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Horowhenua DISTRICT COUNCIL

LEVIN LANDFILL BUSINESS CASE

FOR HOROWHENUA DISTRICT COUNCIL

MORRISON SOLUTIONS

Horowhenua District Council Levin Landfill Business Case

Document History

Version	Issue date	Changes
0.1	14/10/2021	Initial draft for Elected Member briefing
1.0	28/10/2021	Full version for release to Elected Members

Document Review

Role	Name	Review Status
Project Manager	Tessa McGregor	Complete
Reviewer	Doug Low	Reviewed
Project Director	Malcolm Morrison	Reviewed

Contents

ACRONYMS

CCTO	Council Controlled Trading Organisation
ETS	Emissions Trading Scheme
HDC	Horowhenua District Council
HEKA	Hōkio Environmental Kaitiaki Alliance
HRC	Horizons Regional Council
KCDC	Kāpiti Coast District Council
LFG	Landfill Gas
LTP	Long Term Plan
MDC	Manawatu District Council
MfE	Ministry for the Environment
PMG	Levin Landfill Project Management Group
RFP	Request for Proposals
SUIP	Separately used or inhabited part of a rating unit
tpa	Tonnes per annum
UEF	Unique Emissions Factor
WMMP	Waste Minimisation and Management Plan
WWTP	Wastewater Treatment Plant

EXECUTIVE SUMMARY

Horowhenua District Council (HDC/Council) owns the Levin Landfill. The Landfill's consents expire in 2037, or sooner if the consented capacity is reached. HDC signed a 'Levin Landfill Agreement' in 2019 agreeing to a formal review of the Landfill closure date and the establishment of a Project Management Group that would have input into decisions on the future of the Landfill.

A range of options were considered for this review and following a workshop with Council three were shortlisted: close the Landfill in 2022, close the Landfill in 2025, or keep the Landfill operating until it is full, or its consents expire. The closure in 2022 option aligns with the expiry of the current contract with HDC's Landfill operations contractor.

HDC controls approximately 4,000-4,500 tonnes per annum of solid waste so will need an alternative disposal location for this waste if the Levin Landfill closes. The assessment of closure dates also looked at HDC's ability and cost to dispose of this waste.

HDC and the Project Management Group have commissioned a number of reports as part of the closure review. These include technical, social impact, cultural impact, wellbeing and financial assessments. This Business Case has drawn on the output of all these reviews, as well as the independent analysis by Morrison Solutions, to develop a recommendation on the future of the Levin Landfill.

A Request for Proposals (RFP) process was held in early-mid 2021 to identify commercial partners to either operate the Levin Landfill and/or to dispose of HDC waste at a third-party location. The current operator of the Levin Landfill is responsible for providing over 85% of the waste disposed of in the Landfill and the RFP sought partners who would also be able to commit their own waste to the Levin Landfill.

The RFP process showed that there were no commercial operators who were interested in committing their own waste to the Levin Landfill on the same basis as the current operator. There was, [redacted] for out of district disposal of HDC waste should the Levin Landfill be closed.

If there is a decision by Council that the Landfill operation will be ongoing, HDC will be dependent on competing on the open market for third-party tonnes. At the very minimum, at least 10,000 tonnes per annum (including HDC tonnes) is required to allow HDC's sewage sludge to be mixed through with general waste. An assessment of the tonnes available and HDC's likelihood of securing these tonnes has been made. [redacted]

As a result of this assessment, the financial modelling has shown that closure of the Levin Landfill in 2022 and disposal of HDC's waste at an alternative facility (Option 1) provides the best financial outcome to Council in the base case scenario and in the majority of sensitivity analyses carried out. Ongoing operation of the Levin Landfill until 2037 (Option 3) is only the preferred option from a financial perspective [redacted] HDC could have to provide significant additional funding to keep the Landfill operating.

The competitiveness of the Levin Landfill is strongly influenced by the price of Emissions Trading Scheme (ETS) Units. The price of these has doubled in just over 12 months and is likely to rise further in future. As the price of ETS units goes up, the Levin Landfill becomes less competitive due to its relatively low gas capture. The likely revenue to Council from third-party tonnes would decrease as the ETS costs would capture a larger share of the gate rate.

From a financial perspective, closure of the Levin Landfill in 2025 (Option 2) is never the preferred option due to the high costs of operating the Landfill for less than four years, followed by disposal at a third-party landfill without the ability to secure a preferential rate.

If the Landfill was to be operated for a long period it would be entirely appropriate for it to be managed by a Council Controlled Trading Organisation (CCTO) as this would provide a greater commercial focus and flexibility than if managed internally within HDC. However, the statutory purpose of a CCTO is to make a profit. Ongoing operation of the Levin Landfill is [redacted]

BERL has completed a wellbeing assessment of the options, based on information from HDC, a review of documents and interviews with stakeholders. A framework for the assessment was workshopped with HDC Elected Members and officers in June 2021. The framework saw each of the four wellbeings (social, cultural, economic and environmental) given equal weighting. Desired outcomes were identified for each of the wellbeings and each option was individually assessed against these.

This assessment showed that closure of the Levin Landfill in 2022 (Option 1) was the preferred option when measured against the social, environmental and cultural wellbeings. Closure of the Levin Landfill in 2022 (Option 1) and closure of the Levin Landfill in 2037 (Option 3) were first-equal for economic wellbeing. Closure of the Levin Landfill in 2025 (Option 2) was the second ranked option from a wellbeing perspective, with closure of the Levin Landfill in 2037 (Option 3) last despite the high economic score.

The potential risks of each of the options has also been assessed. From a risk perspective, closure of the Levin Landfill in 2022 (Option 1) provides the lowest commercial and operational risk. The most significant risk to HDC with this option is the [redacted] and if Council decides to proceed with this option it should take steps to mitigate this risk. From a community perspective, there is also a risk that closure of the Levin Landfill will result in higher transfer station disposal rates. If the Levin Landfill was open HDC could mitigate this risk by building a publicly accessible transfer station in Levin, which would provide competition to the Midwest Transfer Station. This would almost certainly result in lower disposal costs; however these would need to be subsidised by HDC as they would not reflect the full cost of the Landfill operations. If this was to occur, HDC ratepayers would be subsidising both residential and commercial waste producers and would need to consider whether this subsidisation was in line with its policy settings or its waste minimisation strategy.

For ongoing operation of the Levin Landfill until 2025 or 2037, there are ongoing environmental, health and safety, cost escalation and human resources risks while the Landfill remains operational. HDC will also have to compete with commercial operators to secure tonnes with the knowledge that [redacted] Finally, if the chosen Landfill closure date is after 2025, the Landfill Agreement will terminate. As well as the reputational damage to HDC from the perspective of Ngāti Pareraukawa, Muaūpoko and other Hōkio stakeholders, Council would risk spending significant time and money on legal proceedings against part of its community.

As this is part of the solid waste activity, Council's stated aim is to have the outcome align with its WMMP. Closure of the Levin Landfill in 2022 (Option 1) is the strongest aligned to the WMMP as it provides the greatest incentive for waste minimisation. The cost of disposal will decrease more rapidly if HDC is disposing of its waste elsewhere. If HDC is still operating the Landfill, it will need to fund the high fixed costs associated with this option by maintaining high volumes of both council-controlled and third-party waste.

In our independent opinion, the preferred option is closure of the Levin Landfill in 2022 (Option 1). This is because it provides the best outcome for Council from a strategic, financial, wellbeing and risk perspective.

1 INTRODUCTION

1.1 Introduction

This Business Case evaluates a range of potential closure dates for the Levin Landfill (Landfill) for Horowhenua District Council (HDC/Council). The evaluation covers the strategic, economic, social, cultural, commercial, financial and implementation considerations associated with each closure date and associated future refuse disposal options. This process results in a recommended closure date.

The purpose of this Business Case is to provide sufficient information to allow HDC's elected members to identify a preferred closure date for the purpose of carrying out a Special Consultative Process with the Horowhenua community.

The Business Case:

- summarises HDC's current refuse disposal activity and future obligations
- summarises the history and performance of the Levin Landfill
- provides information on the Levin Landfill Agreement and the work that has been commissioned through the Landfill Agreement regarding potential closure dates
- outlines a range of potential closure date options
- outlines how the potential closure dates fit with HDC's strategic context and strategic intentions
- identifies and considers the costs of each option to Council and the wider Horowhenua community
- examines the feasibility, costs, wellbeing benefits and risks of the options
- recommends the preferred option which optimises public value and wellbeing.

This Business Case has been informed by the reports commissioned by the Levin Landfill Project Management Group as well as the following external parties:

- Stantec: engineering advice and financial modelling
- BERL: wellbeing assessment
- Simpson Grierson: legal advice on Request for Proposals procurement process
- Buddle Finlay: legal advice on the Landfill Agreement
- Brookfields: legal advice on HDC's current waste contracts and obligations.

2 STRATEGIC CONTEXT

The Strategic Case summarises the strategic context in which the Levin Landfill closure date decision must be made. It demonstrates alignment of the options with wider priorities and goals, policy decisions, and with HDC's strategic intentions.

2.1 HDC's solid waste activity

Horowhenua District Council's Solid Waste activity involves:

- Educating the community on waste minimisation.
- Providing kerbside recycling, recycling stations, refuse bag collection, operation of waste transfer stations, Levin Landfill operations, and monitoring closed landfills.
- Ensuring that the necessary resource consents for the activity are obtained and that any conditions are complied with.
- Operating within other legislative requirements (e.g., the Health Act 1956 and the Waste Minimisation Act 2008)[1].

Like most Council activities, the solid waste activity is delivered through a hybrid model, with a combination of in-house and outsourced delivery. This is summarised in the table below.

Table 1: Summary of current delivery arrangements for HDC's solid waste activity

In-house delivery	Delivery by a third party
• Governance and funding • Strategy, policy and planning • Contract management • Project management • Some monitoring • Resource Consents reporting and liaison with Horizons Regional Council • Landfill operations management including Landfill Gas Flare, leachate system • Maintenance of all solid waste related assets • Scoping and delivering capital projects • Customer enquiries for all solid waste related matters (over 100 CRMs per week)	• Kerbside collections and Foxton/Shannon transfer station operations (Low Cost Bins) • Levin Landfill operations and Levin Resource Recovery Centre (Midwest) • Bore, surface water sampling (Horowhenua Alliance with Downer) • Recyclables processing and sale (PNCC) • Professional Services (Stantec and others)

HDC's solid waste team is overseen by its Waste and Waste Services Manager and currently comprises two full-time employees, a Solid Waste Environmental Engineer and a Waste Minimisation Officer. The solid waste team's primary role is to develop the overall waste strategy and direction for Council approval, and to manage external consultants and contractors to implement this strategy. HDC holds the Resource Consents for the Levin Landfill and small closed landfills and has overall responsibility for achieving compliance with the consent conditions, including applying for any variations to the consents which are required.

[1] Source: HDC LTP 2021-41

2.2 Alignment to strategic intentions

2.2.1 Council's objective for this waste disposal assessment

Council's key objective, as defined through the refuse disposal procurement process, is to achieve an optimised solid waste disposal solution that provides best value for the Horowhenua Community in the short term and which aligns with its community's social, economic, environmental and cultural wellbeings, Council's Waste Management and Minimisation Plan (WMMP) and is economically and environmentally sustainable in the longer term.

2.2.2 Alignment to Long Term Plan

Landfill rationale and performance

The Long Term Plan (LTP) states the rationale for the provision of the landfill and static recycling stations:

Outstanding Environment Well managed solid waste disposal services and infrastructure allow for waste to be disposed of in a controlled manner that minimises environmental impacts. Recycling services support the reduction in waste entering the landfill.

Fit for purpose Infrastructure Provision of solid waste infrastructure that meets expected level of service and legislative requirements ensures that waste can be disposed of in a safe, environmentally sustainable way.

