclables, tend to lead to significant litter production during frequent windy days, as evidenced by frequent resident complaints. This litter tends to enter the storm water system and can end up in Wellington Harbour, leading to ocean and beach pollution.

Note that the existing service option with crates is not a full cost service, i.e. users are expected to pay for their own crates. The use of flexinets to avoid wind-blown litter is voluntary and users are also expected to pay for their own nets. This approach is relatively ineffective in practice, as some residents use their own "containers" (such as cardboard boxes). There is little incentive for them to use the flexinets to avoid wind-blown litter.

Some materials that are collected through Council's recycling service are not recycled. For example, plastic grades 3-7 are sold as part of bales of mixed plastic (grades 1-7), but processors may then separate and recycle the grade 1 and 2 plastics and dispose of the grade 3-7 plastics. Working collaboratively with their contractor, Council needs to ensure that there are appropriate end-markets available for the materials collected through Council's recycling services so that the community can be assured that materials collected for recycling are actually recycled. In May 2019 Council ceased collection of plastic grades 3-7 and undertook an education campaign with customers to ensure plastic grades 3-7 are no longer received through Council's recycling service.

There has always been volatility in the recycling commodities market, however the commodity prices are currently at an all-time low due to the bans imposed by China on many recycling products that have subsequently been followed by other recycling markets.

[3] 34 councils in NZ (out of 67) use wheelie bins for recycling. A further six councils are currently looking to change to wheelie bins.

[4] Council are planning to undertake a survey of the composition of kerbside refuse and recycling receptacles in September 2019 to confirm this quantity. Results from a similar audit in Napier-Hastings identified 18% of Napier's refuse and 10% of Hastings' refuse could be diverted.

Recycling stations

In addition to the kerbside collection, Council provides community recycling stations at five locations. There are contamination and significant illegal dumping issues at these stations, which are open 24/7 and are unstaffed. Some sites such as the station in Naenae have had repeated occurrences of loads being too contaminated to allow further processing and being re-directed to the landfill. In relative terms, the Seaview site appears to attract the fewest concerns, likely due to the fact that it is co-located with the Seaview transfer station (e.g. staffing during the day, cameras, good natural surveillance).

It is possible that at least some of the illegal dumping that is occurring is due to residents not understanding the waste collection system that is in place (e.g. language barriers), hardship, or lack of willingness to pay for refuse disposal. However, Council does not have data available to show the exact causes of illegal dumping behaviours.[5]

Organics

No kerbside collection service is provided for organics, although customers can pay for a private green waste collection service.

There is a low rate of diversion of organics waste, with compostable food and green waste accounting for approximately 45% of domestic refuse.

There is an opportunity to increase diversion of kerbside collected waste by targeting organics, however this needs to be balanced by the high cost of organics collection services.

In addition, food and green waste breaks down quickly in landfill and can assist in breaking down other materials, because of the carbon and moisture they introduce. Breaking down quickly, food and green waste do not take up valuable airspace in the landfill. However, the breakdown of organic waste can cause odour, increases landfill gas production and the risk of increased fugitive emissions of greenhouse gases such as methane. While Silverstream has an effective gas recovery system, it cannot necessarily capture all such emissions (albeit at this point in time, it is not fully clear how the carbon footprint of landfilling at Silverstream compares to alternative options such as composting).

The issues and opportunities with the current kerbside collection services were identified through the ILM process which can be seen in Appendix 2. Further details on the Strategic Case including how these issues are addressed by the strategic objectives can be found in the blue box in the BBC Summary in Appendix 1.

[5] Council has undertaken various initiatives such as trialling cameras, increased enforcement and education, but this has not resulted in a reduction in illegal dumping occurrences. In some cases, Council has identified repeat offenders and infringements notices do not appear to be effective in stopping such behaviour.

Longlist assessment

A longlist of future kerbside collection service delivery options was developed using the BBC five option dimensions as demonstrated in Figure 2.

The longlist options were assessed against the strategic objectives developed through the ILM process. These objectives were able to be standardised across the three waste services reviews. The strategic objectives are:

- to provide services that are cost-effective
- to provide services that are safe
- to provide services that reduce greenhouse gas emissions
- to provide services that customers want and can use appropriately
- to reduce waste and protect the environment from the harmful effects of waste.

The longlist options were also assessed against critical success factors. These critical success factors are considered standard practice for BBC analysis:

- Strategic fit and business needs: alignment with the Waste Management and Minimisation Plan 2017-23 and other relevant plans.
- Potential value for money: right solution, right time, at the right price.
- Supplier capacity and capability: is it a sustainable and viable arrangement (external).
- Potential affordability: manageable within funding constraints.
- Potential achievability: ability and skills to deliver (internal).

The longlist of options was assessed against the strategic objectives and critical success factors at the options assessment workshop. Options which did not meet the strategic objectives or critical success factors were discarded from further analysis.

The following tables provide a summary of the longlist assessment for the refuse collection, recycling collection, recycling drop-off stations and organics collection options. The longlist of options is provided in Appendix 3.

Table 1 Assessment of refuse collection options

Option	Overall assessment	Shortlisted for economic case?
Status quo: bags, collect weekly	Does not meet strategic objectives but continue to economic assessment for comparison. Not preferred as bags are being phased out in other areas due to safety concerns	Yes
Bins, size restricted, collect weekly	Possible – cost-effective and safe but less customer choice	Yes
Bins, range of sizes, collect weekly	Preferred – cost-effective, safe and provides customer choice	Yes
Bins with pay-as-you-throw user tags, collect weekly	Possible – cost-effective, customer friendly and safer than bag collections, but added complexity	Yes
Bins with pay-as-you-throw with RFID technology, collect weekly	Discard - unknowns associated with RFID for PAYT. Possible future option when technology enables.	No[6]
Bins (either 1b, 1c, 1d or 1e methodology), collect fortnightly	Discard - only feasible if combined with food waste collection	No
Council opts out of refuse collection	Possible - private sector could provide service but Council may retain administrative function	Yes

Table 2 Assessment of recycling collection options

Option	Overall assessment	Shortlisted for economic case?
Status quo: crates, collect weekly	Does not meet strategic objectives but continue to economic assessment for comparison. Not preferred as crate service generates litter, less safe than bins but better recycling products	Yes
2-stream: 45L glass crate and 240L mixed recycling, collect fortnightly	Possible - crate collection (for glass) less safe than bins, but better recycling products	Yes
2-stream: 80L glass bin and 240L mixed recycling bin, collect fortnightly	Discard - glass bin collections only in trial phase	No
240L fully commingled bin, collect fortnightly	Discard - lower quality recycling products that cost more to process; no current processing capacity in the Wellington region	No
Kerbside service discontinued	Discard - customers expect kerbside service and waste disposal would increase	No

[6] Although possible future option

Table 3 Assessment of recycling drop-off options

Option	Overall assessment	Shortlisted for economic case?
Status quo: four council recycling stations (plus private Seaview)	Does not meet strategic objectives but continue to economic assessment for comparison. Not preferred as high cost for limited diversion and contamination and illegal dumping impacting ability to recycle materials collected	Yes
Increased network of recycling stations	Discard - high cost and reduced diversion due to contamination	No
Drop off at strategic, supervised locations (e.g. RTS, RRC)	Preferred - supervision, enforcement and cameras reduce illegal dumping	Yes
Recycling stations discontinued	Discard - no outlet for customers' excess recyclables	No

Table 4 Assessment of organic collection options

Option	Overall assessment	Shortlisted for economic case?
Status quo: drop off green waste at transfer station, green waste used as landfill cover	Possible - status quo is cost-effective but alternative landfill covers more effective, landfill diversion possible	Yes
Drop off green waste, composted	Possible - diverts green waste from landfill but alternative daily cover required	Yes
25L Bin for food waste only, collect weekly	Discard - high cost, requirement to identify food waste processor, carbon benefits would need confirmation	No
240L bin for food and green waste, collect weekly	Discard - high cost, requirement to identify food waste processor, carbon benefits would need confirmation	No
240L bin for green waste, collect monthly	Discard - additional service to manage, increased cost, however easier to process than food waste	No
No food or green waste services	Discard - community expects green waste service	No

Shortlisted options

From the longlist assessment, the following options were taken forward for economic assessment. For the kerbside recycling collection service, a change to a two-stream service was clearly preferred over other options. For refuse collection, a number of options were shortlisted for more detailed analysis.

Table 5 Summary of shortlisted options

Option Description	Elements common to all options
Option 1: Status quo • Continuation of refuse bag collection service	• Replacing recycling crates with a two-stream recycling collection service using a 240L wheelie bin for mixed recyclables and a 45L crate for glass collected fortnightly • Retain current kerbside collection areas • Phase out the unstaffed recycling stations, with drop-off only being retained at two strategic locations (e.g. at the privately-run Seaview transfer station and another suitable location) • No kerbside organics collection service introduced at this stage • Separate assessment (outside of this report) of the ongoing use of green waste as landfill cover • Continuation of outsourced contracts for kerbside collection service delivery, with potential collaboration with Upper Hutt City Council • All service delivery changes implemented as part of kerbside collection contract re-tender
Option 2: Opt out • Discontinue Council's refuse collection service, refuse collection provided by private sector	
Option 3: Rates-funded refuse bin • Provide all residents with a wheelie bin for refuse, funded through a targeted rate	
Option 4: PAYT (pay as you throw) refuse bin • Provide all residents with a wheelie bin for refuse, but only charge customers when they use the service	

Economic case – identifying the preferred option

The aim of the economic case is to determine the cost-effectiveness of the shortlisted options from both a financial and non-financial perspective and identify a preferred option.

This was determined by three separate assessments:

- Whole of life cost: This takes into consideration the Capex and Opex cost of the service over the lifetime of the service. A 10-year assessment period has been used to align with LTP funding envelopes.
- Net Present Value (NPV): This is an assessment of monetary benefits and cost. Only direct costs have been considered for this BBC. A typical public sector discount rate of 7% has been used for NPVs.
- Multi Criteria Analysis: This method identifies and ranks non-monetary benefits and costs using the following risk areas
  - Political: negative media coverage or negative community feedback
  - Economic: unexpected cost increases
  - Social: risk to public health or working safety

- Technical: untried technology or process
- Legal: council decisions legally challenged
- Environmental: risk of discharge to environment

The economic case is shown in the red box in the BBC summary in Appendix 1 and the NPV calculations are provided in Appendix 4. Table 6 below provides a summary of the economic assessment.

Table 6 Summary of economic assessment (Net Present Value and Multi Criteria Assessment)

Assessment criteria	Option 1: Status quo, pre-paid official bag	Option 2: Opt out	Option 3: Rates-funded refuse bin	Option 4: PAYT refuse bin
Net Present Value	-$18.7 million	-$14.2 million	-$45.7 million	-$13.5 million
Political risk - negative media coverage or negative community feedback	Low risk - continuation of current service	Medium risk - no longer offering council refuse service, private service costs may be high	Medium risk - rates increase may attract coverage	Low risk - improved level of service with bins
Economic risk - unexpected cost increases	Medium risk - long term recycling commodity prices unknown	Medium risk - long term recycling commodity prices unknown	Medium risk - long term recycling commodity prices unknown	Medium risk - long term recycling commodity prices unknown
Social risk - risk to public health or worker safety (n.b. community opposition assessed under Political)	High risk - manual handling with crates and bags	Medium risk - some manual handling with glass crates	Medium risk - some manual handling with glass crates	Medium risk - some manual handling with glass crates and removal PAYT tags
Technical risk - Untried technology or process	Low risk - approach is common in NZ	Low risk - approach is common in NZ	Low risk - approach is common in NZ	Medium risk - solution not widely used in NZ
Legal risk - Council decisions legally challenged	Low risk - unlikely to be legally challenged	Low risk - unlikely to be legally challenged	Low risk - unlikely to be legally challenged	Low risk - unlikely to be legally challenged
Environmental risk - risk of discharge to environment	Medium risk - existing diversion, but some illegal dumping associated with user-pays model	High risk - no refuse price control to drive diversion and no reduction in illegal dumping	Medium risk - rates funded refuse may encourage more disposal, but partially decrease illegal dumping	Medium risk - more diversion anticipated, but some illegal dumping associated with user-pays model

Service use and tonnes collected

Key information relating to the different options is provided below. This is used throughout the assessment as part of the comparison of shortlisted options.

Table 7 Refuse and recycling collection service use and tonnes

Service use and tonnes	Refuse Collection				Recycling Collection	
Service option	**Pre-paid Official Refuse Bag**	**Opt-out Refuse Service**	**Rates Funded Refuse Bins**	**PAYT Refuse Bins**	**Crates, Weekly**	**2-stream, Fortnightly**
Households in Lower Hutt	36,000					
Participation rate	30%	0%	100%	90%	100%	100%
Presentation rate	90%	n/a	90%	60%	90%	90%
Tonnes per year	1,900	0	20,300	16,300	7,800	8,900

The participation rate is the percentage of households that participate in the service, while the presentation rate is the number of participating households that use the service in any given week. A 90% presentation rate is typical in urban areas. For the current pre-paid official refuse bags, 30% of households participate in the service. This compares with all households participating in recycling services and rates-funded refuse services. The PAYT participation rate is estimated at 90% to reflect households opting out at service commencement. The PAYT refuse bin has a 60% presentation rate to reflect that customers will only present their bin for collection when it is full.