Strong Communities Reliable solid waste infrastructure and services enable strong communities through the provision of safe, accessible waste disposal options.

The stated level of service for the Landfill is to achieve zero Abatement Notices, Infringement Notices, Enforcement Orders and Convictions. This was achieved in 2018/19 and 2019/20, but not in 2017/18 or 2020/21. Details of non-compliances are provided in section 3.1.1.

The ongoing operation of the Levin Landfill is a significant forecasting assumption in the LTP.

Waste minimisation

Targets for performance are to reduce the quantity of waste going to the Landfill per person per year to less than 400kg, and to increase the level of recycling to more than 40% of total waste. Current volumes are estimated at 660kg/year, with the level of recycling approximately 10-12%.

Importantly, for all local authorities who own landfills, there is an inherent conflict in Council's objectives with regards to waste minimisation. Council benefits financially from higher waste volumes going into the Landfill. However, Council also has specific waste minimisation targets, both through its own goals and targets and through central government direction. Despite the financial cost, Council does have initiatives in place to reduce waste, in accordance with its WMMP.

Stakeholders interviewed for the wellbeing assessment also addressed this point. It was questioned whether HDC continuing to own the Landfill was in conflict with HDC's long term plans. It was also raised that owning a Landfill is inconsistent with efforts to reduce waste.

2.2.3 Alignment to Waste Minimisation and Management Plan

HDC's Waste Minimisation and Management Plan sets out how Council will progress efficient and effective waste management and minimisation in the Horowhenua District. If fulfils Council's obligations under the Waste Minimisation Act, including the use of the following waste hierarchy as a guide to prioritising its waste minimisation activities.

This Business Case is focussed on HDC's options for the disposal of residual waste. In future, central government policies will likely incentivise Councils and the public to focus on activities further up the waste hierarchy, so that there is less residual waste to be disposed of.

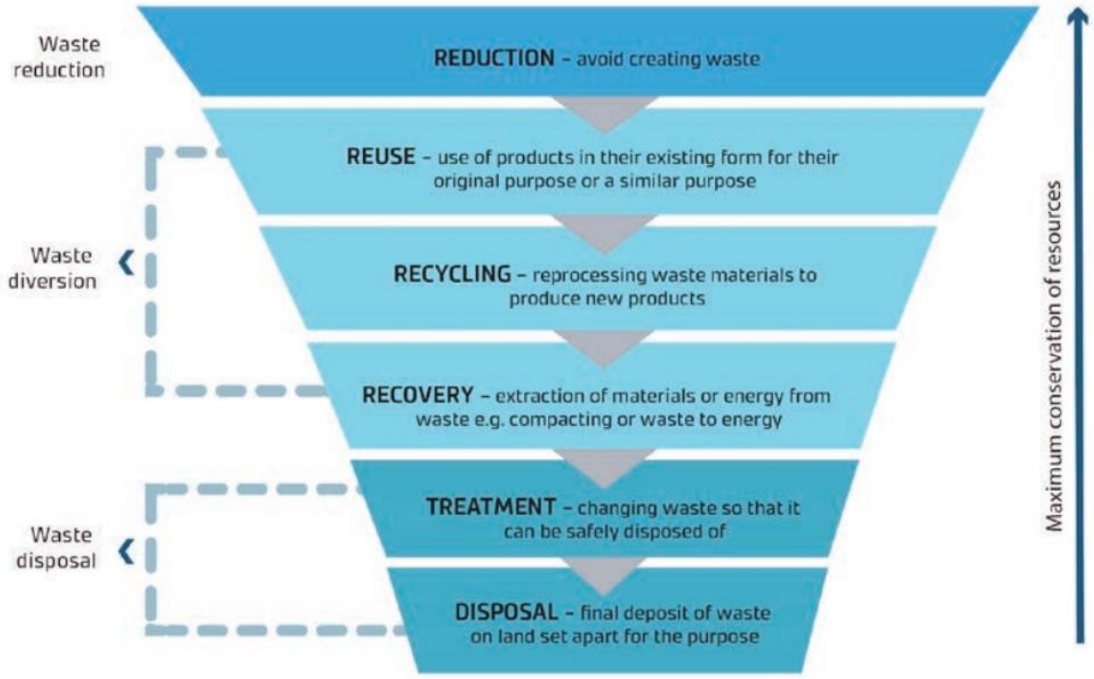

Figure 1: Waste hierarchy from HDC WMMP

The objectives for waste minimisation and management in the Horowhenua District are:

1. To avoid creating waste.
2. To make it easy and safe to recycle.
3. To ensure households and businesses have access to appropriate disposal of residual waste.
4. To create opportunities for Horowhenua District - community partnerships, jobs, new products, more efficient businesses.
5. To reduce illegal dumping.
6. To improve community understanding of issues and opportunities for waste minimisation and management in the Horowhenua District.
7. To work with other territorial authorities, central government, industry and other parties to improve waste minimisation and management in New Zealand[2].

Several of the proposed infrastructure actions in the WMMP are relevant to this Business Case, including:

- Complete detailed analysis of organic waste collection options including the status quo (private sector services), a food and garden waste collection and food waste only collection.
- Complete detailed analysis of optimising services for bulky household waste including the role of transfer stations, potential for a voucher system and potential bulky waste collections.

[2] HDC Waste Minimisation and Management Plan, 2018

- Complete detailed analysis of sorting of construction and demolition waste prior to disposal of residual material. Include examination of linkages with sorting of kerbside recyclable materials and bulky waste collections.

If any of these were implemented, it could reduce the council-controlled residual waste to be disposed of.

Another of the actions listed in the WMMP is for:

- Council to confirm a medium-term strategy for Levin Landfill that provides for full funding of historic and current development, operations, closure and appropriate management after closure.

This Business Case forms part of the information to assist Council's decision on the future of the Levin Landfill.

2.3 Waste volumes

2.3.1 Current council-controlled waste volumes

Refuse collection and disposal is a key part of the solid waste activity. Council currently collects refuse from four main sources, as shown in the table below. This waste is referred to as council-controlled waste.

The majority of waste from the district is collected by private contractors and is referred to as contractor-controlled waste. This includes private domestic kerbside collections, commercial refuse collections, construction and demolition waste and all waste taken directly by the public to the privately owned Transfer Station in Levin. Council is responsible for the disposal of the council-controlled waste only. All the council-controlled waste from Horowhenua District is currently disposed of in the Levin Landfill.

Table 2: Source of council-controlled waste (FY20-21)[3]

Source	Tonnes per annum		Collected by	Contracted out until
	FY20	FY21		
Parks and General	700	690	Council's Parks department	Ongoing
Kerbside (HDC Controlled tonnes)	550	540	Collections contractor (Low Cost Bins)	2025 at earliest
Foxton/Shannon Transfer Stations	1,650	2,020	Collections contractor (Low Cost Bins)	2025 at earliest
Levin WWTP Dewatered Sewage Sludge	1,050	1,250	Three Waters Alliance with Downer	Ongoing, although responsibility may transfer to new three waters entity if the proposed Three Waters Reform is adopted
Total	3,950	4,500		

[3] Source: Levin Transfer Station weighbridge data, 2020-2021

The FY21 waste volumes are summarised in the figure below. The volumes for all waste sources fluctuate from year to year.

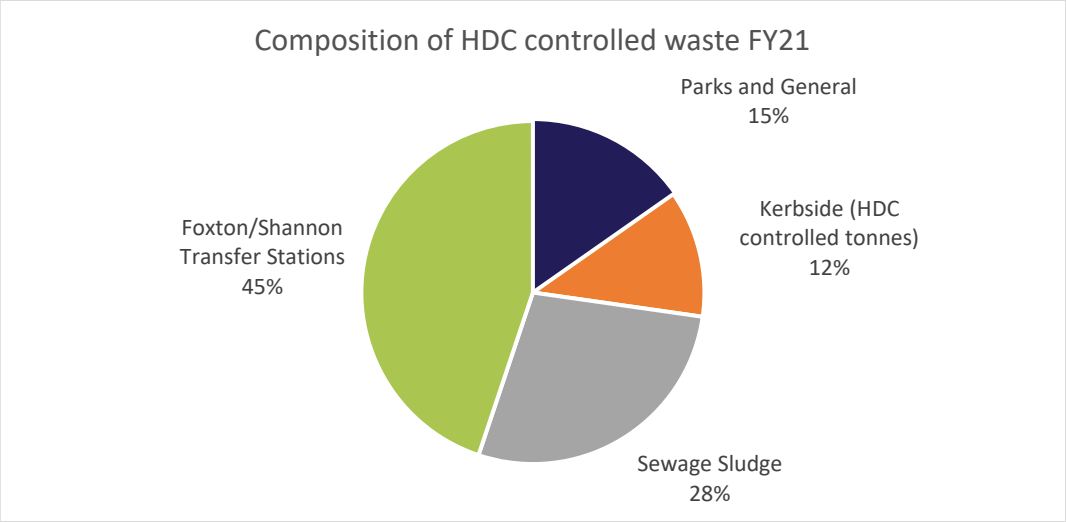

Figure 2: Composition of HDC controlled waste

The following page considers whether HDC could opt out of refuse collection and disposal entirely.

Can Council opt out of refuse collection and disposal?

Part 4 of the Waste Minimisation Act (2008) sets out the responsibilities of territorial authorities in relations to waste management and minimisation. These do not specifically require territorial authorities to provide waste services in their district, although they do have requirements for waste minimisation promotion and for data collection and reporting.

However, while Council could significantly reduce its council-controlled waste through waste minimisation and greater privatisation of refuse collection, it will almost certainly still have some residual waste to dispose of, as well as wastewater treatment plant sludge.

Waste minimisation options to create a smaller residual waste stream include:

- Better separation of construction and demolition waste received at Council transfer stations
- Improved recycling facilities in public spaces to reduce litter bin volumes
- Introduce composting of green waste collected at Council transfer stations
- Kerbside separation of glass to allow it to be recycled
- Separation at source of food waste for composting or anaerobic digestion
- Additional public education and promotion of recycling

Council's kerbside collection contract expires no earlier than 2025, at which point Council could change to a fully privatised model, with licenced waste collectors. This would reduce council-controlled waste by approximately 12% but would not necessarily impact the total waste generated in the District.

Foxton and Shannon transfer station refuse represents 45% of council-controlled waste. Council could decide to close these in 2025 and leave transfer station provision to the private sector, however, this would reduce the level of service provided to the Foxton and Shannon communities as they are unlikely to be generating enough waste to attract a commercial transfer station operator.

Sludge from the HDC wastewater and water treatment plants represents over a quarter of the total council-controlled waste. If the three waters reforms proceed as planned and HDC opts into the new entity, the responsibility for disposal of this would transfer to the new entity no later than 1 July 2024, based on the proposed three waters programme. While this would no longer be HDC's responsibility, the disposal cost will still be captured in water and wastewater charges to residents.

2.3.2 Current total district waste volumes

Midwest Disposals Ltd (Midwest), the current operations contractor, () also places approximately 30,000 tonnes of its own waste into the Levin Landfill each year. This primarily comes from the Horowhenua and Kāpiti Coast Districts. These tonnes form most of the waste placed in the Levin Landfill.

At the end of the current operations contract in May 2022, the tonnes controlled by Midwest will be diverted to Bonny Glen Landfill.

During the Waste Services Agreement extension period from November 2021 to April 2022, these tonnes will also be placed in the Bonny Glen Landfill, under the terms of the variation agreed between Midwest and HDC. This variation allows HDC to utilise airspace at Bonny Glen Landfill while it completes its decision making on the Levin Landfill closure date.