The tonnes collected per year are derived from the different participation and presentation rates. For recycling this also recognises that residents will recycle more with the larger volume provided with the two-stream system.

Service costs

The following table compares the operating costs, revenue and cost per household for the different options. The costs are based on modelling undertaken by Morrison Low using actual household numbers from Lower Hutt, anticipated tonnage based on proposed service changes, and representative costs for collection vehicle lease and operation, fuel, staff, bin supply and maintenance and contract overheads. These costs are representative of actual tendered prices from waste contracts procured throughout New Zealand.

Council's current contract cost for its pre-paid official refuse bag collection service and recycling crate collection service are also provided. For both services, the contracts have been in place for over ten years and, based on Morrison Low's recent procurement experience, significant cost increases are anticipated for these services if re-tendered now.

Table 8 Comparison of refuse and recycling service costs and revenue

Service cost	Refuse Collection					Recycling Collection		
Service option	Pre-paid Official Refuse Bag		Opt-out Refuse Service	Rates Funded Refuse Bins	PAYT[1] Refuse Bins	Crates, Weekly		2-stream, Fortnightly
	Current cost	Future cost				Current cost	Future cost	
Collection cost	$400,000 surplus from bag sales	$768,000	$0	$1,935,000	$1,706,000	$1,300,000	$2,593,000	$1,833,000
Disposal/processing cost		$212,000	$0	$2,176,000	$1,741,000		$390,000	$669,000
Recycling revenue		n/a	n/a	n/a	n/a		-$624,000	-$535,000
Council administration cost[2]		$98,000	$0	$411,000	$345,000		$236,000	$197,000
Total service cost		**$1,078,000**	**$0**	**$4,522,000**	**$3,792,000**	**$1,300,000**	**$2,595,000**	**$2,164,000**
PAYT revenue[1]		$942,000	$0	$0	$3,858,000	n/a	n/a	n/a
Cost recovery from rates (excl. GST)		**$136,000[7]**	**$0**	**$4,522,000**	**$0[3]**	**$1,300,000**	**$2,595,000**	**$2,164,000**
Annual average cost per participating household (incl. GST)	**$130[4]**		**$285[5]**	**$144**	**$234[6]**	**$40**	**$82**	**$69**

(1) PAYT = pay as you throw or user-pays
(2) Council administration estimated at 10% of collection and processing/disposal costs
(3) Surplus revenue generated not shown here
(4) Average annual cost per participating household is 1 bag x 52 weeks x $2.50/bag.
(5) Based on the average 120L/140L annual service cost for private collectors operating in Hutt City
(6) Based on $4.50 per bin tag for 120L bin
(7) This cost recovery from rates for continuing with bags is based on the assumption that the cost per bag remains at $2.50.

While the above table shows overall costs and estimated average costs per household, the different options have different cost effects on individual households, depending on their size. The below table shows the impact of the different refuse service options for three different household types: small, medium and large.

Service option	Pre-paid Official Refuse Bag	Opt-out Refuse Service[(1)]	Rates Funded Refuse Bins	PAYT Refuse Bins
Assumptions	$2.50 per bag in Lower Hutt	$4.62/wk, 80L bin $5.50/wk, 120L bin $8.50/wk, 240L bin	$2.19/wk, 80L bin $2.77/wk, 120L bin	$4.50 per pick up for 120L bin
Household A: One person, 60L of rubbish every three weeks				
Estimated annual cost	$42.50 (17 bags)	$240	$114	$58.50 (pick up four-weekly)
Household B: Three people, 120L of rubbish per week				
Estimated annual cost	$260 (104 bags)	$286	$144	$234 (pick up weekly)
Household C: Five people, 240L of rubbish per week				
Estimated annual cost	$520 (208 bags)	$442	$288 (two 120L bins)	$468 (2 pick ups weekly)

(1) Based on private waste collection charges as at May 2019. These are subject to change as private waste companies adjust their service charges in response to competition from other service providers including Council.

Refuse collection

Due to the low participation rates, the total cost of the current pre-paid official refuse bag collection service is significantly lower than refuse bin service options. The participation rates also drive the difference in cost in delivering the rates-funded refuse bin and the PAYT refuse bin.

PAYT revenue either comes from the sale of pre-paid official refuse bags or from pre-paid refuse bin tags (or similar technology enabled solution such as RFID[7]). Any residual costs are funded from rates, with residual revenue used to fund other Council services.

For the opt out option, there are no Council costs associated with refuse collection. Households can choose from the available private services.

The cost per household considers both the rates funding and PAYT components of the service.

Recycling collection

Overall the two-stream recycling service has lower service delivery costs than crates. Higher processing costs and lower recycling revenue are off-set by lower collection costs. All costs are recovered from rates. Note that continuing with crates is significantly higher cost than at present, this is due to the following key reasons:

- Recycling markets are volatile, and the value of recyclables is relatively low at present. This presents a higher risk, with more uncertainty, for providers, which is expected to be reflected in their tender prices
- The option incorporates all costs including Council administration and the cost of crates and nets. These costs are currently excluded from the targeted rate.

[7] RFID = radio frequency identification. While the PAYT RFID option has been ranked as not viable at the moment, this technology is developing rapidly and could be considered by Council instead of the PAYT option with pre-paid refuse bin tags.

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The recommended option

Recycling services

For the kerbside recycling collection service, a move to 2-stream recycling will provide a more cost-effective service compared to retaining the crate-based service option. It will reduce the health and safety risks associated with kerbside sorting of recyclables. It will also reduce incidences of wind-blown litter and rain damage. The provision of recycling drop-off stations would be reduced from five to two (as the capacity of crates to hold recyclables would be a lesser concern), with the new recycling drop-off stations restricted to locations where drop-off can be supervised when open by existing staff overseeing co-located activities.

No kerbside organics collection services are proposed at this time. This is for two reasons:

- Further analysis should be carried out by undertaking a full carbon emission comparison between alternative options, including composting, anaerobic digestion and landfilling at Silverstream where the gas recovery system appears to be relatively effective.
- Wellington City is planning a trial of a separate food waste collection service, and it would be useful to await its results and apply lessons learnt. It is also likely that there are benefits from economies of scale by cooperating between the councils within the Wellington region on organics processing facilities and identifying the associated end-markets.

Refuse collection service

The recommended approach is a rates-funded wheelie bin collected weekly for the kerbside refuse collection service. Different bin sizes to match household needs should be available, with an option to opt-out of the rates-funded service, and a move to pay as you throw when technology enables. Depending on the availability of suitable and cost-effective technology, a pay as you throw bin service could be a workable alternative to a rates-funded service. This could be confirmed via a procurement process for renewal of Council's kerbside collection services. The pay as you throw option could be tested in terms of technical feasibility and costs in comparison to the rates-funded bin.

A summary of each option is set out below.

Status quo: refuse bags

Advantages

This option is principally able to provide cost effective disposal for residents, especially smaller households that create small volumes of waste. By paying per bag, residents are also incentivised to minimise waste.

In principle, this option would enable Council to continue to make a small surplus from bag sales, supplementing Council revenue (currently $400,000 per year), albeit this would likely require an increase in bag costs compared to the present situation. For example, in Porirua bag costs are $2.75 compared to Lower Hutt's $2.50 per bag.

Refuse bags are a practical option for rural residents (e.g. Wainuiomata Coast Road) whereby they drop off bags at a dedicated collection point. Rural roads can be too narrow for trucks and there are safety issues associated with trucks stopping on high speed roads.

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Disadvantages

Health and safety concerns would continue in this option. These risks are considered too high for most of the major waste collection companies in New Zealand, and these companies will not tender for council contracts that continue refuse bag collection services. In general, the smaller waste companies will still tender for refuse bag collection services. Their health and safety management systems are typically less mature than those of the major waste companies. Therefore, they are not well positioned to take on the higher health and safety risks that they would need to manage with a bag collection service.

Under the current health and safety legislation, Council would have to take on more responsibility for managing the health and safety risks as the specifier of the collection methodology (i.e. safety in design principles). Council would be held more accountable should an incident occur with the bag collection service than it would have if it had followed the wider industry's position of not supporting bag collection services.

As the bag service is a pay as you throw approach, there is scope for residents to avoid rubbish disposal costs by illegally dumping waste. Council employs an Environmental Investigations Officer, and there are costs associated with managing illegally dumped waste. It is possible that at least some of the illegal dumping that is occurring is due to residents not willing to pay for refuse disposal. Therefore, while the Council bag service yields $400,000 in revenue, this is not necessarily a net yield and does not account for potential costs associated with illegal dumping or account for other Council administrative costs.

As a result, for the kerbside refuse collection service, a continuation of the status quo using refuse bags is not recommended.

The three remaining options are all viable but the cost per household and the level of rates funding varies.

Opt-out

Opting out of refuse collection means rates funding is only required for the recycling collection service as there is no Council-provided service. Households would contract a private waste company to receive a refuse collection service (e.g. as is done on the Kapiti Coast). Already 70% of households in Lower Hutt use this option.

Advantages

Health and Safety incidents are expected to decrease in line with the change to a bin service (private operators do not offer bag collection).

Disadvantages

Based on current advertised prices for private wheelie bin services, households would pay more for their refuse collection services. Costs would also increase significantly for those that currently use Council's bag collection service – albeit residents do have the option of sharing bins, enabling some to avoid higher costs.

Most private wheelie bin services provide 240L wheelie bins on a weekly basis at a price that is attractive to customers. The large volume of the bins does not incentivise waste minimisation.

Council currently achieves approximately $400,000 in revenue from its bag service; this revenue source would no longer be there.

It is possible that this change could also lead to an increase in illegal dumping, as the costs for rubbish disposal can be avoided in this way.

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In addition, Council would have less control over the refuse collection service both in terms of cost and its ability to encourage diversion through restricting wheelie bin volume. Once out, Council cannot easily re-enter the market.

Rates funded bins

Advantages

Health and safety incidents are expected to decrease in line with the change to a bin service.

Universally providing a rates-funded refuse bin is more cost-effective than households receiving a private wheelie bin service, at least on average.

A range of bin sizes can be offered to match household needs and the cost could be adjusted to reflect customer choice of bin size. In this way, this option can be relatively cost-effective even for smaller households. In addition, residents could be offered the option to opt out of the Council service and continue with their private collection service.

This option could still provide a market space for private service providers, if Council services are limited to small bin options only such as 80L or 120L. Those wanting larger bins, e.g. 240L, could opt out of the Council service and use a private service.

This option could result in a reduction in illegal dumping, as households choose to use a service they (or their landlord) are already paying for and is convenient, because it is provided to them without them having to make their own arrangements. Therefore, costs associated with managing illegally dumped waste (staff time, contractor costs, disposal costs) could be reduced, albeit the quantum of avoided costs is unclear as illegal dumping will continue to occur for other reasons (e.g. commercial illegal dumping).

For rental properties, the provision of a rates-funded refuse collection service would be paid for by the landlord as part of the property's rates. Experience in other districts has shown this reduces the instances of tenants leaving waste on their rental properties, which becomes a cost to the landlord long term. The choice of bin size and whether to opt out of the service would rest with the landlord, not the tenant.

Disadvantages

While more cost effective for households on average, additional rates funding of $4,500,000 per annum is required for Council to provide this service. The associated rates increase may be unacceptable to ratepayers when considered alongside other rate increases. Council would need clear messaging for its communication with residents to explain that any rates increase would be more cost-effective for an average household. Households that currently use a private service would be able to cancel this and obtain a cost saving to them overall.

Very small households (single person, elderly) could see an increase in costs relative to Council's current bag service.

Council currently achieves approximately $400,000 in revenue from its bag service; this revenue source would no longer be there.

If bin collection is not feasible for rural residents (e.g. Wainuiomata Coast Road) then an alternative collection service would need to be provided, such as rates-funded bags delivered to dedicated collection points (potentially with bigger 660L bins at the drop-off points).

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There may be opposition from private wheelie bin service providers, particularly smaller local companies who may see a loss of revenue with the introduction of a Council service. However, under this option commercial services would continue to be outside the Council collection service, as well as those choosing to opt out of Council's service, providing an ongoing market for private waste companies to cater for.

PAYT bins

This option uses a similar funding model to the bag service, except that it uses bins. Households only pay for bin collection when needed (e.g. by purchasing bin tags or alternatively using RFID technology and invoicing of costs directly to households). The technology required to link a recorded bin lift to a customer account is not yet fully established in New Zealand and is the greatest technology barrier to these services being widely introduced at this time.