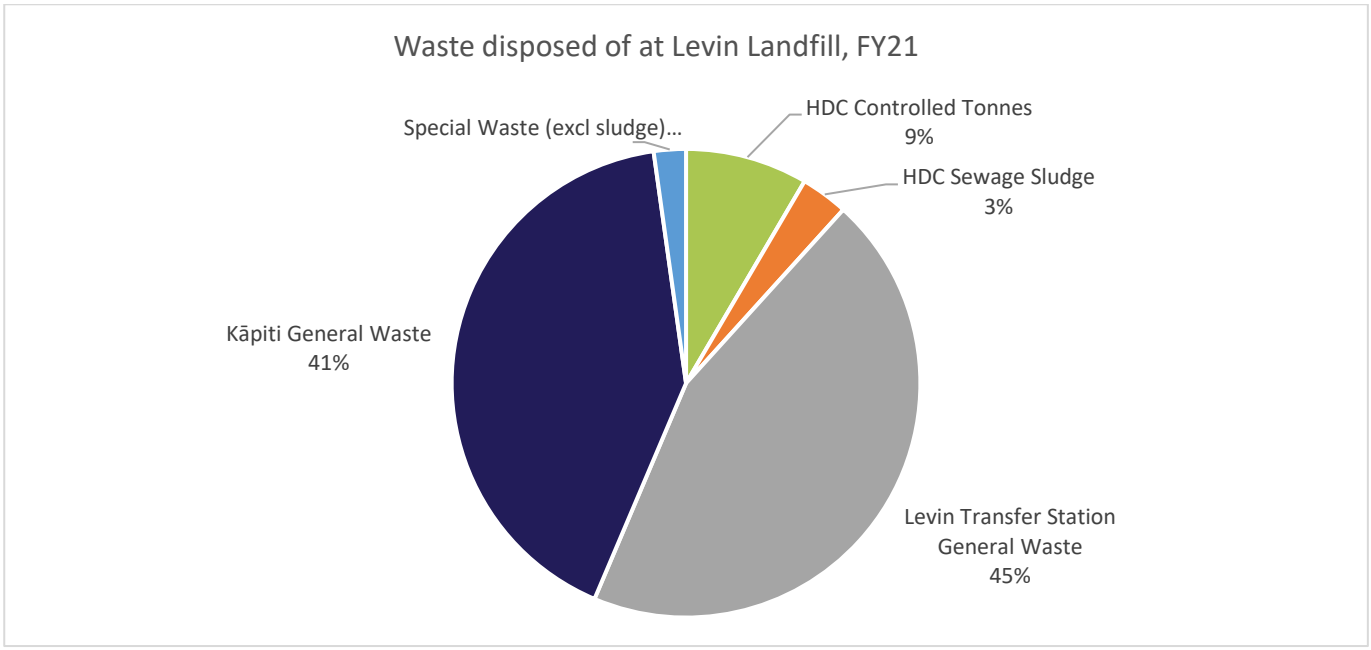

Figure 3: Composition of waste placed in the Levin Landfill, FY21

The LTP annual target for waste produced and disposed of in the Horowhenua District is 400kg per person. The last three years have seen estimated volumes per person steadily increase, from 450kg (2019) to 660kg (2021).

Council's Twelve-Month Report[4] estimated that 23,105 tonnes of waste was produced and disposed of in the Horowhenua District in 2021. This was comprised of:

- HDC controlled tonnes including sludge and Foxton/Shannon transfer station waste disposed of in the Levin Landfill
- Special waste disposed of in the Levin Landfill
- Midwest tonnes from the Levin Transfer Station disposed of in the Levin Landfill

It does not include the tonnes that Midwest brings to the Levin Landfill from Kāpiti.

[4] https://www.horowhenua.govt.nz/files/assets/public/meetings-2021/finance/hdc-finance-audit-risk-committee-agenda-25-august-2021.pdf

HDC does not have visibility of where the tonnes from the Levin Transfer Station come from, and it is possible that some come from outside of the Horowhenua District. HDC also does not have visibility of whether any waste from the Horowhenua District is disposed of in other landfills by private operators. Therefore, this figure is not a direct measure of waste generated in the Horowhenua District, which could be higher or lower than this figure.

HDC's Solid Waste Bylaw is currently being updated. It is proposed that this will require waste collectors to declare the source of their waste which will enable Council to understand the true volumes generated in the District. This is part of the implementation of the National Waste Data Framework which will result in data being collected consistently nationwide and so that inter-district flows of waste can be measured.

2.3.3 Future waste volumes

To reach the LTP waste minimisation target of 400kg of waste per person, waste volumes as a whole would need to decrease by approximately 40%. This would only happen if multiple new waste minimisation initiatives were introduced. In practice the reduction would not be evenly spread across council and non-council-controlled waste. The impact on council-controlled volumes would depend on which waste minimisation interventions were undertaken.

A range of scenarios for council-controlled waste volumes is presented below. All are based on the district's population growth assumptions in the LTP. The figure shows the impact of either exiting kerbside collections by 2026, or by introducing a compulsory rate funded wheelie-bin kerbside collection.

However, if residents are not provided with any additional waste diversion options, the volume of waste generated will likely stay the same, whether Council or a private operator is collecting their waste. The best way to reduce the residual kerbside waste generated in the district would be to introduce a separate green and food waste collection. This would potentially remove an estimated 35% of domestic waste.

The Ministry for the Environment has recently released a discussion document as is looks to publish New Zealand's first emissions reduction plan in 2022. This document states that the proposed approach regarding organic waste in landfills is to:

> "work towards a future decision on organic material bans in both municipal and non-municipal landfill types by 2030. This could potentially include any of food and green waste, fibre (paper and cardboard) and possibly wood waste for municipal landfills.[5]"

It should be noted that this is not yet Government policy. However, by the time Council's current kerbside collection contract expires there is a strong possibility that kerbside separation of food and green waste will be mandated.

[5] Ministry for the Environment. 2021. Te hau mārohi ki anamata | Transitioning to a low-emissions and climate-resilient future: Have your say and shape the emissions reduction plan. Wellington: Ministry for the Environment.

With a strong focus on waste minimisation Council can reduce its general waste volumes going to landfill. This will reduce Council's carbon footprint.

If the Levin Landfill is closed, waste minimisation initiatives focussing on council-controlled waste will reduce Council's refuse disposal costs.

If the Levin Landfill remains operational, HDC will have no financial incentive to minimise waste, due to the high fixed costs associated with the operation of the Landfill and minimum tonnage required to support its viability.

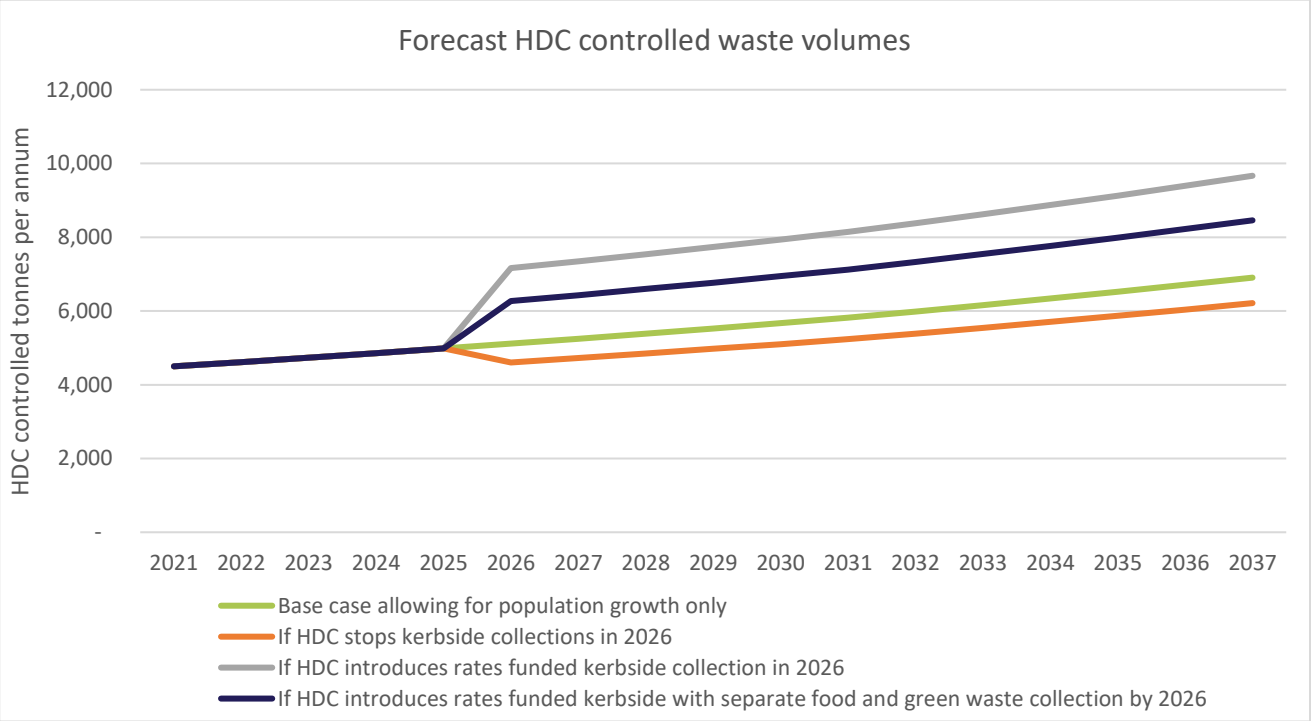

Figure 4: Potential council-controlled waste volumes, 2021-37[6]

2.4 Source of funding

The draft Revenue and Financing Policy sets the following funding sources for the solid waste and wastewater activities. The wastewater and recreation reserves activities are presented here as significant generators of council-controlled waste. Other activities generate only a small contribution to Council's total waste.

[6] An alternative scenario could see Council stop its kerbside collection and instead use licenced waste operators, (as provided for under sections 43 and 56 of the Waste Minimisation Act 2008) but specify that kerbside collected refuse must be placed at the Levin Landfill. This approach would discourage the larger operators from participating in the Horowhenua kerbside market. A full evaluation of kerbside models should be made prior to the current contract expiring in 2025.

Table 3: Draft LTP funding policy for solid waste

Area	2021-41 LTP policy	Source of fees and charges	Distribution of the targeted rate
Solid waste landfills and waste transfer stations	• Public Good: Targeted Rate: 30-40% • Private Benefit – Fees and Charges: 60-70%	Waste transfer station user charges	Solid Waste targeted rate relating to all public good elements of the Solid Waste activity Fixed charge per SUIP of each rating unit Differential of 80% urban and 20% rural
Refuse collection	• Public Good: Targeted Rate: 0-15% • Private Benefit – Fees and Charges: 85-100%	Council refuse bag sales	
Waste minimisation and recycling	• Public Good: Targeted Rate: 100% • Private Benefit – Fees and Charges: 0%	N/A	
Wastewater (Sewer) Systems	• Public Good: Targeted Rate: 80-90% • Private Benefit – Fees and Charges: 10-20%	Industrial Trade Waste fees and charges	Wastewater targeted rate charged on each SUIP or each connection (whichever is the greater) of each rating unit as a uniform charge across the District
Passive Recreation Reserves, Urban Cleansing and Street Beautification	• Public Good: General Rate: 95-100% • Private Benefit – Fees and Charges: 0-5%	Occasional use of reserves to hold events where the public is charged entry	N/A – General Rate

2.5 Regional context

2.5.1 Regional collaboration

In accordance with Section 17A of the Local Government Act, in March 2021 Council completed a service delivery review of its refuse disposal activity. This included meeting with senior officers of Horizons Region and neighbouring territorial authorities.

This review had three main conclusions:

- The territorial authorities in the Horizons Region should work together to develop a joint WMMP. This will identify the areas that are best suited to joint procurement or delivery.
- Joint procurement for refuse disposal would not be practical, as none of HDC's neighbouring territorial authorities had refuse disposal contracts expiring at a similar time. While there are opportunities in the long-term to jointly procure refuse disposal, this is most likely to occur based on a track record of collaboration, as the benefits will be unevenly shared and a high trust model is required.
- The refuse disposal or Landfill operations should continue to be outsourced to a contractor, regardless of whether Council's refuse is to be disposed of in the Levin Landfill or elsewhere.

The future refuse disposal option should allow HDC to participate in the development of a joint WMMP and in any flow-on initiatives. These could result in refuse volumes increasing or decreasing substantially in future, due to waste minimisation initiatives or through a different split of Council/private sector responsibilities.

Since the Section 17A review, no further work on collaboration between local authorities in the Horizons Region has been undertaken and the majority seem to be pursuing individual waste strategies. Therefore, HDC officers have been considering whether working with the Wellington Region local authorities on joint waste minimisation initiatives may be more beneficial than working with the other local authorities from the Horizons Region.

2.5.2 Regional waste market dynamics

The lower North Island is serviced by a small number of landfills. There are three roughly equidistant landfills from Horowhenua (in addition to the Council owned Levin Landfill), which all take waste from external parties:

- Bonny Glen Landfill, a commercial landfill operated by Midwest Disposals Ltd. Bonny Glen Landfill has sufficient airspace for approximately 50 years. Gate rates are negotiated individually with major customers. Bonny Glen Landfill does not have its own transfer station, with the published gate rate at Midwest controlled transfer stations ranging from $159-255 per tonne, as detailed in the following section. Midwest is a joint venture between the two largest solid waste organisations in New Zealand: Waste Management New Zealand Ltd and EnviroWaste Services Ltd.
- Spicers Landfill, owned 78.5% by Porirua City Council and 21.5% by Wellington City Council. Spicers' consents will be renewed by 2025. There is sufficient airspace for between 20-30 years. Spicers is operated by EnviroWaste. The published gate rate for general waste is $141 per tonne[7].
- Silverstream Landfill, owned by Hutt City Council. There is up to 40 years of airspace remaining, based on current volumes, however this may reduce if Southern or Spicers were to close first and additional Wellington region tonnes were transferred to Silverstream. The published gate rate for general waste is $140.00 per tonne[8].

The other lower North Island landfills are:

- Southern Landfill, owned by Wellington City Council. This is slightly further from Levin and charges a gate rate for general waste of $153 per tonne[9].
- Waipukurau Landfill, owned by Central Hawkes Bay District Council. Disposal costs at the Waipukurau landfill are $180 per tonne, reflecting the small volumes and lower carbon capture at this landfill.
- Omarunui Landfill, jointly owned by Hastings District Council and Napier City Council. The published gate rate is $142 per tonne for commercial operators, and $260 per tonne via the transfer station[10].

[7] Porirua City Council, Fees and Charges (excludes GST)

[8] Hutt City Council, Fees and Charges (excludes GST)

[9] Wellington City Council, Fees and Charges (excludes GST)

[10] Napier City Council and Hastings District Council, Fees and Charges (excludes GST)

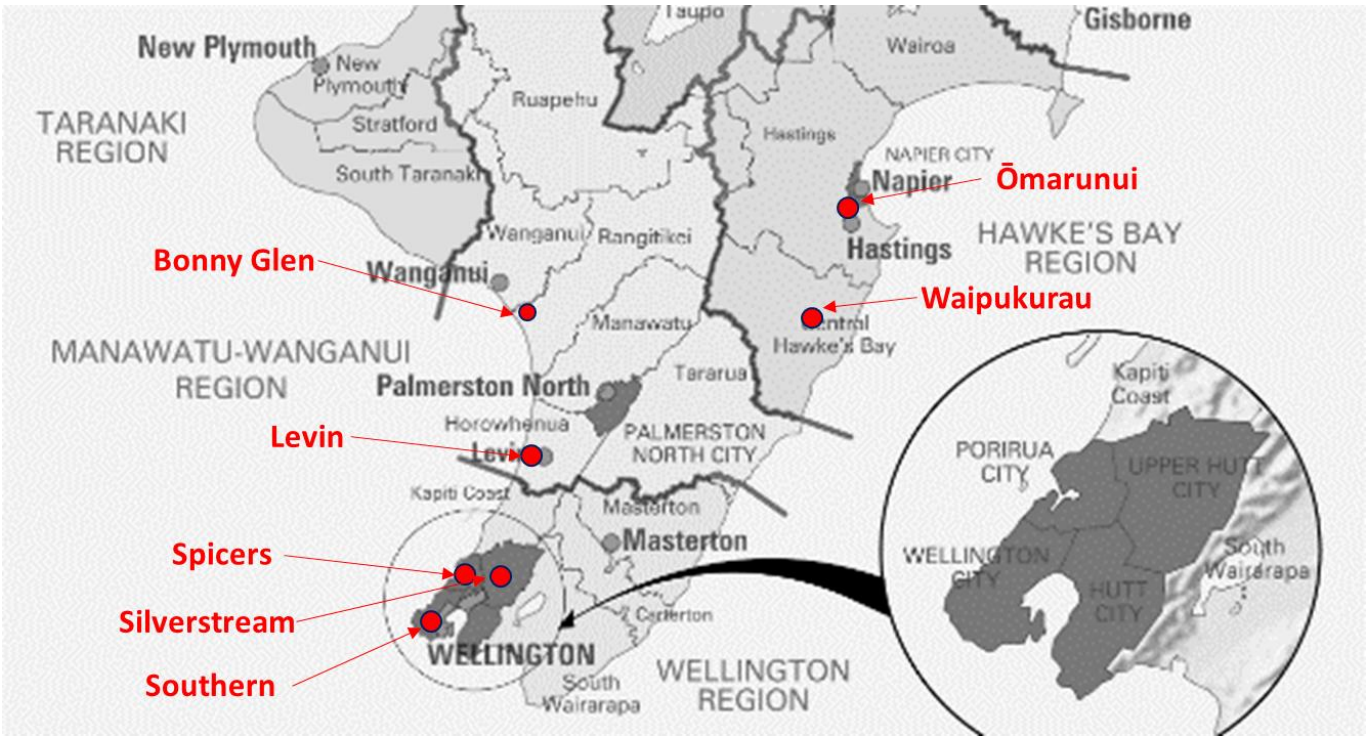

Figure 5: Landfills in the lower North Island[11]

As the council owned landfills near their capacity, their shareholding local authorities may seek to prolong the landfill life by ceasing to accept out of district waste. This would further reduce the competitiveness of the lower North Island waste disposal market.

The main barriers to entry to compete in the landfill market are significant:

- Time and uncertainty of Resource Consent outcomes: From selection of a site to opening a landfill to accept waste is likely to be in the order of 10 years. This has become a major impediment for investment. The constant changes in regulations allow only very large organisations to withstand the risk associated with consenting a new landfill.
- Population spread vs landfill economics: NZ has a large spread of towns and cities with relatively low population bases; landfills are significantly affected by economies of scale which, apart from Auckland and Wellington tend to prohibit more than one landfill in any region being viable.
- Transport costs: these lead to secondary level barriers as frequently there is only one landfill within a reasonable distance that waste can be transported to making freight costs a determining factor. Transport costs from Levin to Bonny Glen Landfill, Spicers and Southern are estimated to be in the range of $45-55 per tonne (excluding GST) for general waste, with up to $90 per tonne for sewage sludge. For some local authorities, this effectively creates a monopoly supplier situation, which, unlike most monopolies, is not regulated by central government. There is some evidence that landfill pricing can be based on an "optimal deprival value' basis (i.e., what options does the potential waste producer have to the next closest landfill and what is the difference in transport costs).

[11] Base image © Terralink International Limited

- Lack of market competition in the landfill industry: apart from smaller regional players (such as Northland Waste) and some territorial local authorities, the landfill market is predominantly controlled by a duopoly of Waste Management and EnviroWaste who also have Midwest Disposals as their operational joint venture in the lower North Island.
- Control of the waste stream: Control of the waste stream is key to operating a successful landfill. Vertical integration, i.e., controlling the waste from user to landfill, is the best way to have secure tonnages. Few landfills are operated by organisations who do not also control the majority of the waste being disposed of there.
- Emissions Trading Scheme (ETS) and Waste Levy uncertainty: Some overseas jurisdictions have waste levies as high as $160 per tonne[12]. Some groups have been calling for similar levies in New Zealand. In addition, carbon costs could more than double over the next five years. If this was to happen, the volume of waste to landfill would decrease substantially and there would be intense competition between landfill operators to secure the remaining tonnes. This would likely make landfill operations uneconomic for small landfill operators.

Because of the above factors it is extremely difficult for any but the largest of local authorities (or regionally collaborative local authorities) to be able to compete with the private sector. Landfill ownership has traditionally been seen as a way for local authorities to control their own waste disposal costs, but with modern regulatory standards and the need to capture or pay for methane emissions, the cost of operating small landfills has become prohibitive.

Access to a competitive market for refuse disposal will be important for all Horizons' Region local authorities as their current disposal agreements expire. [redacted]

2.5.3 *Control of refuse volumes*

The majority of local authorities in the Horizons Region control only a small proportion of waste from their district. All have either a solely private kerbside service or an optional user pays Council rubbish bag service (for urban residents). Private operators provide a wider range of services with different pricing options, allowing them to attract the majority of residents to their service. The estimated council kerbside market share for the optional user pays bags ranges from 20% in Horowhenua to 30% in Palmerston North. In addition, the majority of transfer stations in the region are either privately owned and operated, or leased out with the Contractor responsible for disposal of the waste collected.

The result of this is that individual local authorities [redacted]

[12] Eunomia Consulting, The New Zealand Waste Disposal Levy, Potential impacts of Adjustments to the Current Levy Rate and Structure, 2017 https://eunomia.co.nz/wp-content/uploads/2017/06/WDL-Final-Report-30-05-17.pdf

From the perspective of landfill owners, the most efficient way to operate a landfill is to control the largest volume of waste. A very high proportion of costs are fixed for landfills and will not change regardless of the number of tonnes being placed per annum. A small proportion of costs are variable and will increase with increasing volumes. This allows landfill owners to offer significant discounts on rates to large customers who will make their operations more efficient.

Small customers who contribute less than 5,000 tonnes per annum are less important to the landfill owners and as a result often either pay the prevailing gate rate, or receive only a small discount off this.

Table 4: Council solid waste arrangements in selected lower North Island territorial authorities

Council	Kerbside refuse collection	Transfer Station provision	Current disposal location	Contract expiry	Council-controlled tonnes
Horowhenua District	Council bags or private	Council and private TSs	Levin Landfill	Landfill operations: April 2022	4,500
Manawatū District	Council bags or private	Council TS	Bonny Glen Landfill	January 2023	6,300
Palmerston North City	Council bags or private	Private TS	Bonny Glen Landfill	October 2026	5,500
Rangitīkei District	Council bags or private	Council TS	Bonny Glen Landfill	Long-term arrangement	Unknown
Tararua District	Private collections only	Council TS	Waipukurau (CHB)		3,000
Whanganui District	Urban – private. Rural – council contracted	Private TS	Bonny Glen Landfill	New contract awarded 2021	2,000
Kāpiti Coast	Private collections only	Council TS	Bonny Glen Landfill and Levin Landfill	TS contract – July 2023	20,000
Total					**41,300**

Sources: Council WMMPs, websites and discussion with officers from each council. Tonnage figures are estimates only.

2.5.4 Transfer Station fees for the public

The table below compares disposal fees for Transfer Station general waste disposal across the wider Horizons-Wellington region. All fees are shown including the current ETS charges and Waste Levy but excluding GST and have been rounded to the nearest dollar. Note, these are the rates for the general public, rather than those paid by larger commercial operators and larger local authorities who typically have negotiated rates. This is also a different market to the commercial skip, frontload or HUKA bin market. As these bins are contracted to private waste companies, they are more likely to be disposed of out of the district than public transfer station waste, based on separately negotiated disposal agreements.