PAYT refuse bins off-set rates funding by charging participating households a fee (either per pick up or an annual fee) for receiving the service. In order to recover sufficient fees to fund the service, Council would need to charge a similar fee to that currently charged for private wheelie bin services. Rates funding could be eliminated entirely if the bin lift price is set to fully cover operating costs and customers are willing to pay the charge.

Advantages

Health and safety incidents are expected to decrease in line with the change to a bin service.

This option incentivises diversion with households only paying for the disposal volume they use.

PAYT refuse bins are more cost-effective for households compared to them receiving a private wheelie bin service, especially for very small households.

This option could still provide a market space for private service providers who would compete with Council for services, particularly if Council services are limited to smaller bin options such as a standard 120L bin.

Council currently achieves approximately $400,000 in revenue from its bag service. In principle, this revenue source could still be retained, subject to costs for bin tags or bin lift being slightly higher than operating costs.

Disadvantages

From an average household perspective, the cost would be similar to a private collection service.

The technology and administrative requirements to implement PAYT refuse bins are not yet well advanced in New Zealand, although technology is improving quickly. Depending on the availability of suitable and cost-effective technology, a pay as you throw bin service could be a workable option. This could be confirmed via a procurement process.

If bin collection is not feasible for rural residents (e.g. Wainuiomata Coast Road) then an alternative collection service would need to be provided, such as pre-paid official bags delivered to dedicated collection points (potentially with bigger 660L bins at the drop-off points).

This option may not result in a reduction in illegal dumping, as households can still avoid the rubbish collection service. Therefore, associated costs would continue to arise (e.g. staff time, contractor costs, disposal costs).

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Financial case

The financial case looks at the overall cost to Council, including the funding required, whether there is any revenue to offset the funding, and whether the service is affordable overall. The financial case is shown in the orange box in the BBC summary in Appendix 1.

Rates funding

The overall targeted rate for both the rates-funded recycling service and rates-funded refuse service is estimated at $213 per household. This combined cost is lower than what households are currently paying just for a private refuse collection service.

The rates funding required for the recycling collection service, including the two-stream recycling collection and recycling drop-off stations, is estimated at $2,200,000 per annum or $69 per household. This estimate is in line with the actual cost per household currently in Porirua City and Dunedin City.

The rates funding required for the universal 120L refuse bin collection service is estimated at $4,500,000 per annum or $144 per household. This estimate is in line with actual cost per household in Waimakariri District and Christchurch City.

Bin and crate purchase

The rollout of wheelie bins and crates for the refuse and recycling collection service can either be financed from capital expenditure or operating expenditure. Generally up-front capital expenditure can be more cost-effective for Council due to lower borrowing costs. It is also possible for the Council's collections contractor to fund the upfront capital cost, with bin capital payback through amortisation over the contract term (this would move this to a Council operating expenditure). In the latter, Council would own the wheelie bins and crates at the end of the contract and could pass this ownership onto the next contractor.

Note, for comparison purposes the wheelie bin and crate purchase has been amortised over the contract term in the financial modelling.

PAYT

The introduction of PAYT, either through bin tags or an RFID-enabled automated system, would introduce user-pays funding for the refuse collection services, avoiding the requirement for rates funding for this service.

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Commercial case

The commercial case is about confirming that appropriate commercial agreements can be put in place to deliver the services. This includes procurement considerations as well as wider contractual and governance arrangements, risk-sharing approach and procurement timeframes. The commercial case is shown in the yellow box in the BBC summary in Appendix 1.

Implementation of any of the shortlisted options will occur through the procurement of a new kerbside collection service contract. The current contracts expire in September 2019, although work is currently under way to extend this contract, with a re-tender ahead of this (the recommended extension is to June 2021). This means there should be sufficient time for the procurement and mobilisation of the new contracts. It is noted that six to nine months is required for procurement and at least six months is required for the mobilisation period (with contractors preferring at least nine months) to allow enough time for new vehicles, bins and crates to be supplied, recruitment of collection vehicle drivers, and the rollout of new bins and crates prior to the service commencement date. Risk-sharing associated with recycling commodity revenue is recommended to balance the risk associated with the current volatility in commodity markets.

Options for implementing PAYT can be requested from suppliers through this procurement, from which Council can decide whether to implement the changes from the start of its new contracts or reconsider its introduction in future once technology enables.

Management case – the way forward

In order to successfully implement the recommended approach, the following actions are proposed, and a possible timeline is provided:

- Consult with community on proposed service changes for refuse collection, recycling collection and recycling drop-off stations, e.g. through 2020 Annual Plan consultation.
- Undertake procurement for new kerbside refuse and recycling collection services (run in parallel, but only released to market after 2020 Annual Plan deliberations complete, i.e. release to market July 2020, awarded December 2020).
- Inform community of cost of service changes based on procurement outcomes, e.g. through consultation on 2021-2031 Long Term Plan.
- Mobilise and roll out new kerbside refuse and recycling collection services (mobilise from January 2021 and commence new services July 2021, at the earliest).
- Progressively decommission recycling drop-off stations following introduction of new kerbside recycling collection service (from July 2021 onwards).

At a high level, the following risks have been identified for implementing the preferred option, with these risks needing to be managed through the project:

- Community opposition to rates increases associated with a rates-funded refuse collection service, and kerbside recycling.
- Private collector opposition to a rates-funded refuse collection service that impacts their market share.
- Continued volatility in the recycling commodity markets.
- Tight procurement timeframes for renewing kerbside collection services.

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Appendix 1 Better Business Case Summary

Kerbside Collection Services Business Case

Strategic Case:

Need to invest

The current contract for Council's kerbside collection service ends in the third quarter of 2019 albeit work is currently under way to extend this contract. There is an opportunity to review the services ahead of re-tendering the contracts.
A review of Hutt City Council's refuse bylaw is also currently under way, and could support any service changes.

Refuse collection
A weekly user-pays bag collection service is provided to both urban residential and commercial customers. Customers can put out as many (or as few) bags as they have paid for. Waste companies also provide private refuse wheelie bin services directly to customers (i.e. non-Council service).

Experience throughout New Zealand has shown that customers tend to prefer bins to bags for refuse collection because they are more convenient, easier to use, less prone to animal strike and generally less odorous.

In Lower Hutt, residents (that have the ability to pay or willingness) have taken up private wheelie bin services and consequently Council's market share, although stable, sits at around 30%. The service is currently self-funding and realising a surplus of approximately $400,000 for Council per year. However, experience in other parts of New Zealand shows that further reductions in market share (e.g. following key changes in the market) may result in the service being less cost-effective. To respond to this, Council could increase the price of its rubbish bags to cover the funding shortfall. However, this may incentivise more customers to move to a wheelie bin service as the cost difference between rubbish bags and a private wheelie bin narrows.

Bag collection services have been identified as higher risk from a worker health and safety perspective than bin collection services due to the need to exit the vehicle to complete the collection, manual handling of bags and exposure to sharps.

Recycling collection
A weekly kerbside collection service is provided to residential customers only. The service is a kerbside sort of 55L crates.

Throughout New Zealand councils have found that customers prefer wheelie bins for their recycling collection services because the materials are not impacted by wind and rain and the greater capacity enables customers to recycle more.

However, the improved convenience of wheelie bins is balanced by the need for post-collection sorting in a processing facility and the inability to detect contamination until wheelie bins are lifted.

Recycling crate services have higher worker health and safety risks than wheelie bins due to the need for workers to exit trucks, manually handle crates, and handle recyclables, including sharps (eg broken glass).

Some materials that are collected through Council's recycling service are not recycled. For example, plastic grades 3-7.

Recycling stations
In addition to the kerbside collection, Council provides community recycling stations at five locations. There are contamination and significant illegal dumping issues at these stations, which are open 24/7 and are unstaffed.

Organics
No kerbside collection service is provided for organics, although customers can pay for a private greenwaste collection service.

There is a low rate of diversion of organics waste, with compostable food and greenwaste accounting for approximately 45% of domestic refuse.

There is an opportunity to increase diversion of kerbside collected waste by targeting organics, however this needs to be balanced by the high cost of organics collection services and the need to confirm greenhouse gas implications.

Strategic Context

Council waste minimisation and management is governed by the Waste Minimisation Act (WMA). The purpose of the WMA is to:
"encourage waste minimisation and a decrease in waste disposal in order to
(a) protect the environment from harm: and
(b) provide environmental, social, economic, and cultural benefits."

To further it's aims, the WMA requires councils to promote effective and efficient waste management and minimisation within their district. To achieve this, all councils are required by the legislation to adopt a Waste Management and Minimisation Plan (WMMP).

In 2017 the Councils of the Greater Wellington Region, including Hutt City, adopted a new Joint WMMP. The vision for the WMMP is "waste free, together – for people, environment and economy".

The WMMP also outlines Council's vision, goals, objectives and targets for waste minimisation and management in the region and include both regional and Council-specific action plans. As part of the WWMP action plan, HCC has committed to further investigate a number of options of its ongoing waste services. The two key actions are:
• C.1: Investigate Options and costs of a two-stream recycling collection, by 2019
• C.2: Investigate the use of wheelie bins for kerbside recycling by 2019

Further, there are three actions in the WMMP that relate to the above actions, these need to be jointly considered:
• C.3: Investigate methods to prevent recycling from being put in council rubbish bags
• C.4: Provide city wide weekly refuse and recycling collection service plus recycling collection stations
• IN.4: Review effectiveness, number, and positions of community recycling stations. Implement agreed changes (if any).

In additional to the WMA, kerbside collection services are governed by the Local Government Act and the Health and Safety at Work Act.

Hutt City Council has also adopted a carbon reduction goal of carbon zero by 2050 (subject to approval at 11 December 2018 meeting).

Investment Objectives and Case for Change

Objective 1	**To provide services that are cost effective**
Status Quo	A user-pays bag refuse collection service provides a price incentive to divert waste. With 30% market share, the cost of providing the service is covered by the bag sales, but this may not be the case if bag sales drop. Council's recycling collection costs Council $1.3 million (excl GST) per annum. Refuse collection costs Council $1.07 per bag sold or approximately $510K (excl GST) per annum
Relevant Investment Benefits	The overall suite of Council kerbside services provided is a cost-effective package. Customers are encouraged to divert waste with the right funding mechanism. Fixed cost are shared across sufficient customers to achieve efficiencies from scale
Relevant KPIs	Overall service cost within approved budgets
Potential Scope	Changes to Council kerbside collection services and drop-off points are considered as a total package from a cost perspective
Constraints and dependencies	Refuse and recycling collection contract expires in September 2019. The hilly terrain of the Hutt Valley coupled with strong winds and rain impact service delivery
Risks	Preferred collection methodology and funding mechanisms do not align (e.g. user pays and refuse wheelie bins). Service costs recovered through rates are unacceptable to ratepayers
Objective 2	**To provide services that are safe**
Status Quo	Council's services include manual collections of bags and crates, which are generally considered higher risk from a health and safety perspective
Relevant Investment Benefits	Contractor, council staff and the general public are kept safe at all times
Relevant KPIs	Zero reportable incidents associated with Council's hazardous waste services
Potential Scope	Health and safety considered as part of service options
Constraints and dependencies	Changes to kerbside services must improve health and safety standards and comply with regulatory requirements
Risks	Continuing with bag collection for refuse or crate collection for recycling may not be acceptable to some contractors due to H&S risks, and may open Council up to undue H&S liability should a serious incident occur
Objective 3	**To provide services that reduce greenhouse gas emissions**
Status Quo	Transportation emissions associated with weekly refuse and recycling collections plus private refuse collection vehicles also driving the same streets. Emissions from landfill disposal as well as the processing of kerbside collected recycling
Relevant Investment Benefits	Greenhouse gas emissions are unchanged or reduced as a result of service changes
Relevant KPIs	Reduce carbon emissions to zero by 2050 Reduce landfill disposal of material with high greenhouse gas generation potential
Potential Scope	Greenhouse gas emissions considered as part of service options
Constraints and dependencies	Changes to kerbside services must reduce or maintain current greenhouse gas emissions
Risks	Changes to services introduce new greenhouse gas emissions not previously considered
Objective 4	**To provide services that customers want and can use appropriately**
Status Quo	Council has received requests from residents for a change to wheelie bins for both refuse and recycling, although the level of satisfaction with the current service is relatively high. In the case of refuse, this only applies to the 30% of residents that use the service, with the remaining 70% of residents opting to use private wheelie bin services
Relevant Investment Benefits	Reduced contamination of recycling products. Increased customer satisfaction recorded in Council's annual customer survey
Relevant KPIs	High level of satisfaction with Council's kerbside collection services in Council's annual customer satisfaction survey
Potential Scope	Change in kerbside collection methodology from status quo. Potential introduction of organics collection. Potential changes to recycling drop-off points
Constraints and dependencies	Refuse and recycling collection contract expires in September 2019. The hilly terrain of the Hutt Valley coupled with strong winds and rain impact service delivery
Risks	Residents uncertain how to use the new recycling system, may result in increased contamination
Objective 5	**To reduce waste and protect the environment from the harmful effects of waste**
Status Quo	Large quantities of recyclable material and organics that could be diverted are currently being landfilled. Material collected as recyclables may be disposed of at the end processor if no market exists for them
Relevant Investment Benefits	Reduction in waste to landfill and improved recycling outcomes. Reduction in contamination of recycling products
Relevant KPIs	Meet regional WMMP diversion targets
Potential Scope	Change in kerbside collection methodology from status quo. Potential introduction of organics collection. Potential changes to recycling drop-off points
Constraints and dependencies	Refuse and recycling collection contract expires in September 2019. Alignment with the implementation of regulatory framework change (e.g. solid waste bylaw). The hilly terrain of the Hutt Valley coupled with strong winds and rain impact service delivery
Risks	Residents uncertain how to use the new recycling system, may result in increased contamination. Markets not available for some recyclables, resulting in the need to landfill these materials