There are a number of factors determining the transfer station gate fees in each district. Firstly, the distance to the disposal location, with each 50km distance adding an additional $30-40 of transportation cost. Secondly, whether there are competing private and council owned transfer stations within the same city or town. Thirdly, whether there are competing landfills within a reasonable distance. And lastly, for council owned transfer stations, whether that council has got a favourable disposal rate for its waste that it can pass on to the public.

For the situation in Levin, there is currently only one transfer station in operation, which is operated by Midwest. Regardless of when the Levin Landfill shuts, [redacted] The only way that Council can influence the Levin Transfer Station gate rate [redacted]

Table 5: Comparison of selected Transfer Station disposal costs

Council	Transfer Station fees set by	Landfill Ownership	Disposal fees per tonne	Disposal location	Distance to disposal location	Landfill Competition
Horowhenua District (Levin Transfer Station)	Private sector	Council	$187	Levin Landfill	<10km	Bonny Glen Landfill
Manawatū District	Council	Private sector	$235	Bonny Glen Landfill	40km	Nil
Palmerston North City	Private sector	Private sector	$234	Bonny Glen Landfill	50km	Nil
Rangitīkei District	Council	Private sector	$159	Bonny Glen Landfill	<10km	Nil
Whanganui District	Private sector	Private sector	$243	Bonny Glen Landfill	30km	Nil
Porirua	Council	Council	$141	Spicers Landfill	0km	Silverstream, Southern
Hutt City	Council	Council	$140	Silverstream Landfill	0km	Spicers, Southern
Kāpiti Coast	Private sector	Private sector	$173 (Otaihanga) $186 (Ōtaki)	Levin Landfill & Bonny Glen Landfill	20-40km	Nil
South Taranaki	Council	Private sector	$155	Bonny Glen Landfill	120km	Nil
New Plymouth	Private sector	Private sector	$255	Bonny Glen Landfill	190km	Nil

Figure 6: Comparison of Transfer Station fees at selected lower North Island transfer stations

2.6 National context

2.6.1 *Waste Minimisation*

The Ministry for the Environment (MfE) is working on a number of initiatives to reduce waste to landfill in New Zealand. This is being underpinned by the development of a new national waste strategy and updated waste-related legislation. Most of this work is focused on recycling, including the Container Return Scheme, new recycling infrastructure and product stewardship schemes.

The government is also looking to standardise kerbside collections, based on the recommendations from WasteMINZ's comprehensive review of kerbside collections[13]. These recommendations are:

- Standardise materials to be collected in domestic kerbside recycling collections across the country, and how they should be presented, to increase consistency, reduce confusion for householders and reduce contamination.
- Incentivise local authorities to collect food waste for composting or anaerobic digestion to reduce kerbside residual rubbish to landfill.
- Incentivise local authorities to collect glass separately to other recyclable materials to improve the quality of all materials accepted in kerbside recycling.
- Provide best practice recommendations for food waste, recycling, and residual rubbish collections to increase consistency across the country.

These initiatives alone produce uncertainty regarding future general waste volumes and this uncertainty is further exacerbated by ETS pricing and the increases to the Waste Levy.

[13] https://environment.govt.nz/publications/recommendations-for-standardisation-of-kerbside-collections-in-aotearoa/

2.6.2 *Incentivising waste diversion via the Waste Levy*

One of the other tools that MfE is utilising to improve waste diversion is an increase in the Waste Levy. There will be a stepped increase to the Waste Levy over the next four years. This will increase the cost of disposal significantly, as shown in the table below.

Table 6: Planned increase to the Waste Levy[14]

Landfill levy per tonne of waste placed	Until 1 July 2021	From 1 July 2021	From 1 July 2022	From 1 July 2023	From 1 July 2024
Municipal landfill (class 1)	$10	$20	$30	$50	$60
Estimated Waste levy cost per annum for HDC controlled waste (assuming 4,500 tonnes per annum)	$45,000	$90,000	$135,000	$225,000	$270,000

This is a substantial cost increase and is likely to lead to an increased focus on waste diversion for all councils.

Currently, local authorities receive 50% of the total levy funds collected, shared out nationally on a population basis. It is unclear what proportion local authorities will receive of the increased levy funding, as this is part of the waste legislation review. The Ministry for the Environment has provided an indicative timeframe of the second half of 2021 for further clarification on the revised national approach to waste[15].

2.6.3 *Minimising emissions via the Emissions Trading Scheme*

2.6.3.1 Landfill emissions

Waste accounts for 9% of the total biogenic methane emissions in New Zealand[16] and 4% of New Zealand's gross emissions[17]. The Climate Change Commission has recommended that methane emissions from waste reduce by 40% by 2035 from 2017 levels[18].

Landfills are covered by the Emissions Trading Scheme (ETS) under the mandatory activity of "operating a disposal facility" as listed in Schedule 3 of the Climate Change Response Act. This means that landfill owners must surrender New Zealand Units based on the number of tonnes of refuse placed in the landfill and the Emissions Factor associated with each individual landfill.

A comparison of landfill emissions from the Levin Landfill and other New Zealand landfills is presented in section 3.1.4.

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[14] Ministry for the Environment, https://www.mfe.govt.nz/waste/waste-and-government#waste-disposal-levy . Annual cost for HDC based on approximately 4,500 tpa of council-controlled waste.

[15] Indicative timeframes for public consultation and submittal to cabinet of updated (draft) national Waste Strategy and legislation (Waste Minimisation and Litter Acts). Source: Ministry for the Environment, *Waste and Resource Efficiency work programme (next 12 to 24 months)*, WasteMINZ conference presentation, October 2020.

[16] Climate Change Commission, 2021. Ināia tonu nei: a low emissions future for Aotearoa Advice to the New Zealand Government on its first three emissions budgets and direction for its emissions reduction plan 2022 – 2025

[17] https://environment.govt.nz/assets/publications/Emissions-reduction-plan-discussion-document.pdf

[18] https://environment.govt.nz/assets/publications/Emissions-reduction-plan-discussion-document.pdf

2.6.3.2 Cost of emissions

The current spot price of ETS units is $64.85[19], up more than $25 per unit since the start of 2021.

The Ministry for the Environment has created a price mechanism called a cost containment reserve (CCR) which is intended to dampen demand if the price of ETS units reaches that price. The 2021 CCR price trigger is $50/ tCO_2-e[20], however will increase to $70/$tCO_2$-e in 2022 and then by 12%[21] per year between 2022 and 2026. This is intended to set a cap on the price of units for each year, however the current demand for ETS units has already meant that this 'cap' has been breached and future ETS unit prices will be primarily driven by supply and demand. This could result in significantly higher ETS costs in future.

While the actual ETS costs remain unknown and will be driven by market forces, the mechanism set out by MfE would see a price of up to $98/ tCO_2-e by 2025. Based on the increase in unit costs in 2021, the actual ETS costs could be even higher than this by 2025.

[19] Source: https://www.commtrade.co.nz/ Accessed 14 October 2021

[20] https://environment.govt.nz/what-government-is-doing/key-initiatives/ets/nz-ets-market/emission-unit-prices-and-controls/

[21] https://environment.govt.nz/news/release-of-updates-to-nz-ets-regulations-and-sgg-levy/

3 LEVIN LANDFILL

Council holds Resource Consents for the Levin Landfill that were issued in 2002 with a maximum term of 35 years, expiring in May 2037. The total remaining consented capacity of the Levin Landfill is approximately 560,000m^3, providing space for approximately 475,000 tonnes.

One of the consent conditions is a five yearly review of the conditions by Horizons Regional Council (HRC). In 2015, HRC issued a notice of review. In 2016, Commissioners released their decision, which was subsequently appealed by the Hōkio Environmental Kaitiaki Alliance (HEKA), with Ngāti Pareraukawa in support. That appeal was resolved as a result of the Levin Landfill Agreement being signed in March 2019. This review took three and a half years. As the resulting changes to the consent conditions were only implemented after the final Environment Court decision, the next review is now scheduled for October 2024.

The current Levin Landfill is located adjacent to the original landfill that is now closed but was in operation from the 1970s until 2004. The original landfill is unlined.

A map of the site is shown below.

Figure 7: Levin Landfill site showing new and old landfills[22]

[22] Stantec, Levin Landfill Management Plan, March 2021

3.1 Levin Landfill – performance and environmental impact

A summary of the Levin Landfill's performance and environmental impact is shown below.

3.1.1 Compliance with Consent Conditions

The Levin Landfill's compliance with its Consent Conditions between 2017 and 2020 is as follows.

Table 7: Compliance with consent conditions – 2017-2020

Consent	HRC Compliance Report covering the period[23]:			
	Dec 2019 – Dec 2020	**Jul 2017- Dec 2019**	**Jul 2017 - Jun 2018**	**02/2017-07/2017**
6009 Discharge solid waste to land	Comply full	Moderate Non-Compliance	Comply – On Track	Comply – Full
6010 Discharge landfill leachate onto and into land	Low Risk Non-Compliance	Moderate Non-Compliance	Comply	Comply
6011 Discharge landfill gas, odour and dust to air	Significant Non-Compliance	Low Risk Non-Compliance	Significant Non-Compliance	Significant Non-Compliance
6012 Divert stormwater from around the landfill	Comply Full	Not covered in this report	Not covered in this report	Comply
7289 Discharge liquid waste onto and into land	Comply Full	Comply Full	Comply - Full	Not covered in this report
102259 Discharge stormwater to land and potentially to groundwater via ground soakage	Comply Full	Comply Full	Comply - Full	Comply
106798 Discharge to air (flared landfill gas)	Low Risk Non-Compliance	Not covered by this report	Not covered in this report	N/A

The significant non-compliances received during this period were for the following conditions:

- Feb-June 2017 Compliance Report. Significant non-compliance for discharge of odour that in the opinion of a Regional Council Enforcement Officer is noxious, dangerous, offensive or objectionable beyond the property boundary.
- 2017-2018 Compliance Report. Significant non-compliance for consent for discharge of odour from the landfill that in the opinion of a Regional Council Enforcement Officer is noxious, dangerous, offensive or objectionable beyond the property boundary.

[23] HRC Compliance reports dated: 19 June 2017, 21 August 2018, 27 July 2020, 8 June 2021. Accessible at: https://www.horowhenua.govt.nz/Growth-Projects/Projects/Levin-Landfill#section-2

- 2019-2020 Compliance Report. For "unauthorised discharge to air. Monthly methane monitoring was not being carried out, as required by the Resource Consents, between 19 December 2019 and 31 December 2020." Note: By the time that the Compliance Report was issued, this monitoring had already commenced.

The HRC reporting format prior to 2017 makes it more difficult to provide comparable information, as separate assessments were made for review of quarterly reports and in response to site inspections or complaints. At least one Significant Non-Compliance was reported during the period 2014-2016, for discharge of odour beyond the site boundary.

3.1.2 Leachate

HDC holds a Resource Consent for the discharge of leachate to ground[24]. One of the consent conditions states that HDC "must complete an assessment of leachate remediation options (and a Best Practicable Option) to:

(a) cease, or if cessation is not feasible, materially reduce the discharge of leachate to the Tatana Drain and Hōkio Stream; or

(b) if neither of the options in (a) are feasible then options to offset effects within the Hōkio catchment and if that is not feasible or possible options to compensate effects within the Hōkio catchment or outside of it (either option through an ecological package).[25]"

This Best Practicable Option (BPO) assessment was also required under the terms of the Levin Landfill Agreement and was carried out by Tonkin + Taylor (T&T) in 2019. T&T concluded that:

> "The Current Landfill is lined and is not thought to be a significant source of leachate discharge … The remainder of this leachate BPO assessment is focused on the Original Landfill, which we consider to be the primary source of leachate discharge at the site."

T&T identified options that would materially reduce the volume or effects of leachate. These options fell into three broad categories:

- Reduce leachate generation
- Collect leachate
- Manage impacts

A total of 11 options were considered, ranging from low cost (<$100k) to very high cost ($>1,000k) and these were assessed based on their likely impact on leachate generation, reduction of leachate discharge to groundwater and surface water as well as other impacts.