Economic Case:

Determine Potential Value for Money
(COSTS ARE INDICATIVE AND FOR COMPARISON ONLY. ACTUAL COSTS WILL DEPEND ON MARKET RESPONSE)

	Status quo: bags, crates	Opt out refuse, 2-stream recycling	Refuse bins, 2-stream recycling	PAYT refuse bins, 2-stream recycling
Appraisal period (years)	10	10	10	10
Capital costs ($m)	0.0	0.0	0.0	0.0
Whole of Life Costs ($m)	-44.2	-27.5	-72.8	-65.5
Cost-Benefit Analysis of (monetary benefits and costs at the Public Sector Discount Rate)				
Net Present Value of Benefits ($m)	12.4	5.2	5.5	32.6
Net Present Costs ($m)	-31.1	-19.4	-51.2	-46.1
Benefit Cost Ratio	Not calculated			
Net Present Value (NPV, $m)	**-18.7**	**-14.2**	**-45.7**	**-13.5**
Multi-criteria Analysis (ranking of non-monetary benefits and costs, if any)				
Political risk *- negative media coverage or negative community feedback*	Low risk - continuation of current service	Medium risk - no longer offering council refuse service, private service costs may be high	Medium risk - rates increase may attract coverage	Low risk - improved level of service with bins
Economic risk *- unexpected cost increases*	Medium risk - long term recycling commodity prices unknown	Medium risk - long term recycling commodity prices unknown	Medium risk - long term recycling commodity prices unknown	Medium risk - long term recycling commodity prices unknown
Social risk *- risk to public health or worker safety (n.b. community opposition assessed under Political)*	High risk - manual handling with crates and bags	Medium risk - some manual handling with glass crates	Medium risk - some manual handling with glass crates	Medium risk - some manual handling with glass crates and removal PAYT tags
Technical risk *- Untried technology or process*	Low risk - approach is common in NZ	Low risk - approach is common in NZ	Low risk - approach is common in NZ	Medium risk - solution not widely used in NZ
Legal risk *- Council decisions legally challenged*	Low risk - unlikely to be legally challenged	Low risk - unlikely to be legally challenged	Low risk - unlikely to be legally challenged	Low risk - unlikely to be legally challenged
Environmental risk *- risk of discharge to environment*	Medium risk - existing diversion, but some illegal dumping assoc. user pays model	High risk - no refuse price control to drive diversion and no reduction in illegal dumping	Medium risk - rates funded refuse may encourage more disposal, but partially decrease illegal dumping	Medium risk - more diversion anticpated, but some illegal dumping assoc. user pays model
Preferred Option:				

The Preferred Option:
Based on this assessment, the recommended approach for kerbside recycling collection is to move to a 2-stream recycling service, providing households with a 240L wheelie bin for mixed recycling and a 45L crate for glass, both collected fortnightly. Alongside this the provision of recycling drop-off stations should be reduced from five to two, with the new recycling drop-off stations restricted to locations where drop-off can be supervised when open. Kerbside recycling and the recycling drop-off stations would continue to be funded through rates.

For the kerbside refuse collection service, the recommended approach is a rates-funded wheelie bin collected weekly, available in different sizes to match household needs, with an option to opt-out of the rates-funded service, and a move to pay-as-you-throw (PAYT) when technology enables. Depending on the availability of suitable and cost-effective technology, a PAYT bin service could be a workable alternative to a rates-funded service. This could be confirmed via a procurement process for renewal of Council's kerbside collection services. The PAYT option could be tested in terms of technical feasibility and costs in comparison to the rates-funded bin.

A kerbside organics collection service is not proposed at this point in time. Further analysis of carbon emissions from organics services and learnings from Wellington City's food waste collection trial will be used to inform a decision on this service at a future time.

The recommended options will improve health and safety outcomes, reduce windblown litter and animal strike and divert more waste from landfill. For an average household, a rates-funded service can deliver both a refuse collection and recycling collection service for less cost than a private refuse collection service alone and is therefore more affordable. Offering the option of smaller bin sizes, opting out and a move to PAYT when technology enables, provides a cost-effective option for smaller households and those that produce less waste.

Financial Case:

Financial Costing for 2-stream recycling and range of refuse options

	Year One	Total
Capital Expenses ($m)	0.00	0.00
Operating Expenses ($m)	Refuse $0m to $4.5m Recycling $2.2m	Refuse $0m to $45m Recycling $22m
Total Revenue ($m)	Refuse $0m to $4.5m Recycling $0m (rates funded)	Refuse $0m to $45m Recycling $0m (rates funded)
Capital Funding Required ($m)	0.00	0.00
Operating Funding Required ($m)	Refuse $0m to $4.5m Recycling $2.2m	Refuse $0m to $45m Recycling $22m

Affordability and funding
The overall targeted rate for both the rates-funded recycling service and rates-funded refuse service is estimated at $213 per household. This combined cost is lower than what households are currently paying just for a private refuse collection service.
The rates funding required for the recycling collection service, including the two-stream recycling collection and recycling drop-off stations, is estimated at $2,200,000 per annum or $69 per household.
The rates funding required for the universal 120L refuse bin collection service is estimated at $4,500,000 per annum or $144 per household.
The introduction of PAYT, either through bin tags or an RFID-enabled automated system, would introduce user-pays funding for the refuse collection services, avoiding the requirement for rates funding for this service.
The rollout of wheelie bins and crates for the refuse and recycling collection service can either be financed from capital expenditure or operating expenditure. Generally up-front capital expenditure can be more cost-effective for Council due to lower borrowing costs. It is also possible for the Council's collections contractor to fund the upfront capital cost, with bin capital payback through amortisation over the contract term (this would move this to a Council operating expenditure). In the latter, Council would own the wheelie bins and crates at the end of the contract and could pass this ownership onto the next contractor.

Commercial Case:

Prepare for the Potential Deal:
Implementation of any of the shortlisted options will occur through the procurement of a new kerbside collection service contract. The current contracts expire in September 2019, albeit work is currently under way to extend this contract (the recommended extension is to June 2021). This means there should be sufficient time for the procurement and mobilisation of the new contracts. It is noted that six to nine months is required for procurement and at least six months is required for the mobilisation period (with contractors preferring at least nine months) to allow enough time for new vehicles, bins and crates to be supplied, recruitment of collection vehicle drivers and the rollout of new bins and crates prior to the service commencement date. Risk-sharing associated with recycling commodity revenue is recommended to balance the risk associated with the current volatility in commodity markets.
Options for implementing PAYT can be requested from suppliers through this procurement, from which Council can decide whether to implement the changes from the start of its new contracts or reconsider its introduction in future once technology enables.

Management Case:

Plan for Successful Delivery:
In order to successfully implement the recommended approach, the following actions are proposed and a possible timeline is provided:
- Consult with community on proposed service changes for refuse collection, recycling collection and recycling drop-off stations
- Undertake procurement for new kerbside refuse and recycling collection services
- Inform community of cost of service changes based on procurement outcomes
- Mobilise and roll out new kerbside refuse and recycling collection services
- Progressively decommission recycling drop-off stations following introduction of new kerbside recycling collection service

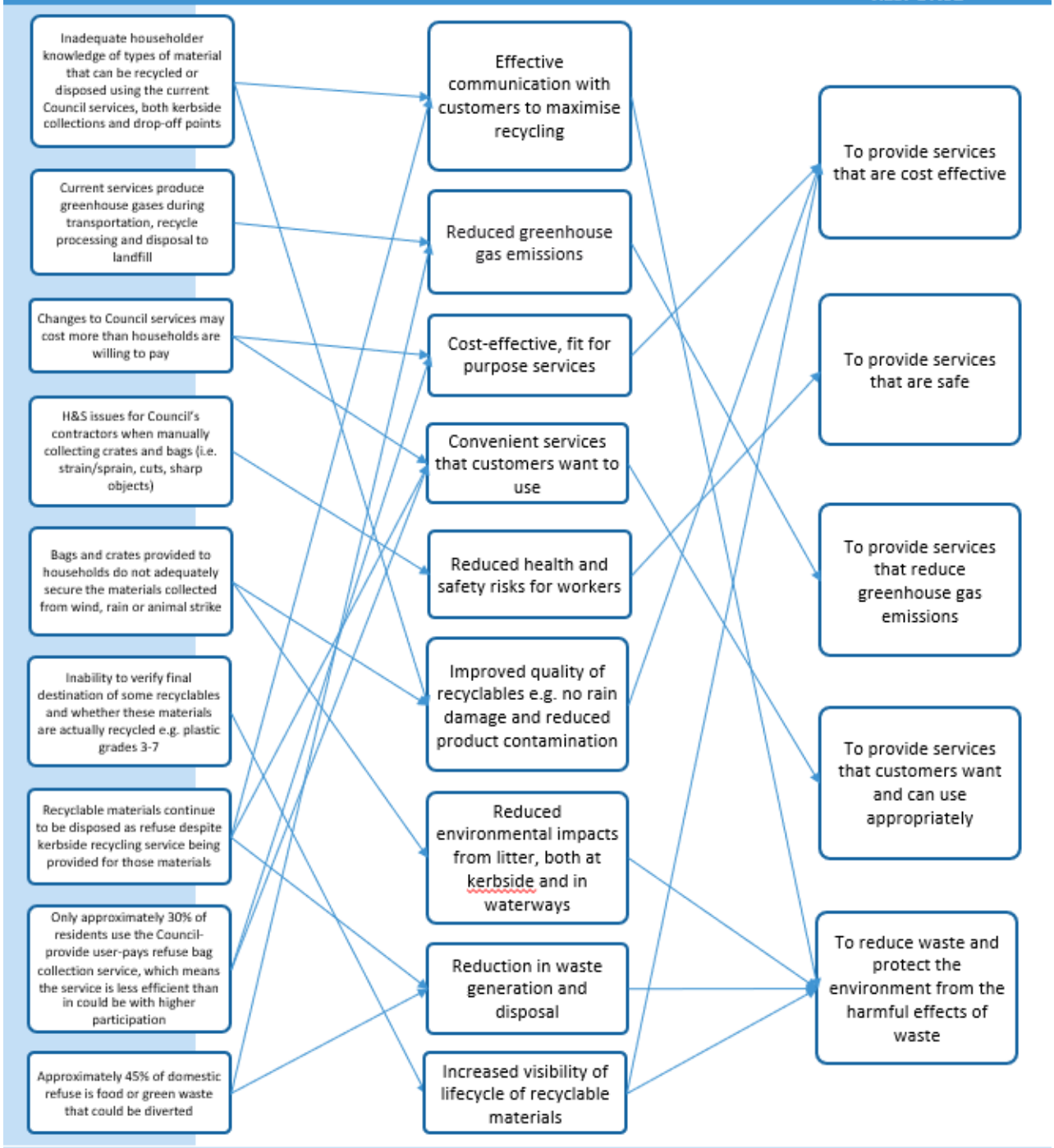
At a high level, the following risks have been identified for implementing the preferred option, with these risks needing to be managed through the project:
- Community opposition to rates increases
- Private collector opposition to a rates-funded refuse collection service that impacts their market share
- Continued volatility in the recycling commodity markets
- Tight procurement timeframes for renewing kerbside

Appendix 2 Investment Logic Map (ILM)

Hutt City Council

Kerbside collection services

INVESTMENT LOGIC MAP



Business Problem Owner: Jörn Scherzer
Facilitator: Alice Grace

Version no: FINAL
Last modified: 12/12/2018

Appendix 3 Longlist Options Assessment

	Scope Options (What)			Service Solution Options (How)															
				SS-1: Refuse							SS-2: Recycling							
											SS-2a: Kerbside					SS-2b: Drop Off		
	SC-1	SC-2	SC-3	SS-1a	SS-1b	SS-1c	SS-1d	SS-1e	SS-1f	SS-1g	SS-2a(i)	SS-2a(ii)	SS-2a(iii)	SS-2a(iv)	SS-2a(v)	SS-2b(i)	SS-2b(ii)	SS-2b(iii)
Description of Option:	Status quo: current collection areas (including all residents in commercial areas)	Extend to all commercial areas	Extend to schools, early childhood centers and churches	Status quo: bags, collect weekly	Bins, size restricted, collect weekly	Bins, range of sizes, collect weekly	Bins with pay-as-you-throw user tags, collect weekly	Bins with pay-as-you-throw with RFID technology, collect weekly	Bins (either 1b, 1c, 1d or 1e methodology), collect fortnightly	Council opts out of refuse collection	Status quo: crates, collect weekly	2-stream: 45L glass crate and 240L mixed recycling, collect fortnightly	2-stream: 80L glass bin and 240L mixed recycling bin, collect fortnightly	240L fully commingled bin, collect fortnightly	Kerbside service discontinued	Status quo: four council recycling stations (plus private Seaview)	Increased network of recycling stations	Drop off at strategic, supervised locations (e.g. RTS, RRC)
Investment Objectives																		
To provide services that are cost effective	**Yes** - cost effective	**Partial -** cost may be higher for bespoke solution	**Yes -** potential economies of scale, albeit overall cost increase	**Partial -** bags cost more than bins to collect	**Yes** - bins cost less than bags to collect	**Partial -** a range of size can potentially create inefficiencies for collections	**Partial** - bins cost less to collect than bags but additional cost to manufacture and distribute tags	**Partial -** potential higher costs because of RFID technology	**Yes** - fortnightly collections would cost less	**Partial -** No cost to council but residents may pay more for private service	**Partial -** crates more expensive to collect but less expensive to process	**Partial -** bins less expensive to collect but more expensive to process	**Partial -** bins less expensive to collect but more expensive to process	**No -** bins less expensive to collect but more expensive to process commingled recycling (may need transport out of region)	**Partial -** efficiencies from a citywide service (economies of scale)	**No** - high cost of service for limited diversion (due to illegal dumping)	**No** - high cost of service for limited diversion (due to illegal dumping)	**Yes** - cost shared with RTS or RRC costs
To provide services that are safe	**Yes** - does not impact safety	**Partial** - bespoke services adds complexity	**Partial** - servicing schools and early childhood centres adds complexity	**No** - bag collections are being phased out due to safety	**Yes** - automated bin collections are safer than manual bags	**Yes** - automated bin collections are safer than manual bags	**Partial** - removal of tags requires driver to exit truck	**Yes** - automated bin collections are safer than manual bags	**Yes** - automated bin collections are safer than manual bags	**Yes** - no kerbside collection service	**Partial** - crates are not as safe as bins to collect	**Partial** - recycling crates (for glass) are not as safe as bins to collect	**Yes** - automated bin collections are safer than manual crates	**Yes** - automated bin collections are safer than manual crates	**Partial -** demand for drop-off sites may increase, increasing H&S management at sites	**Partial** - potential exposure to hazardous materials illegally dumped	**Partial** - potential exposure to hazardous materials illegally dumped	**Yes** - use of recycling station supervised
To provide services that reduce greenhouse gas emissions	**Yes** - status quo can support this (e.g. electric trucks)	**Yes** - even though transport requirements would increse, use of electric vehicles could off-set	**Yes** - even though transport requirements would increse, use of electric vehicles could off-set	**Yes** - similar to status quo	**Yes** - similar to status quo	**Yes** - similar to status quo	**Yes** - similar to status quo	**Yes** - similar to status quo	**Yes** - transport requirements would decrease, also use electric vehicles	**Partial** - limited Council influence e.g. electric trucks not specified, more trucks driving routes	**Yes** - status quo can support this (e.g. electric trucks)	**Partial** - increased transport emissions from two collection runs	**Partial** - increased transport emissions from two collection runs	**Yes** - similar to status quo emissions	**Yes** - no Council transport emissions from kerbside collection service	**Partial** - customers could use kerbside service alone	**Partial** - more emissions from customers driving to stations and haulage of recyclables	**Yes** - use of drop off facility while visiting RTS or RRC
To provide services that customers want and can use appropriately	**Yes** - satisfaction with status quo	**Partial -** unclear demand for commercial users	**Partial -** demand not fully known, although some schools have enquired	**Partial** - demand from people who produce low waste volumes but only 30 per cent market share	**Yes** - typically households prefer bins to bags	**Yes** - typically households prefer bins to bags	**Yes** - typically households prefer bins to bags	**Yes** - typically households prefer bins to bags	**Partial** - fortnightly collection less desirable	**Partial** - Less customer focused as Council has limited control of the services	**Partial -** high satisfaction but customers also want bins (complaints about litter, cant take recyclables)	**Partial** - bins are more popular than crates, but require storage bin and crate	**Partial** - bins are more popular than crates, but require storage two bins	**Yes** - bins are more popular than crates	**No** - customers expect kerbside service	**Partial** - recycling stations are used but kerbside service used more	**Partial** - more stations may not increase use as customers prefer kerbside	**Partial** - less recycling stations available but kerbside service used more
To reduce waste and protect the environment from the harmful effects of waste	**Yes -** reduces harm and waste	**Yes -** reduces harm and waste	**Yes -** reduces harm and waste	**Yes -** service reduces harm and waste with user pays	**Yes -** service reduces harm and waste by restricting volume	**Partial** - bigger bin options may increase waste	**Yes -** service reduces harm and reduces waste with PAYT	**Yes -** service reduces harm and reduces waste with PAYT	**Yes -** service reduces harm and waste by reducing frequency	**Partial** - Council has limited control of the services (capacity drives waste increase)	**No** - crate service generates litter	**Yes -** service reduces harm and waste	**Yes -** service reduces harm and waste	**Partial -** lower quality recycling products result in less recycling overall	**No** - waste disposal would increase	**No** - high contamination and limited recycling as a result	**No** - high contamination and limited recycling as a result	**Partial** - some recycling that does take place may no longer occur
Critical Success Factors (as these CSFs are crucial (not just desirable) any options that score a 'no' are automatically discounted from further analysis																		
Strategic fit and business needs - *Alignment with Waste Mgmt and Min Plan 17-23 and other relevant plans*	**Yes -** alignment with strategic objectives	**Yes -** alignment with strategic objectives	**Yes -** alignment with strategic objectives	**No** - bag collections are being phased out due to safety	**Yes -** alignment with strategic objectives	**Yes -** alignment with strategic objectives	**Yes -** alignment with strategic objectives	**Yes -** alignment with strategic objectives	**Yes -** alignment with strategic objectives	**Partial** - community expects a Council service	**Partial -** some alignment, however some H&S risks with crates	**Yes** - aligns with strategic objectives	**Yes** - aligns with strategic objectives	**Yes** - aligns with strategic objectives	Not assessed. Does not meet strategic objectives.	**No** - contamination limiting recycling	Not assessed. Does not meet strategic objectives.	**Yes** - aligns with strategic objectives
Potential value for money - *right solution, right time at the right price*	**Yes -** cost-effective	**Partial -** cost may be higher for bespoke solution	**Yes -** potential economies of scale	**Partial -** status quo may cost more with limited suppliers	**Partial** - bins cost less than bags to collect, but fixed volume means low waste producers pay for more capacity than need	**Partial -** can potentially create inefficiencies for collections	**Yes -** customer focused and cost efffective; users only pay for volume used	**Partial -** potential higher costs because of RFID technology but users only pay for volume used	**Yes** - fortnightly collections would cost less, but low waste producers may pay for more volume than need	**Partial** - No cost to council but residents may pay more for private service	**Partial -** status quo may cost more reflecting supplier reluctance	**Partial** - a bin collection service would be higher cost than status quo	**Partial** - a bin collection service would be higher cost than status quo	**Partial** - higher processing costs due to glass commingled with other recyclables		**Partial** - high contamination results in high cost to service for limited diversion		**Yes** - cost shared with RTS or RRC costs
Supplier capacity and capability - *is it a sustainable arrangement (external)*	**Yes -** common service across New Zealand	**Partial -** suppliers may not want to compete	**Partial -** suppliers may not want to compete	**No -** the majority suppliers with capability and capacity no longer collect bags	**Yes -** common service across New Zealand	**Yes -** common service across New Zealand	**Yes -** approx 130,000 households receive collections with this method in NZ	**No -** very limited supplier experience with RFID billing	**Yes -** common service across New Zealand	**Partial -** private services common service across New Zealand however Council would need to ensure all areas serviced	**Partial -** majority suppliers with capability and capacity reluctant to collect crates only	**Yes -** common service across New Zealand	**No -** glass bin collections are currently in trial phase	**No** - OJI MRF does not process commingled glass, would need to transport out of region for processing		**Yes -** common service across New Zealand		**Yes** - common to combine these activities
Potential affordability - *are there no funding constraints*	**Yes** - no constraints	**Partial -** added rates cost from extending service	**Partial -** added rates cost from extending service	**Partial -** status quo may cost more with limited suppliers	**Partial -** added rates costs	**Partial -** added rates costs	**Yes -** option is affordable	**Partial -** some unknown costs with RFID technology	**Partial -** added rates costs	**Yes** - no cost of collection for Council	**Partial -** status quo may cost more reflecting increasing supplier reluctance	**Partial** - a bin collection service would be higher cost than status quo	**Partial** - a bin collection service would be higher cost than status quo	**Partial** - a bin collection service would be higher cost than status quo		**Partial** - high contamination resulting in high cost		**Yes** - reduces funding required
Potential achievability - *ability and skills to deliver (internal)*	**Yes -** would be achievable	**Partial -** more customers to manage	**Partial -** more customers to manage	**Yes** - no change from status quo	**Yes** - similar management to status quo	**Partial -** added customer complexity	**Partial -** option is achievable but some concerns about bin tag theft	**Partial -** added billng complexity	**Yes** - similar management to status quo	**Partial** - residents likely to continue to contact Council regarding collection service	**Yes** - no change from status quo	**Yes** - similar to status quo	**Yes** - similar to status quo	**Partial** - added complexity in changing to alternative MRF that processed commingled glass		**Yes** - no change from status quo		**Yes** - less services to manage
Summary of Advantages and Disadvantages:																		
Overall Assessment:	**Yes** - Important to assess status quo against the other options	**Discard** - limited benefit over status quo	**Discard** - limited benefit over status quo	Does not meet strategic objectives but continue to economic assessment for comparison	**Possible -** cost effective and safe but less customer choice	**Preferred** - cost effective, safe and improves customer choice	**Possible** - cost effective, customer friendly and safer than bag collections, but added complexity	**Discard** - unknowns associated with RFID for PAYT	**Discard** - only feasible if combined with food waste collection	**Possible** - private sector could provide service but Council may retain administrative function	Does not meet strategic objectives but continue to economic assessment for comparison	**Possible** - crate collection (for glass) less safe than bins, but better recycling products	**Discard** - glass bin collections only in trial phase	**Discard** - lower quality recycling products that cost more to process	**Discard** - customers expect kerbside service and waste disposal would increase	Does not meet strategic objectives but continue to economic assessment for comparison	**Discard** - high cost and reduced diversion due to contamination	**Preferred** - supervision, enforcement and cameras reduce illegal dumping
Short-listed options:																		
Status Quo: refuse bags, crate recycling	**SC-1:** Current Collection Areas			**SS-1a:** Weekly bag collection							**SS-2(i):** Crates, collected weekly					**SS-2b(i):** Four recycling stations		
Option 1: opt out refuse, 2 stream recycling				**SS-1g:** Opt out of refuse collection							**SS-2a(ii)**: 45L glass crate, 240L mixed recycling bin, collected alternating weeks					**SS-2b(i):** Drop off at strategic locations		
Option 2: refuse bins, 2 stream recycling				**SS-1b:** Restrict bin size, collect weekly														
Option 3: refuse bins with user pays tags, 2 stream recycling				**SS-1d:** Range bin sizes with PAYT tags, collect weekly														

Note, Option 1 usually "do minimum", Option 2 "preferred" and Option 3 "more ambitious"