T&T did not recommend a single best option, however recommended a suite of options be selected in conjunction with the community. The current preferred option is the creation of a wetland in the Tatana Drain, assuming Council can enter into a land purchase agreement satisfactory to both the owners and HDC.

[24] HRC Discharge Permit 6010, Discharge landfill leachate onto and into land.

[25] HRC Discharge Permit 6010, Discharge landfill leachate onto and into land, Condition 2.

HDC has committed, through the Landfill Agreement, to funding the recommended option provided the cost is no more than $350,000 to design, consent/approve, implement and/or install and no more than $25,000 per year to monitor, maintain or operate[26]. This commitment is separate to HDC's obligations under the Resource Consent, which requires HDC have implemented the selected option by 2023.

HDC needs to be aware that none of the leachate reduction options proposed by Tonkin and Taylor will stop all the leachate discharge from the old landfill. Council will need to communicate this clearly to stakeholders and the wider community. Council has a requirement to meet the terms of the relevant resource consent irrespective of the option agreed with the Levin Landfill Project Management Group.

The advice from T&T, the Technical Advisory Group expert appointed under the Landfill Agreement, concluded that the "Current Landfill is lined and is not thought to be a significant source of leachate discharge". Closure of the Current Landfill either immediately or at any date in the future will not materially reduce the leachate entering the Tatana Drain and Hōkio Stream.

T&T concluded that the Original Landfill is the primary source of leachate discharge at the site. The range of options available to mitigate leachate from the Original Landfill have been identified.

Regardless of the closure date chosen, HDC has an obligation under its Resource Consents to (if feasible) cease or materially reduce the discharge of leachate to the Tatana Drain and Hōkio Stream by implementing one or more of these options by June 2023.

3.1.3 Odour

The Resource Consent conditions state: "There shall be no objectionable or offensive odour or dust beyond the boundary of the site[27]."

Historical compliance with this condition is as follows:

Period	Condition Compliance Status
6 February 2017 to 1 June 2017	Significant Non-Compliance
1 July 2017- 30 June 2018	Significant Non-Compliance
1 July 2018- 18 December 2019	Comply - Full
19 December 2019 – 31 December 2020	Comply - Full

The latest HRC Levin Landfill Compliance Report for the period 19 December 2019 to 31 December 2020 notes that while odour was detected on one of the four site assessments during this period, it was determined not objectionable.

[26] The Landfill Agreement also contains provisions that will apply if agreement cannot be reached, or no suitable option is recommended. In certain circumstances HDC's responsibility to fund the leachate improvements could be reduced to $150,000.

[27] HRC Discharge Permit 6011, Discharge landfill gas, odour and dust to air, Condition 3.

Catalyst completed an independent compliance review for 2019-2020[28] and also concluded that HDC was compliant with this condition. However, this also noted that "full assessment of compliance with this condition is inherently difficult" and that there are "substantial logistical challenges in HRC's ability to investigate odour complaints given their distance to the landfill and the response time required". This assessment also notes that "HDC carried out 6 odour assessments at the boundary from March – June 2020. Each of these assessments had the same finding, being odour was detected but was not considered objectionable at any location for any duration or frequency."

The subjective nature of odour perception, as well as the logistical difficulties in carrying out formal odour assessment in response to a complaint, means that there have always been differing views regarding the impact of odour from the Levin Landfill. The table below show the odour complaints received by HRC over the period 2017-2020. Some complaints over the period have also been made direct to HDC and these are not included in this table, unless also reported to HRC. The Levin Landfill Social Impact report stated that over 400 odour complaints were made between 2013 and 2018. It is not clear if these were all logged with HRC or HDC.

Table 8: Odour complaints received by HRC: 2017-2020

Period	Duration (days)	Number of complaints received by HRC	Average frequency of complaints	Number of complaints assessed by HRC	Objectionable odour detected by HRC
1/7/2017 – 7/12/2017	160	40	Every 4 days	5	2
8/12/2017 -7/6/2018	182	0	Nil	N/A	N/A
8/6/2018-5/8/2018	58	9	Every 6 days	2	0
30/7/2018-18/12/2019	507	15	Every 33 days	4	0
19/12/2019–31/12/ 2020	378	11	Every 34 days	4	0

The BERL wellbeing report[29] included the following feedback from neighbours regarding odour from the Levin Landfill:

- "Odour is a major concern for local residents. Although there have been limited official recordings of odour concerns residents report regular instances of odour from the landfill. Neighbours and residents from Hōkio Beach have reported negative health impacts they believe are connected to the odour coming from the landfill. This odour prevents local residents from enjoying the outdoors around the landfill. Residents would like to see better controls over odour issues and lacking this would like to see better enforcement of odour restrictions. Local residents commented that odour issues were having negative impacts on their health that were preventing them from working.
- The major odour concerns are most noticeable on still cold days. The smell becomes unbearable for neighbours."

[28] Drewitt, T, November 2020 Compliance Review Levin Landfill: compliance assessment 1. The Catalyst Group Contract Report No. 2020/159 prepared for Horowhenua District Council.

[29] BERL, 2021. "Levin landfill and Horowhenua waste disposal Wellbeing case"

Source of odour and impact of closure

The 2019 T&T technical report[30] noted: "During the 2016 review of the landfill consent conditions, three air quality experts reviewed the sources of odour at the landfill. These experts agreed that the main source of offsite odour is likely to be landfill gas. In particular, the principal sources of odour were identified as (i) passive discharge of landfill gas from portions of the landfill that had been capped with intermediate cover but have not yet received final cover, and (ii) landfill gas emissions from the leachate collection manhole. The experts agreed that odour from the active landfill tipping area and leachate pond were likely to be minor contributors to odour detected beyond the landfill boundary. Odour is likely to reduce with installation of a final cap, as clayey soil used to form the cover will act as a barrier to landfill gas migration."

It should be noted that leachate is now pumped to the wastewater treatment plant and the leachate pond is no longer in use. A flare was installed in 2017 and is now connected to the leachate collection manhole. This would be expected to have a beneficial effect on odour from this source.

HDC is currently procuring a contract to place a combination of temporary and final capping over the completed cells 1A, 2 and 3. This will reduce the passive discharge of landfill gas and will reduce one of the potential sources of odour. This will also improve the landfill gas collection and increase the efficiency of the flare. Temporary capping of the future cells would also reduce the passive emissions of landfill gas, if implemented in a continuous manner.

In summary, the closure of the Levin Landfill would likely reduce substantially, but possibly not entirely eliminate, the odour generated. While there have been no verified instances of objectionable odour beyond the site boundary since 2017, there have been numerous odour complaints made to HRC and HDC and this continues to be an ongoing concern of local residents.

3.1.4 Methane emissions and gas capture

As landfills are covered under the Emissions Trading scheme, there is good data available on the comparative methane emissions from different landfills.

The Climate Change (Waste) Regulations[31] provide a methodology for calculating the amount of methane emitted by landfills around New Zealand. Landfills can either calculate their emissions and apply for a Unique Emissions Factor (UEF) or use a higher (more expensive) Default Emissions Factor. Most large landfills have a Unique Emissions Factor, while small landfills (e.g., Westland, Buller) do not as the cost of applying for a Unique Emissions Factor outweighs their potential savings.

These figures show that, of the landfills that have a Unique Emissions Factor, the Levin Landfill currently has the fourth highest emissions per tonne. However, many smaller New Zealand landfills do not have Unique Emissions Factors and may potentially have higher emissions per tonne than the Levin Landfill.

For each tonne of waste, the current methane emissions for the Levin Landfill will be over 3.5 times those for Midwest's Bonny Glen Landfill, or 8.6 times those for Kate Valley Landfill (operated by Waste Management). The Levin Landfill's ETS charges will also be 3.5 times and 8.6 times higher respectively. However, they will be 26% less than for a landfill using the Default Emissions Factor.

[30] Tonkin + Taylor, 2019. "Levin Landfill, Closure Review – Technical Considerations".

[31] Climate Change (Waste) Regulations 2010

If the Levin Landfill remains open past 2022, Council will need to consider whether to invest further into the gas capture system, to reduce its environmental impact and ETS costs. The current financial model assumes that the rate of gas capture wil[redacted]each time a new cell is constructed. As the price of ETS units goes up, the benefits of further investment will likely outweigh the costs.

As noted above, HDC is currently procuring a contract to place a final cap over the completed cells 1A, 2 and 3. This will help to reduce emissions and ETS costs.

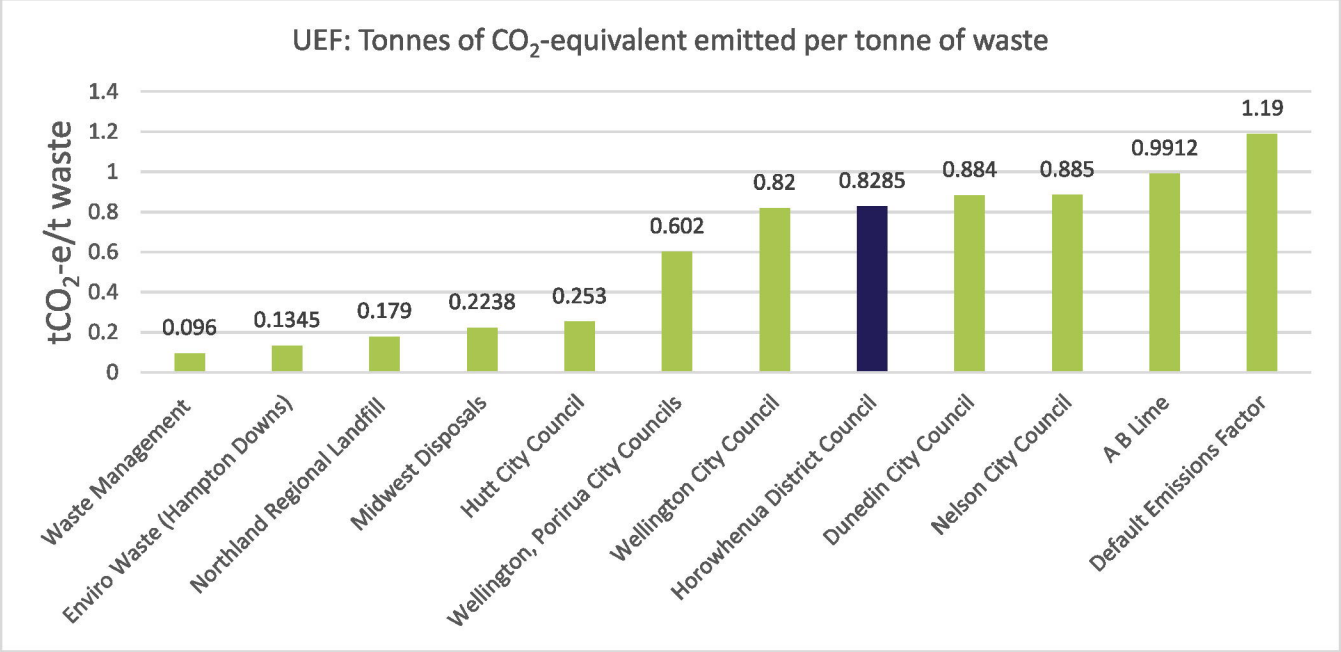

Figure 8: Unique Emissions Factors for New Zealand landfills[32]

Based on the Government's current price control setting, with ETS units costing up to $98/tonne by 2025, Council's ETS costs could more than double[33]. For Council's approximately 4,500 tonnes per annum of refuse going to the Levin Landfill, allowing for the modelled increase in gas capture, the ETS costs could increase from less than $150,000 in 2020 to $365,000 per annum by 2025. This could be partially mitigated through the construction of additional gas capture infrastructure, however that would require additional capital investment over and above that included in the financial model.

Based on the spot price of ETS units in 2021, the actual costs could be even higher than the Climate Change Commission's recommendations.

3.2 Levin Landfill Agreement

The Levin Landfill Agreement established a Project Management Group (PMG) to build relationships and have oversight of processes established under the Agreement. It also set out a specific process (clause 11.1) to determine the closure date for the Levin Landfill. This process is set out as follows.

[32] Note: Marlborough District Council has a Unique Emissions Factors for its waste disposal facility, however this uses a different calculation methodology so is not comparable. EnviroWaste also has a second (lower) Unique Emissions Factor for Special Waste.

[33] Note actual ETS costs could be higher than the ETS price control settings

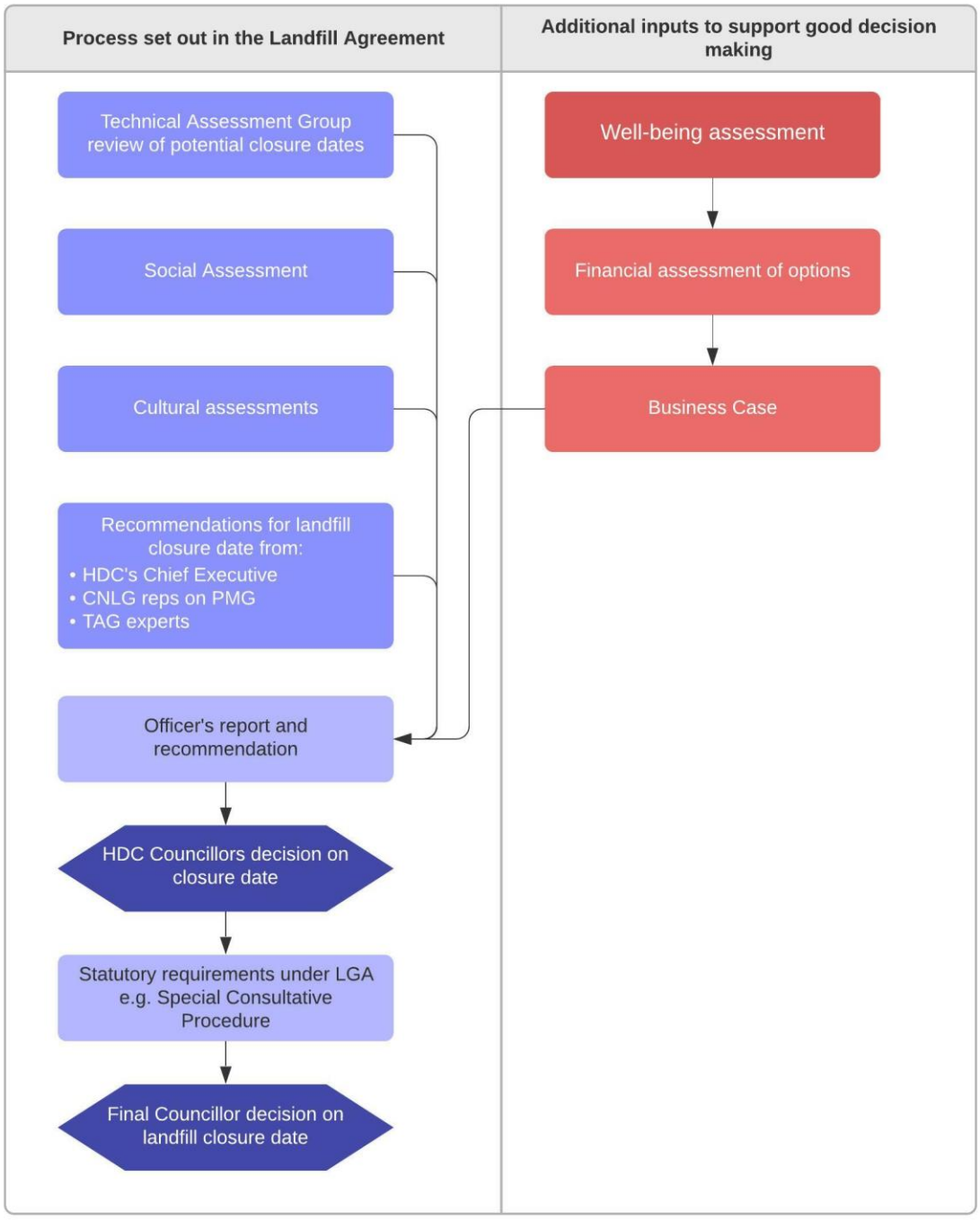

Figure 9: Landfill closure date decision making process as set out in the Landfill Agreement

There are a number of other parts to the Landfill Agreement that will commence once the closure date has been decided, if the closure date is on or before 31 December 2025. These include:

- the implementation of the preferred leachate cessation or reduction option from the old landfill,
- the development of a closure and remediation plan, and
- a reconciliation process including an apology from HDC
- an annual review of monitoring and reporting and an annual review of odour.

If HDC's Elected Members decide on a closure date after 31 December 2025, then the obligations under the Landfill Agreement will terminate. The parties to the Landfill Agreement will then be able to take whatever action is available to them.

The Levin Landfill Agreement is attached to this Business Case as Appendix A.

A Social Impact report was prepared in June 2020 by Bronwyn Kerr. This was one of two reports commissioned as part of the restorative justice work. While the other report considers the wider impact of Council actions, this one focussed purely on the Levin Landfill closure date issue. It should be noted that the report focusses on the impacts on those people closely connected to the Levin Landfill and is not an overview of the feelings of the entire Horowhenua District community. The Social Impact Assessment is attached as Appendix B.

Two cultural assessments have also been prepared. 'Cultural and Environmental Impacts on Ngāti Pareraukawa and Ngātokowaru Marae' and 'Cultural and Environmental impacts on Muaūpoko-Tamarangi Hapū'. These are attached as Appendix C and Appendix D.

Tonkin + Taylor (T&T) was commissioned to provide the TAG expert report as required by the Landfill Agreement. This report was completed in December 2019 and titled "Levin Landfill Closure Review – Technical Considerations". This report reviewed the Landfill closure conditions in the Resource Consents to evaluate whether early closure of the Landfill would be likely to affect whether these conditions could be met. The report did not identify any consent conditions that could not be met by closure in either 2021 or 2037. The report also addressed the technical aspects of early closure and did not identify any technical issues associated with either closure date.

4 IDENTIFICATION OF OPTIONS

A number of reasonably practical options have been identified for the closure date of the Levin Landfill, and the future refuse disposal option for HDC.

For all options, it is assumed that HDC will retain ownership of the Levin Landfill site and the Landfill's resource consents, whether the Landfill is open or closed. HDC will also be responsible for monitoring and maintenance of the Landfill for a minimum of 30 years after it is closed, in accordance with the Resource Consents.

Council's current waste services will continue at the current level of service until at least 2025, including:

- Pre-paid Council rubbish bags
- Foxton/Shannon Transfer Station operations
- Public litter bins

Council could reconsider the provision of these services when the relevant contracts come to an end.

It is anticipated that HDC will continue to have a contract with Midwest Disposals for the provision of a public recycling station at the Levin Transfer Station. Disposal of recyclables at this transfer station would continue to be free of charge for the public. From 2022 onwards, the materials to be accepted at no charge will be expanded to include most e-waste and batteries. If the Government introduces a Container Return Scheme, this agreement will terminate, and a new public recycling station service (either in-house or contracted out) will need to be instituted if Council wishes to continue to offer a public recycling service. [redacted]

4.1 Long list of options

The Local Government Act (2002) requires local authorities to "seek to identify all reasonably practical options for the achievement of the objective of a decision"[34]. The Act allows local authorities to use discretion about how to achieve this in proportion to the significance of the matter and the extent to which different options are to be identified and assessed.

Five options have been identified, of which the first three (in bold) have been short-listed:

- **Close the Levin Landfill in 2022 and dispose of HDC's waste at one or more third-party disposal sites**
- **Close the Levin Landfill by 2025 and then dispose of HDC's waste at one or more third-party disposal sites**
- **Close the Levin Landfill when the Resource Consents expire in 2037, or sooner if full**
- Close the Levin Landfill by 2025 and invest in a new landfill
- Close the Levin Landfill by 2025 and invest in a waste to energy plant

[34] Local Government Act (2002), s77

If Council decides to keep the Levin Landfill operating until 2037, it could also apply for further consents to keep operating it past this date or after the current consenting volume had been filled. This decision would need to be made at the time and has not been factored into this Business Case.

There is no status quo option available which includes the operations contractor also being responsible for contributing the majority of the waste. The current contract to operate the Landfill is due to expire, and no commercial operator has expressed interest in continuing to operate the Landfill on the same basis as the current arrangements.

The closure dates specified above do not specify the exact day on which the Levin Landfill will close under each scenario. This is because once Council has made a final decision on the closure date, the contractual arrangements for that date will need to be put in place. This may take a number of months during which time alternative waste disposal arrangements (either at the Levin Landfill or elsewhere) could be required.

These options are described in more detail in the following sections.

4.1.1 Short-listed options

Three key options have been short-listed and assessed through this Business Case. These are depicted in the figure below and are described in more detail in Section 5. The benefits, costs and risks of each option have been assessed over the period from 2022 to 2037.

These are the overarching closure date options for the Levin Landfill. Within each option, there are different ways they could be implemented. For example, different governance structures could be chosen, including CCTO or in-house governance. The council-controlled waste volumes could also change through HDC introducing or ceasing some waste services, or by implementing waste minimisation initiatives.

A Request for Proposals (RFP) procurement process covering these three options was completed in mid-2021. The outcome of this process has informed the option assessment. The Request for Proposals process is outlined in more detail in Section 8.

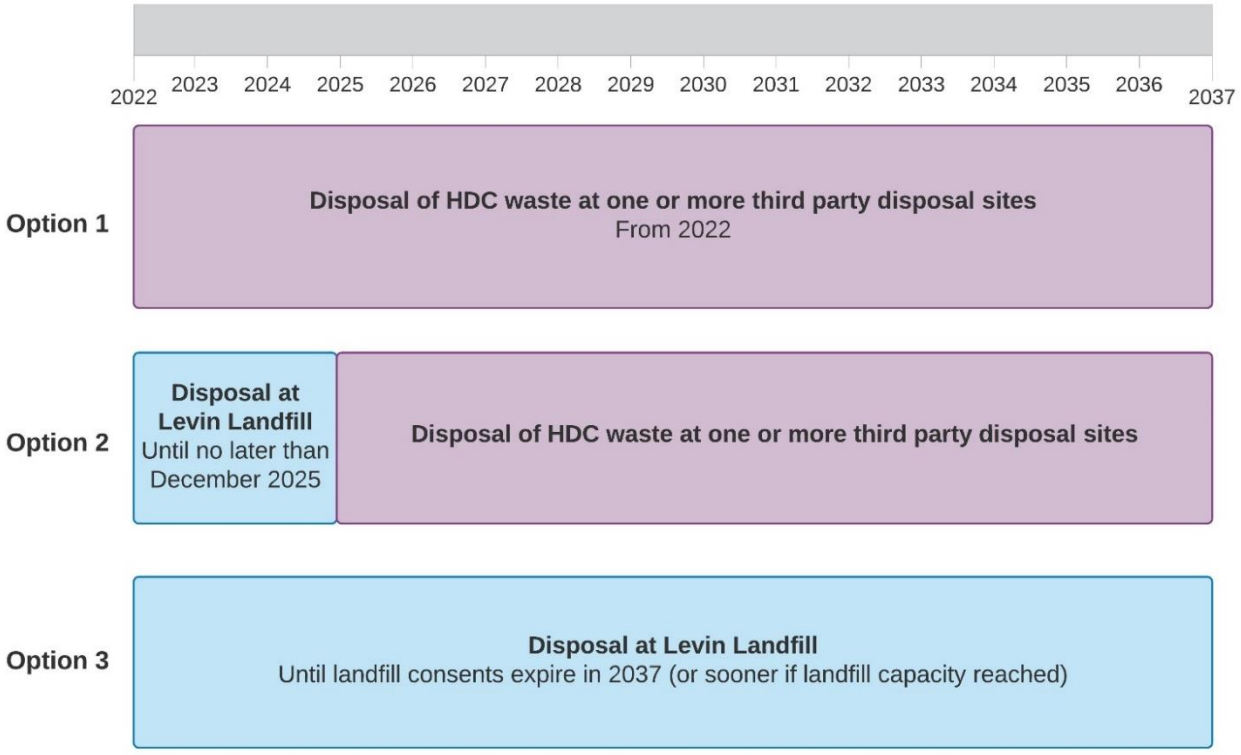

Figure 10: Summary of short-listed options

4.1.2 Long-list options that were not short-listed

In addition to the short-listed options, a further two options have been considered but not short-listed. These are briefly summarised below, including the reasons why they have not been shortlisted.