		SS-3: Organics						Service Delivery Options (Who)								
	SS-2b(iv)	SS-3a	SS-3b	SS-3c	SS-3d	SS-3e	SS-3f	SD-1	SD-2	SD-3	SD-4	SD-5	SD-6	SD-7	SD-8	SD-9
Description of Option:	Recycling stations discontinued	Status quo: drop off green waste at transfer station, green waste used as landfill cover	Drop off green waste, composted	25L Bin for food waste only, collect weekly	240L bin for food and green waste, collect weekly	240L bin for green waste, collect monthly	No food or green waste services	Status quo: council alone, out-sourced contracts	Council alone, in-house resources	Shared service with UHCC	Regional shared service	CCO/CCTO for waste services by council alone	Regional CCO/CCTO for waste services	Council in partnership with private sector e.g. joint venture	Council in partnership with community sector e.g. a trust	No council service, service controlled via bylaw
Investment Objectives																
To provide services that are cost effective	**Yes** - no recycling station costs	**Yes** - cost effective	**Partial** - cost increase for composting and need alternative landfill cover	**Partial** - high cost to deliver food waste collection service	**Partial** - high cost to deliver food waste collection service	**Partial** - less cost than food waste	**Yes** - no cost for service	**Yes** - cost effective	**Partial -** in-house may cost more due to inexperience, need to scale up resources and systems	**Yes** - economies of scale	**Yes** - economies of scale	**No** - high start up and management cost	**No** - high start up and management cost	**Partial** - services may cost more with less Council control	**Partial -** Council with community may cost more due to inexperience	**Partial** - Council has limited control of the services
To provide services that are safe	**Yes** - no recycling station service	**Yes** - service is seen as safe	**Yes** - service is seen as safe	**Partial** - manual collection of 25L bins is not as safe as bins to collect	**Yes** - automated bin collections seen as safer service	**Yes** - automated bin collections seen as safer service	**Yes** - no services	**Yes** - option supports this	**No -** Council not experienced in managing H&S risks with services	**Yes** - similar to status quo	**Yes** - similar to status quo	**Yes** - similar to status quo	**Yes** - similar to status quo	**Yes** - similar to status quo	**No -** Council and community group not experienced in managing H&S risks with services	**Partial** - Council has limited control of the services
To provide services that reduce greenhouse gas emissions	**Yes** - reduced transport emissions to use and service stations	**Partial** - emission benefit uncertain in light of effective gas capture	**Partial** - emission benefit uncertain in light of effective gas capture	**Partial** - emission benefit uncertain in light of effective gas capture	**Partial** - emission benefit uncertain in light of effective gas capture	**Partial** - emission benefit uncertain in light of effective gas capture	**Partial** - emission benefit uncertain in light of effective gas capture	**Yes** - option can support this	**Yes** - option can support this	**Yes** - option can support this	**Yes** - option can support this	**Yes** - option can support this	**Yes** - option can support this	**Yes** - option can support this	**Yes** - option can support this	**Yes** - option can support this
To provide services that customers want and can use appropriately	**No** - no recycling stations available for excess recyclables	**Partial** - Some use of drop-off services by residents	**Partial** - Some use of drop-off services by residents	**Yes** - services are functionable and popular	**Yes** - services are functionable and popular	**Yes** - services are functionable and popular	**No** - customers expect organic waste services are available	**Yes** - option supports this	**Yes** - option supports this	**Yes** - option supports this	**Yes** - option supports this	**Yes** - option supports this	**Yes** - option supports this	**Yes** - option supports this	**Yes** - option supports this	**Yes** - option supports this
To reduce waste and protect the environment from the harmful effects of waste	**Partial** - some recycling that does take place may no longer occur	**Partial** - reduces waste to landfill, but more diversion possible	**Yes** - reduces waste to landfill, soil cover likely to be more effective than greenwaste	**Partial** - reduces waste to landfill but food waste degrade quickly and does not take up landfill space long term	**Yes** - reduces waste to landfill, greenwaste takes longer to break down than food waste (wood content)	**Yes** - reduces waste to landfill, greenwaste takes longer to break down than food waste (wood content)	**Partial** - increases waste to landfill but some food waste degrades quickly and does not take up landfill space long term	**Yes** - option supports this	**Yes** - option supports this	**Yes** - option supports this	**Yes** - option supports this	**Yes** - option supports this	**Yes** - option supports this	**Yes** - option supports this	**Yes** - option supports this	**Yes** - option supports this
Critical Success Factors (as these CSFs are crucial (not just desirable) any																
Strategic fit and business needs - *Alignment with Waste Mgmt and Min Plan 17-23 and other relevant plans*	Not assessed. Does not meet strategic objectives.	**Partial -** green waste landfilled not diverted	**Yes** - aligns with strategic objectives	**Yes** - aligns with strategic objectives	**Yes** - aligns with strategic objectives	**Yes** - aligns with strategic objectives	Not assessed. Does not meet strategic objectives.	**Yes** - aligns with strategic objectives	Not assessed. Does not meet strategic objectives.	**Yes** - aligns with strategic objectives	**Yes** - aligns with strategic objectives	Not assessed. Does not meet strategic objectives.	Not assessed. Does not meet strategic objectives.	**Yes** - aligns with strategic objectives	Not assessed. Does not meet strategic objectives.	**Partial** - private services may cost more
Potential value for money - *right solution, right time at the right price*		**Yes** - cost effective	**Partial** - cost increase for composting and need alternative landfill cover	**Partial** - high cost to deliver food waste collection service	**Partial** - high cost to deliver food waste collection service	**Partial** - less cost than food waste		**Yes** - cost effective		**Yes** - economies of scale	**Yes** - economies of scale			**Partial** - services may cost more with less Council control		**Partial** - reduced cost for Council, increased cost for ratepayer
Supplier capacity and capability - *is it a sustainable arrangement (external)*		**Yes** - continue status quo	**Yes -** common service across New Zealand and existing compost facilities available, use alternative cover materials is common	**Partial** - collections use common methods but processing requires site with capacity for large volumes food waste	**Partial** - collections use common methods but processing requires site with capacity for large volumes food waste	**Yes -** common service across New Zealand		**Yes -** common service across New Zealand		**Yes -** common service across New Zealand	**Yes -** common service across New Zealand			**Partial -** suppliers may not favour joint venture		**Yes -** common services across New Zealand
Potential affordability - *are there no funding constraints*		**Yes** - cost effective	**Partial** - cost increase for composting and need alternative landfill cover	**No** - significant cost increase for Council	**No** - significant cost increase for Council	**Partial** - an organics collection would increase costs		**Yes** - affordable		**Yes** - possible cost savings	**Yes** - possible cost savings			**Partial** - services may cost more with less Council control		**Partial** - private services may cost more
Potential achievability - *ability and skills to deliver (internal)*		**Yes** - no change from status quo	**Yes** - similar to status quo	**Partial** - additional service to manage	**Partial** - additional service to manage	**Partial** - additional service to manage		**Yes** - similar to status quo		**Partial** - more coordination with shared services with UHCC	**No** - more coordination with shared services and complexity with services differing between the cities			**Partial** - may require more Council resources to administer		**Yes -** reduced council requirement with bylaw admin only
Summary of Advantages and Disadvantages:																
Overall Assessment:	**Discard** - no outlet for customers' excess recyclables	**Possible** - status quo is cost effective but alternative landfill covers more effective, landfill diversion possible	**Possible** - diverts green waste from landfill but alternative daily cover required	**Discard** - high cost, requirement to identify food waste processor, carbon benefits would need confirmation	**Discard** - high cost, requirement to identify food waste processor, carbon benefits would need confirmation	**Discard** - additional service to manage, increased cost, however easier to process than food waste	**Discard** - community expects green waste service	**Preferred** - status quo is effective, explore collaboration in future	**Discard** - inhouse resources not experienced and qualified to manage services	**Possible** - potential cost savings and only need coordination with UHCC	**Discard** - potential cost savings but more coordination	**Discard** - insufficient scale to warrant high start up and ongoing management cost	**Discard** - insufficient scale to warrant high start up and ongoing management cost	**Discard** - does not warrant effort for all waste services. Still possible for particular projects	**Discard** - Council and community resources not experienced and qualified to manage services	**Discard** - reduced Council involvement may cost customers more
Short-listed options:																
Status Quo: refuse bags, crate recycling		**SS-3a**: Greenwaste drop-off at transfer station, use as landfill cover						**SD-1:** Council alone, out-sourced contracts (potential collaboration with UHCC)								
Option 1: opt out refuse, 2 stream recycling																
Option 2: refuse bins, 2 stream recycling																
Option 3: refuse bins with user pays tags, 2 stream recycling		**SS-3b**: Greenwaste drop-off at transfer station, composted														

Note, Option 1 usually "do minimum", Option 2 "preferred" and Option 3 "more a

	Implementation Options (When)			Funding Options		
	IM-1	IM-2	IM-3	FU-1	FU-2	FU-3
Description of Option:	All at contract expiry	Methodology changes during next contract	Defer to next contract renewal	Status quo: user pays refuse and rates funded diversion (e.g. recycling)	Rates funded refuse, recycling, and organics	Rates funded but opt-in for refuse and organics
Investment Objectives						
To provide services that are cost effective	**Yes** - cost effective to make all changes at once	**Partial** - can create inefficiencies	**No** - increase cost with status quo continuing	**Partial** - can create inefficiencies if market share low	**Yes** - cost effective	**Partial** - can create inefficiencies if opt-in low
To provide services that are safe	**Yes** - option supports this	**Yes** - option supports this	**No** - safety issues with status quo	**Yes** - option supports this	**Yes** - option supports this	**Yes** - option supports this
To provide services that reduce greenhouse gas emissions	**Yes** - option can support this	**Yes** - option can support this	**No** - no reduction emissions	**Yes** - option can support this	**Yes** - option can support this	**Yes** - option can support this
To provide services that customers want and can use appropriately	**Yes** - option supports this	**Yes** - option supports this	**No** - customers seeking change	**Yes** - status quo supported	**Partial -** no customer choice of service provider	**Yes** - option supports this
To reduce waste and protect the environment from the harmful effects of waste	**Yes** - option supports this	**Yes** - option supports this	**No** - as not improvement in waste reduction	**Yes** - option supports this	**Yes** - option supports this	**Partial** - less diversion if organics optional
Critical Success Factors (as these CSFs are crucial (not just desirable) any						
Strategic fit and business needs - *Alignment with Waste Mgmt and Min Plan 17-23 and other relevant plans*	**Yes** - aligns with strategic objectives	**Yes** - aligns with strategic objectives	Not assessed. Does not meet strategic objectives.	**Yes** - aligns with strategic objectives	**Yes** - aligns with strategic objectives	**Yes** - aligns with strategic objectives
Potential value for money - *right solution, right time at the right price*	**Yes** - cost effective	**Partial** - can create inefficiencies		**Partial** - can create inefficiencies if market share low	**Yes** - cost effective	**Partial** - can create inefficiencies if opt-in low
Supplier capacity and capability - *is it a sustainable arrangement (external)*	**Yes -** common service across New Zealand	**Partial -** can create complexity for suppliers		**Partial** - user pays common with refuse bags untried with refuse bin collections	**Yes -** common service across New Zealand	**Partial** - limited examples of opt-out in NZ
Potential affordability - *are there no funding constraints*	**Yes** - cost effective	**Partial** - can create inefficiencies		**Partial** - can create inefficiencies if market share low	**Partial -** higher rates cost than status quo	**Partial** - can create inefficiencies if opt-in low
Potential achievability - *ability and skills to deliver (internal)*	**Yes** - would be achievable	**Partial** - can create administrative complexity		**Yes** - similar to status quo	**Yes** - similar to status quo	**Partial** - opt-in requires more administration
Summary of Advantages and Disadvantages:						
Overall Assessment:	**Preferred** - most cost effective approach	**Possible** - introduces complexity and potentially cost	**Discard** - changes are required short term	**Possible** - impact of the market share on cost, but retains customer choice	**Possible** - cost effective but reduces customer choice of supplier	**Possible** - impact of market share on cost, but retains customer choice
Short-listed options:						
Status Quo: refuse bags, crate recycling	**IM-1:** All at contract expiry			**FU-1:** User pays refuse, rates funded diversion		
Option 1: opt out refuse, 2 stream recycling				**FU-2:** rates funded diversion (no refuse service)		
Option 2: refuse bins, 2 stream recycling				**FU-2:** rates funded refuse and diversion		
Option 3: refuse bins with user pays tags, 2 stream recycling				**FU-1:** User pays refuse, rates funded diversion		

Note, Option 1 usually "do minimum", Option 2 "preferred" and Option 3 "more a

Appendix 4 Financial Modelling for Economic Case

Option	Status Quo: refuse bags, crate recycling

ProjectID:	
Project Name:	Kerbside Collection Services Business Case
Discount Rate:	7%
Timeframe (yrs):	10

Direct benefits and costs
Can be readily quantified and attributed to the organisation. Examples of direct benefits include:
- Maintenance improvements - the asset will be better maintained
- Reduction in repair costs
- Operating improvements - the asset will operate more effectively, or will provide better service.
- Revenue generation
- Improved asset capacity and/or life

		Year:	0	1	2	3	4	5	6	7	8	9	10			
		Discount:	1.00	0.93	0.87	0.82	0.76	0.71	0.67	0.62	0.58	0.54	0.51			
Costs	Investment Costs (-ve)															
	Costs associated with project only.	*Scoping*														
		Concept Design														
		Detailed Design														
		Construction/Implementation														
		Consents														
		Disposal of existing asset														
	TOTAL	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	PV TOTAL	0	-	-	-	-	-	-	-	-	-	-	-			
	Annual Costs (-ve)															
	Costs measured against the status quo.	*Maintenance Costs*														
		Operating Costs - refuse collections		-980,339	-980,339	-980,339	-980,339	-980,339	-980,339	-980,339	-980,339	-980,339	-980,339			
		Operating Costs - recycling collections		-2,987,985	-2,987,985	-2,987,985	-2,987,985	-2,987,985	-2,987,985	-2,987,985	-2,987,985	-2,987,985	-2,987,985			
		Operating Costs - recycling drop offs		-120,000	-120,000	-120,000	-120,000	-120,000	-120,000	-120,000	-120,000	-120,000	-120,000			
		Management Costs - council admin		-334,443	-334,443	-334,443	-334,443	-334,443	-334,443	-334,443	-334,443	-334,443	-334,443			
		Other														
	TOTAL	-44,227,662	-	- 4,422,766	- 4,422,766	- 4,422,766	- 4,422,766	- 4,422,766	- 4,422,766	- 4,422,766	- 4,422,766	- 4,422,766	- 4,422,766	-	-	-
	PV TOTAL	-31,063,659	-	- 4,133,426	- 3,863,015	- 3,610,295	- 3,374,107	- 3,153,371	- 2,947,076	- 2,754,277	- 2,574,090	- 2,405,692	- 2,248,310			
Benefits	Annual Benefits (+ve)															
	All benefits are measured against the status quo.	*Reduction in Maintenance*														
		Reduction in Operations														
		Reduction in Capital / Deferred Works														
		Residual Value / Increase in asset life (New DRC at end of analysis period)											372,610			
		~~Increased~~ Revenue - refuse PAYT		942,334	942,334	942,334	942,334	942,334	942,334	942,334	942,334	942,334	942,334			
		~~Increased~~ Revenue - recyclables sales		623,899	623,899	748,678	748,678	898,414	898,414	898,414	898,414	898,414	898,414			
	TOTAL	17,931,588	-	1,566,233	1,566,233	1,691,012	1,691,012	1,840,748	1,840,748	1,840,748	1,840,748	1,840,748	2,213,358	-	-	-
	PV TOTAL	12,385,269	-	1,463,769	1,368,008	1,380,370	1,290,065	1,312,428	1,226,568	1,146,325	1,071,332	1,001,245	1,125,159			

PV of Net Benefits (NPV)	-18,678,389.9

Benefit Cost Ratio	not calculated

Option	Opt out refuse, 2 stream recycling

ProjectID:	0
Project Name:	Kerbside Collection Services Business Case
Discount Rate:	7%
Timeframe (yrs):	10

Direct benefits and costs
Can be readily quantified and attributed to the organisation. Examples of direct benefits include:
- Maintenance improvements - the asset will be better maintained
- Reduction in repair costs
- Operating improvements - the asset will operate more effectively, or will provide better service.
- Revenue generation
- Improved asset capacity and/or life

	Year:	0	1	2	3	4	5	6	7	8	9	10				
	Discount:	1.00	0.93	0.87	0.82	0.76	0.71	0.67	0.62	0.58	0.54	0.51				
Costs	**Investment Costs**															
	Costs associated with project only															
	Scoping															
	Concept Design															
	Detailed Design															
	Construction/Implementation															
	Consents															
	Disposal of existing asset															
	TOTAL	**0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	PV TOTAL	**0**	-	-	-	-	-	-	-	-	-	-				
	Annual Costs															
	Costs measured against the status															
	Maintenance Costs															
	Operating Costs - refuse collections		0	0	0	0	0	0	0	0	0	0				
	Operating Costs - recycling collections		-2,508,086	-2,508,086	-2,508,086	-2,508,086	-2,508,086	-2,508,086	-2,508,086	-2,508,086	-2,508,086	-2,508,086				
	Operating Costs - recycling drop offs		-120,000	-120,000	-80,000	-80,000	-40,000	-40,000	0	0	0	0				
	Management Costs - council admin		-197,318	-197,318	-197,318	-197,318	-197,318	-197,318	-197,318	-197,318	-197,318	-197,318				
	Other															
	TOTAL	**-27,534,043**	-	- 2,825,404	- 2,825,404	- 2,785,404	- 2,785,404	- 2,745,404	- 2,745,404	- 2,705,404	- 2,705,404	- 2,705,404	-	-	-	-
	PV TOTAL	**-19,400,099**	-	- 2,640,565	- 2,467,818	- 2,273,720	- 2,124,972	- 1,957,435	- 1,829,379	- 1,684,790	- 1,574,570	- 1,471,561	- 1,375,290			
Benefits	**Annual Benefits**															
	All benefits are measured against															
	Reduction in Maintenance															
	Reduction in Operations															
	Reduction in Capital / Deferred Works															
	Residual Value / Increase in asset life (New DRC at end of analysis period)											909,963				
	~~Increased~~ Revenue - refuse PAYT		0	0	0	0	0	0	0	0	0	0				
	~~Increased~~ Revenue - recyclables sales		534,905	534,905	641,887	641,887	770,264	770,264	770,264	770,264	770,264	770,264				
	TOTAL	**7,885,130**	-	534,905	534,905	641,887	641,887	770,264	770,264	770,264	770,264	770,264	1,680,226	-	-	-	-
	PV TOTAL	**5,244,325**	-	499,912	467,207	523,971	489,692	549,187	513,259	479,682	448,301	418,973	854,142			

PV of Net Benefits (NPV)	-14,155,773.7

Benefit Cost Ratio	not calculated

Option	Refuse bins, 2 stream recycling

ProjectID:	0
Project Name:	Kerbside Collection Services Business Case
Discount Rate:	7%
Timeframe (yrs):	10

Direct benefits and costs
Can be readily quantified and attributed to the organisation. Examples of direct benefits include:
- Maintenance improvements - the asset will be better maintained
- Reduction in repair costs
- Operating improvements - the asset will operate more effectively, or will provide better service.
- Revenue generation
- Improved asset capacity and/or life

Year:	0	1	2	3	4	5	6	7	8	9	10				
Discount:	1.00	0.93	0.87	0.82	0.76	0.71	0.67	0.62	0.58	0.54	0.51				

Costs	**Investment Costs (-ve)**															
	Costs associated with project only.	*Scoping*														
		Concept Design														
		Detailed Design														
		Construction/Implementation														
		Consents														
		Disposal of existing asset														
	TOTAL	**0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	PV TOTAL	**0**	-	-	-	-	-	-	-	-	-	-	-			
	Annual Costs (-ve)															
	Costs measured against the status quo.	*Maintenance Costs*														
		Operating Costs - refuse collections		-4,117,460	-4,117,460	-4,117,460	-4,117,460	-4,117,460	-4,117,460	-4,117,460	-4,117,460	-4,117,460	-4,117,460			
		Operating Costs - recycling collections		-2,508,086	-2,508,086	-2,508,086	-2,508,086	-2,508,086	-2,508,086	-2,508,086	-2,508,086	-2,508,086	-2,508,086			
		Operating Costs - recycling drop offs		-120,000	-120,000	-80,000	-80,000	-40,000	-40,000	0	0	0	0			
		Management Costs - council admin		-609,064	-609,064	-609,064	-609,064	-609,064	-609,064	-609,064	-609,064	-609,064	-609,064			
		Other														
	TOTAL	**-72,826,100**	-	- 7,354,610	- 7,354,610	- 7,314,610	- 7,314,610	- 7,274,610	- 7,274,610	- 7,234,610	- 7,234,610	- 7,234,610	- 7,234,610	-	-	-	-
	PV TOTAL	**-51,211,344**	-	- 6,873,467	- 6,423,801	- 5,970,901	- 5,580,281	- 5,186,696	- 4,847,380	- 4,505,352	- 4,210,609	- 3,935,149	- 3,677,709			

Benefits	**Annual Benefits (+ve)**															
	All benefits are measured against the status quo.	*Reduction in Maintenance*														
		Reduction in Operations														
		Reduction in Capital / Deferred Works														
		Residual Value / Increase in asset life (New DRC at end of analysis period)										1,459,390				
		~~Increased~~ Revenue - refuse PAYT		0	0	0	0	0	0	0	0	0	0			
		~~Increased~~ Revenue - recyclables sales		534,905	534,905	641,887	641,887	770,264	770,264	770,264	770,264	770,264	770,264			
	TOTAL	**8,434,557**	-	534,905	534,905	641,887	641,887	770,264	770,264	770,264	770,264	770,264	2,229,654	-	-	-	-
	PV TOTAL	**5,523,626**	-	499,912	467,207	523,971	489,692	549,187	513,259	479,682	448,301	418,973	1,133,443			

PV of Net Benefits (NPV)	**-45,687,717.9**

Benefit Cost Ratio	**not calculated**

Option	Refuse bins with user pays tags, 2 stream recycling

ProjectID:	0
Project Name:	Kerbside Collection Services Business Case
Discount Rate:	7%
Timeframe (yrs):	10

Direct benefits and costs
Can be readily quantified and attributed to the organisation. Examples of direct benefits include:
- Maintenance improvements - the asset will be better maintained
- Reduction in repair costs
- Operating improvements - the asset will operate more effectively, or will provide better service.
- Revenue generation
- Improved asset capacity and/or life

		Year:	0	1	2	3	4	5	6	7	8	9	10				
		Discount:	1.00	0.93	0.87	0.82	0.76	0.71	0.67	0.62	0.58	0.54	0.51				
Costs	**Investment Costs (-ve)**																
	Costs associated with project only.	*Scoping*															
		Concept Design															
		Detailed Design															
		Construction/Implementation															
		Consents															
		Disposal of existing asset															
	TOTAL	**0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	PV TOTAL	**0**	-	-	-	-	-	-	-	-	-	-	-				
	Annual Costs (-ve)																
	Costs measured against the status quo.	*Maintenance Costs*															
		Operating Costs - refuse collections		-3,451,902	-3,451,902	-3,451,902	-3,451,902	-3,451,902	-3,451,902	-3,451,902	-3,451,902	-3,451,902	-3,451,902				
		Operating Costs - recycling collections		-2,508,086	-2,508,086	-2,508,086	-2,508,086	-2,508,086	-2,508,086	-2,508,086	-2,508,086	-2,508,086	-2,508,086				
		Operating Costs - recycling drop offs		-120,000	-120,000	-80,000	-80,000	-40,000	-40,000	0	0	0	0				
		Management Costs - council admin		-542,508	-542,508	-542,508	-542,508	-542,508	-542,508	-542,508	-542,508	-542,508	-542,508				
		Other															
	TOTAL	**-65,504,970**	-	- 6,622,497	- 6,622,497	- 6,582,497	- 6,582,497	- 6,542,497	- 6,542,497	- 6,502,497	- 6,502,497	- 6,502,497	- 6,502,497	-	-	-	-
	PV TOTAL	**-46,069,289**	-	- 6,189,250	- 5,784,345	- 5,373,278	- 5,021,755	- 4,664,710	- 4,359,542	- 4,049,428	- 3,784,512	- 3,536,928	- 3,305,540				
Benefits	**Annual Benefits (+ve)**																
	All benefits are measured against the status quo.	*Reduction in Maintenance*															
		Reduction in Operations															
		Reduction in Capital / Deferred Works															
		Residual Value / Increase in asset life (New DRC at end of analysis period)											1,404,448				
		~~Increased~~ Revenue - refuse PAYT		3,858,383	3,858,383	3,858,383	3,858,383	3,858,383	3,858,383	3,858,383	3,858,383	3,858,383	3,858,383				
		~~Increased~~ Revenue - recyclables sales		534,905	534,905	641,887	641,887	770,264	770,264	770,264	770,264	770,264	770,264				
	TOTAL	**46,963,442**	-	4,393,288	4,393,288	4,500,269	4,500,269	4,628,647	4,628,647	4,628,647	4,628,647	4,628,647	6,033,094	-	-	-	-
	PV TOTAL	**32,595,362**	-	4,105,877	3,837,268	3,673,560	3,433,234	3,300,161	3,084,263	2,882,488	2,693,914	2,517,677	3,066,919				

PV of Net Benefits (NPV)	**-13,473,926.9**

Benefit Cost Ratio	**not calculated**

Appendix 5 Hutt City Council Terms of Reference

TERMS OF REFERENCE – "Kerbside collection review"

Project Title	Kerbside collection review
Version	1.3
Project Definition	- To develop a business case for identifying a preferred option for kerbside collection of recycling and waste, for implementation from mid-2019

Background	- Under the Waste Management and Minimisation Plan (WMMP) 2017-23, Hutt City Council has committed to two key actions:
	  o *C.1: Investigate Options and costs of a two-stream recycling collection, by 2019, and*
	  o *C.2: Investigate the use of wheelie bins for kerbside recycling by 2019.*
	- There are three actions in the WMMP that relate to the above actions (changes to the above may impact on these, or they may have to be considered as part of review of the waste management system):
	  o *C.3: Investigate methods to prevent recycling from being put in council rubbish bags* (effectively this is looking at how to improve current recycling rates)
	  o *C.4: Provide city wide weekly refuse and recycling collection service plus recycling collection stations* (albeit this is subject to periodic reviews, such as the one proposed here).
	  o *IN.4: Review effectiveness, number, and positions of community recycling stations. Implement agreed changes (if any).*
	- In parallel, the contract for Hutt City Council's recycling kerbside collection service is coming up for re-tender in the third quarter of 2019.
	- In line with these actions, and the timing constraint of re-tendering our kerbside collection service contract, a business case is required to inform decisions by the Council on the preferred option for kerbside recycling and waste collection in the future.

Objectives	- A business case for a preferred option for kerbside collection, including a cost-benefit analysis of the various options identified
Desired Outcomes	- Key outcome: certainty about the costs and benefits of various kerbside collection options - To inform a decision by the Hutt City Council on the preferred option for kerbside collection - Implementation of that decision in a follow-up project (eg tender of preferred model, and selection of a preferred provider for kerbside collection services in Lower Hutt – depending on the preferred approach selected)
Scope	The review/analysis should cover the following issues: - A description of the waste and recycling market for different types of recyclables and waste materials such as organics (eg the value of recyclables in the waste stream, recyclability, markets for those materials such as Type 1 plastics going to 'Flight Plastics' in Lower Hutt), and

	analysis on the issue of certain markets for recyclables reducing as a result of policy changes in China - A description of how the current residential waste system operates in Lower Hutt, and relevant advantages and disadvantages (eg wind-blown litter as a result of open crates), including volumes and the recycling percentage of total waste - A description of other systems, and relevant lessons learnt in other council, including benchmarking Hutt City Council's current system against what other councils are doing in this regard (eg Christchurch City Council), including greenhouse gas emissions performance - Identification and description of all available options for kerbside waste and recycling collection, including status quo (eg fully private vs current mixed vs fully council controlled but tendered out), and types of separation (eg co-mingled vs separated into glass and plastics; the analysis for each option should identify all pros and cons, eg based on experience in other councils - The analysis should consider the benefits and costs of a separate organics collection, including the experience of councils that already have separate organics collection: food waste only (Auckland model) or food waste and green waste (Christchurch model). The analysis should consider the associated greenhouse gas footprint vs the current approach of landfill with methane capture and electricity production - Analysis should consider the issue of some users not requiring weekly kerbside collection (eg bags get put out every few weeks because of little waste creation), including the options and role of pay-as-you-throw wheelie bin systems (this could also include considering recent experience in Auckland where payment tokens were stolen) - Potentially a survey of actual consumer costs of council-provided and private-provided services, including bin vs bag collection - Potentially a survey of, or selected consultation with, residents on their views on what sort of recycling system they would like or be prepared to pay for, what are the public's expectations; the business case should take into account public expectations regarding recycling - A cost-benefit analysis and/or multi criteria analysis of the various options, including a greenhouse gas emission assessment of the various options - Where possible, the CBA should be based on established best practice (e.g. Treasury's Better Business Case approach) - Review should include sensitivity analysis based on different scenarios and/or assumptions. - Analysis should consider the role of local recycling drop off stations. Do they have a role in a revised system? (There are currently five stations, all of which are experiencing instances of illegal dumping and cross-contamination. One is currently in the process of being closed down due to these problems.) - Assessment of whether a potential Resource Recovery Centre could affect the kerbside collection approach in any way (eg organics processing)? What are the potential implications due to a future container deposit scheme as is currently being considered by central government? - How can risks be managed, such as the occurrence of different providers collecting wastes/recyclables on different days, thereby making local streets less attractive due to litter bins being outside several days of the week

Exclusions	- A cost-benefit analysis of related items such as resource recovery centre is outside the scope
Who will benefit from the project	- The Lower Hutt community will benefit from a more efficient and cost effective service, with a potential increase in the diversion of recyclable waste and a reduction in greenhouse gas emissions
Assumptions and constraints	- The Hutt City Council kerbside collection contract needs to be re-tendered before third quarter of 2019
HCC contact / project lead	- Joern Scherzer (Manager Sustainability and Resilience) or delegated staff member in the Sustainability and Resilience team
Major Milestones	- Review: September 2018 to February 2019 - Business case complete: February 2019 - Decision on preferred approach: mid-2019 - Procurement of provider under new kerbside contract: mid-to-late 2019 - Implementation of new model: from late 2019

Appendix 6 Health and Safety of Manual and Automated Collections

Introduction

Options under consideration for HCC's kerbside refuse and recycling collection services include both manual and automated collection methodologies. This paper presents an assessment of the health and safety risks associated with different refuse and recycling collection services as shown in Table 1.

Table 1 Refuse and recycling collection services

Collection service	Collection type	Current or proposed
Recycling		
Recycling crate collection in Wanaka	Manual crate	Current
Two stream recycling with mixed recycling bin and colour sorted glass crate	Automated bin + manual crate	Proposed
Refuse		
Bag collection	Manual	Current
Bin collection	Automated bin	Proposed

Health and safety considerations are consistent across different types of household waste, e.g. applying to both refuse and recycling, and essentially compare risks between manual and automated collection and between bin and bag options.

Data review

In 2008 Research New Zealand undertook a causation study of injuries in the waste sector, utilising data provided by the country's four largest waste operators. Together these companies represented around 75% of the waste industry workforce and provided both manual (i.e. bag and crate services) and automated (i.e. MGB) collection methodologies. [8]

In 2010 Morrison Low drew upon that data to prepare a Position Report on behalf of the Waste Management Institute New Zealand (WasteMINZ) Health and Safety Sector Group[9]. Table 2 presents data summarised within that Position Report.

[8] Research New Zealand, September 2008 "*Solid Waste and Recoverable Resources Industry Injury Causation study (#3726)*" study prepared for ACC Injury Prevention

[9] Morrison Low, Updated Final 29 March 2012 *"An assessment of the health and safety costs and benefits of manual vs automated waste collections*", Position Report prepared for WasteMINZ Health and Safety Sector Group (draws upon data compiled by Research New Zealand for their 2008 report titled "*Solid Waste and Recoverable Resources Industry Injury Causation study (#3726)")*

Table 2 Total fatalities and Injuries per collection method (based on 2007 national data)

Category	Total	Automated bin collection injuries	Bag collection injuries	Non-automated bin collection injuries*	Loose collection injuries**
Total fatalities and injuries	744	37	270	129	308
Fatality	1****	0	1	0	0
Serious Harm Incidents (SHI)* **	13	2	4	4	3
Lost Time injury – non-SHI	50	6	18	4	22
Medical treatment only injury	375	19	136	65	155
First Aid treatment only	305	10	111	56	128

* *Refers to recycling crates*

** *Refers to inorganic waste collection as well as separate paper, cardboard and green waste collection*

*** *Serious Harm Incidents are assumed to also result in lost time. Therefore, total Lost Time injuries is 13 + 50 = 63 Lost Time injuries for 2007*

**** *ACC coded this fatality as a motor vehicle accident; however it was coded by the company as being an injury from manual waste collections*

Of the total injuries, loose collection methods resulted in the most non-fatal injuries at 41%, followed by bag collections at 36%, then non-automated bin collections 17% and automated bin collections (5%) of all non-fatal injuries. When broken down by collection method the first aid treatment injuries for loose collection incidents accounted for 17%, bag collection for 15%, non-automated bin collection for 8%, and automated bin collection for 1%.

For manual collection of loose materials and refuse bags, around half of the injuries were classified as strains or sprains, around 30% were lacerations/cuts and around 10% were bruising injuries. For automated bin (side arm) collection injuries, 51% were classified as strains or sprains, 22% as lacerations/cuts and 24% were bruising. For non-automated bin collection injuries, 35% were classified as strains or sprains, 27% as lacerations/cuts and 26% were bruising.

It is to be expected that bin collections would lead to a reduction in lacerations/cuts, due to reduced exposure to sharp materials compared to bagged or loose waste. In terms of injury type, automated bin collection appears to result in less bruising injuries than manual bin collection but comparatively more strain/sprain injuries.

Proportion of injuries by collection method

Research New Zealand's study analysed the proportion of injuries per collection method, reproduced within Table 3.

Table 3 Overall usage of each method

Collection Method	Usage of this method (%)	Total injuries for this method (%)
Automated bin	46	5
Bag	32	36
Non-automated bin	13	17
Loose materials	9	41
Total	100	100

Automated bin collection accounted for 46% of all collections yet only accounted for 5% of the injuries. (Manual) bag collection was the second most common collection method with 32% of the collections resulting in 36% of the total injuries sustained.

Overall, the Position Report concluded that:

> *"The major finding was that overall, when the frequency of injuries sustained in the waste industry was examined by the number of hours worked; employees using automated bin collection methods are much less likely to suffer an injury."*

Potential severity of injuries

The fatality noted in Table 1 referred to the death of a refuse manual collection runner in 2007. Since 2010 there have been four workplace fatalities associated with Council waste collections.

In December 2017 a Waikato refuse collector died in Tuakau, with early reports being "It appeared (th)at a rubbish collection worker had fallen from a rubbish truck and died after being run over".[10] Due to the recent nature of this fatality, Worksafe's investigation has not yet been concluded.

In May 2017 a Gisborne girl died on her way home from school after being hit by a council refuse collection truck. Due to the recent nature of this fatality, Worksafe's investigation has not yet been concluded.[11]

In August 2015 a collection runner died in Auckland when the brakes on the refuse truck failed, causing the truck to roll off the road and crush the young worker. This fatality led to the prosecution of Auckland Council, its refuse collection contractor, the truck owner, and the vehicle maintenance service provider – all considered to have failed to take all practical steps to ensure that that collection workers were not harmed.[12]

In March 2015 a recycling collector died in Wellington when he became trapped between the bin lifter and the centre pod of his truck as he collected recycling. This fatality led to the prosecution of EnviroWaste, the Council's recycling collection contractor. [13] EnviroWaste have modified their glass collection vehicles as a result of this incident.

Recent Auckland Council experience

In 2017, Auckland Council changed the kerbside refuse collection service in the Manukau area from bags to bins. This service change was made mid-contract and therefore the same workers were undertaking the new bin collection service as those that had been completing the bag collection service. Auckland Council's press release at the time stated:

> *"From a health and safety perspective it's also very positive. In the last three years more than 80 Auckland rubbish collectors have been injured on the job due to dangerous items thrown away by residents in rubbish bags. With the move from bags to bins this risk disappears."*[14]

Since the introduction of the service, the anticipated reduction in injuries has been realised.

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[10] Weblink: http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=11959709

[11] Weblink: https://www.stuff.co.nz/national/92165266/gisborne-girl-7-killed-by-rubbish-collection-truck-on-way-home-from-school

[12] Weblink: https://www.stuff.co.nz/business/97867792/truck-company-fined-110000-over-death-of-auckland-teen-jane-devonshire

[13] Weblink: https://www.stuff.co.nz/business/78241059/enviro-waste-missed-many-opportunities-to-spot-danger-which-killed-20yearold

[14] https://ourauckland.aucklandcouncil.govt.nz/articles/news/2017/02/manukau-and-howick-residents-get-to-bin-the-bags/

Summary

In summary, the following conclusions are drawn with respect to the assessment of the health and safety risks associated with kerbside collection services.

- Bag collections carry a greater risk of injury than non-automated bin collection (including crates), while automated bin-collection is the least risk option.
- Not only are employees using automated bin collection methods much less likely to suffer an injury than those using manual collection methods, the potential severity of worker injuries are higher for manual collection.

Revised collection cost estimates - as at June 2020

Assessment WITH bin capital included in collection cost, completed by Morrison Low

Scenario	Refuse Collection Service				Recycling Collection Service		Organic Collection Service
	Opt-out Refuse Service	Rates Funded Refuse Bins 120L, Weekly	Rates Funded Refuse Bins 240L, Fortnightly	PAYT Refuse Bins 120L, Weekly	Crates, Weekly	2-stream, Fortnightly	Green Waste, Monthly
Households	37,000	37,000	37,000	37,000	37,000	37,000	37,000
Participation rate	0%	100%	100%	90%	100%	100%	50%
Presentation rate	n/a	90%	90%	60%	90%	90%	80%
Tonnes per year	0	20,779	20,779	16,623	7,965	9,106	7,696
Operating Costs							
Collection cost (including bin lease)	$0	$1,980,044	$1,128,230	$1,714,285	$2,600,677	$2,057,320	$1,160,956
Disposal / processing cost	$0	$2,222,471	$2,222,471	$1,777,977	$796,536	$1,229,556	$230,880
Recycling revenue	n/a	n/a	n/a	n/a	$0	-$227,573	$0
Council administration (10%)	$0	$420,251	$335,070	$349,226	$339,721	$305,930	$139,184
Total service cost	**$0**	**$4,622,766**	**$3,685,771**	**$3,841,488**	**$3,736,935**	**$3,365,233**	**$1,531,020**
PAYT revenue	$0	$0	$0	$3,940,820	n/a	n/a	n/a
Cost recovery from rates (excl. GST)	$0	$4,622,766	$3,685,771	$0	$3,736,935	$3,365,233	$1,531,020
Annual cost per participating household (incl. GST)	**$285**	**$144**	**$115**	**$234**	**$116**	**$105**	**$95**