4.1.2.1 Close the Levin Landfill by 2025 and invest in a new landfill

This option would see the Levin Landfill closed no later than 2025 and HDC investing in a new landfill in or near the Horowhenua District.

This option would only be viable if the shareholders in the landfill had control of a minimum of 30,000 tonnes and ideally at least 50,000 tonnes of waste per annum. HDC would need to partner with other local authorities and the private sector to have access to sufficient waste on a long-term basis.

There are a number of landfills around New Zealand where one or more local authorities have partnered with the private sector to jointly invest and commit tonnes into a landfill. The largest of these is Kate Valley, near Christchurch, which is jointly owned by Waste Management, Christchurch City Council and the Hurunui, Waimakariri, Selwyn and Ashburton District Councils.

A joint public/private ownership model would be the most likely to be successful in the Horizons Region, due to the relatively small population base, limited competition in the region and waste volumes available. Sufficient waste volumes are required to allow landfills the necessary resources to meet modern environmental requirements and to have the economies of scale necessary to invest in high efficiency landfill gas capture infrastructure.

At the moment there are no consents lodged for any new landfills either in or near Horowhenua District. There was nothing submitted via the Request for Proposals process about the development of a new landfill.

[redacted] Landfill consenting can take 5-10 years from lodgement, and there is no guarantee of being successful in obtaining a consent, or, even if this happens, that a landfill will be built. HDC would still need to have a waste disposal option that covered this period and beyond, assuming consents were delayed or unsuccessful.

If a new landfill were to be constructed, it would need to take out of district waste to be viable. If it was located in Horowhenua District, the community would be likely to have strong opposition to the ongoing use of Horowhenua as a disposal location for other districts' waste.

4.1.2.2 Close the Levin Landfill by 2025 and invest in a waste to energy plant

A wide range of waste to energy disposal solutions for general municipal waste exist around the world. The most common of these are combustion-based systems like incineration and pyrolysis. However, none have been built at a commercial scale in New Zealand.

In August 2020, the Ministry for the Environment published a waste to energy guide[35] which outlined a number of issues to be considered when contemplating investing in these facilities. The primary issue is being able to guarantee access to sufficient volumes of waste to be used as feedstock for the plant over its lifetime, to make the operation economical. To date there has not been guidance from central government about the level, if any, of Waste Levies that will be applied to waste to energy plants.

The 2019 BERL assessment of waste to energy[36] concluded that New Zealand has not embraced waste to energy due to our abundance of land, negative community perception of waste to energy, likely negative impact on recycling programmes and waste minimisation goals, lack of access to sufficient feedstock in areas outside of Auckland, and higher disposal costs compared to landfilling.

Several local authorities have investigated waste to energy plants for their municipal waste, however none have progressed past the feasibility stage to date. Manawatu District Council (MDC) has [redacted] a private proposal for a pyrolysis plant in Fielding, however this has not yet completed the Resource Consenting phase[37].

Given the small population of the Horowhenua District, the low volumes controlled by HDC, and the potential competition from a pyrolysis facility in Manawatu, investment in a waste to energy plant is not considered a reasonably practicable option for HDC at this time. If the Manawatu plant is successful [redacted] HDC could become a customer of this facility in future. Availability of an additional waste disposal option near Horowhenua would increase competition and likely reduce HDC's future waste disposal costs.

Our conclusion is that there are no [redacted] waste to energy options available at this time.

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[35] https://environment.govt.nz/assets/Publications/Files/waste-to-energy-guide-for-new-zealand.pdf

[36] https://berl.co.nz/sites/default/files/2020-07/BERL%20Report%20WtE%20final%20July.pdf

[37] http://www.bioplantenergy.com/manawatu

5 DESCRIPTION OF SHORT-LISTED OPTIONS

5.1 Option 1: Close the Levin Landfill in 2022 and dispose of HDC's waste at one or more third-party disposal sites

This option would see the Levin Landfill closed in 2022. As operations at the Levin Landfill are currently suspended, it would mean that no further waste is placed in the Landfill.

5.1.1 Resource Consent and Landfill Agreement implications

Review of the Landfill's Resource Consents is scheduled to commence in October 2024 (and then in 2029 and 2034). Even if the Landfill is closed by this date, the consent review process will still be required, [redacted] HDC has progressed leachate remediation works to the satisfaction of the community.

The costs associated with [redacted] consent review process (legal, engineering and other advice including staff time) have been factored into the overall financial impact of this option. However, there is still a risk that the community opposes the proposed new consent conditions and that a more time consuming and expensive process is required. This is noted in the risk assessment below.

Once Council had made a decision to close the Levin Landfill in 2022, the remaining parts of the Landfill Agreement would come into effect, including the need to develop a landfill closure plan in conjunction with the PMG.

5.1.2 Disposal of waste at a third-party landfill

Council's general waste would all be transported to a landfill owned by a third party (or parties). Either a privately owned landfill or a landfill owned by another Council could be used.

Sludge would be disposed of at a landfill initially. In future it could be diverted to a sludge composting or worm farming facility. There are currently two sludge composting facilities in the lower North Island, at Palmerston North and New Plymouth. [redacted] Alternatively, there is a large worm farming operation in the Bay of Plenty which processes most of the sludge from that region [redacted]

The disposal options for general waste and sludge would be optimised to provide the best value to Council, which may result in sludge being sent to a different disposal location than the general waste.

Council currently has an offer [redacted]

This option would not require HDC to construct a new transfer station in Levin. Residents could continue to use the privately owned Levin Transfer Station in Sheffield Street or take their waste to the Council owned transfer stations in Foxton or Shannon.

5.1.3 Capital works required at the Levin Landfill

The next cell at the Levin Landfill would not need to be constructed if Council decides on this closure date. No landfill operator would be required, but landfill monitoring by a contracted service provider would need to continue throughout the aftercare period.

Council would need to implement the Landfill closure plan, including placing the final cap and re-vegetating the site. There is a process set out in the Landfill Agreement for the development of this plan, which incorporates input from both Council, PMG members and the technical advisory group experts.

The Resource Consents require that agreed leachate remediation works relating to the old landfill must be undertaken and completed by June 2023. This applies to all options.

Future use of the Levin Landfill site

The end use of the Landfill site could be for a reserve, or for grazing by light stock (sheep). These are both allowed under the Resource Consents.

Council could potentially develop a cleanfill site on the undeveloped part of the site. This would require formal planning advice, however operating a small cleanfill is a permitted activity under the Horizons' One Plan. The engineering requirements for a cleanfill are much lower than for a landfill or a construction and demolition facility, however the user charges are also much lower and there is more competition from other small cleanfills. The gate rate at the Kāpiti Coast District Council (KCDC) owned Otaihanga cleanfill site, for example, is $14.50 per tonne. There is currently no ETS charge or Waste Levy for cleanfill sites.

Council could also potentially apply for new consents to operate a construction and demolition facility (Class 2 facility) to make use of the undeveloped cells 1B, 4 and 5. This may still meet strong community opposition depending on the activities undertaken on site. Activities could include consolidation of materials to transport to other sites and/or processing for reuse of concrete, timber, plaster board and steel and/or disposal at the site of any residual materials. There is currently strong demand for construction and demolition facilities, as the majority of construction and demolition waste from the Horizons Region is currently transported to a Class 2 landfill in Wellington.

A construction and demolition facility would generate lower revenue per tonne than a Class 1 municipal landfill. Construction and demolition fill sites do not attract ETS charges but must pay a Waste Levy from 2022 onwards. The Levin Landfill has comparatively high ETS costs when operating as a Class 1 municipal landfill. It would not have this disadvantage if operating as a Class 2 construction and demolition facility.

Development of a cleanfill or a Class 2 demolition and construction facility will need to be subject to a separate decision-making process, once Council has made a decision to close the Levin Landfill as a Class 1 municipal landfill. There is significant uncertainty about the viability of these and it will be more efficient to assess this once the future of the Landfill is known. It is recommended that any future use of the site is developed through early engagement with Ngāti Pareraukawa, Muaūpoko and the Hōkio community.

5.1.4 Risks

Risks relating to this option are described in the table below.

Table 9: Risks for Option 1, close the Levin Landfill in 2022 and dispose of HDC's waste at one or more third-party disposal sites

Risk	Recommended actions to minimise risk or impact	Assessment of impact
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

5.1.5 Greenhouse gas emissions

The estimated annual greenhouse gas emissions associated with this option is 915 tonnes of carbon dioxide equivalent (tCO_2-e). Over a 15 year period, this will amount to 13,725 tCO_2-e.

5.2 Option 2: Close the Levin Landfill by 2025 and then dispose of HDC's waste at one or more third-party disposal sites

This option would see the Levin Landfill closed no later than 31 December 2025, following which HDC's waste would be transported to a third-party landfill. This is the longest that HDC can keep the Levin Landfill open that would not result in the termination of the Landfill Agreement.

5.2.1 Resource Consent and Landfill Agreement implications

Review of the Resource Consent is scheduled to commence in October 2024 (and then in 2029 and 2034). [redacted]

As for Option 1, the costs associated with [redacted] consent review process have been factored into the overall financial impact of this option. However, as waste will still be being placed in the Landfill in 2024, there is an increased chance of community opposition, resulting in a more time consuming and expensive process. This is noted in the risk assessment below.

The remaining parts of the Landfill Agreement will come into effect if Council decides on this Option, including the need to develop a landfill closure plan in conjunction with the PMG.

5.2.2 Governance and operation of the Landfill – 2022 to 2025

For this Option, the Landfill could either be governed directly by Council, or through a CCTO. The process to establish a CCTO is outlined in detail in Option 3.

For Option 2, with less than four years of Landfill operations remaining, in-house governance supported by a Landfill Advisory Board of skilled professionals is likely to be a more appropriate governance structure than a CCTO. This avoids the need to formally establish and then disestablish a CCTO, both of which require consultation via a Special Consultative Procedure.

HDC's in-house waste team would need to be supported [redacted]

HDC would need to tender and let a Landfill operations contract, as well as extending the existing environmental monitoring arrangements.

There is a risk with this approach [redacted]

The costs of either a CCTO or internal governance with a Landfill Advisory Board are estimated to be roughly comparable over this period.

5.2.3 Capital works required at the Levin Landfill

The first lift of cell 1B would need to be constructed prior to any operational contract commencing. [redacted] Additional cells [redacted] before 2025, depending on the commercial volumes HDC can secure and the level of compaction achieved. Temporary and final capping will need to be placed on the new cell(s) as they are filled.

The Resource Consents require that agreed leachate remediation works relating to the old landfill must be undertaken and completed by June 2023. This applies to all options.

Table 10: Cell construction requirements for 2025 closure date

Tonnes received per annum (Council-controlled plus commercial tonnes)	Cells required for period 2022-25
Less than 10,000	Cell 1B, Lift 1
11,000-25,000	Cell 1B, Lifts 1 and 2
More than 25,000	Cell 1B, Lifts 1 and 2, plus Cell 4A

The estimated utilisation of each cell is presented in the figure below for the period 2022 to 2037.

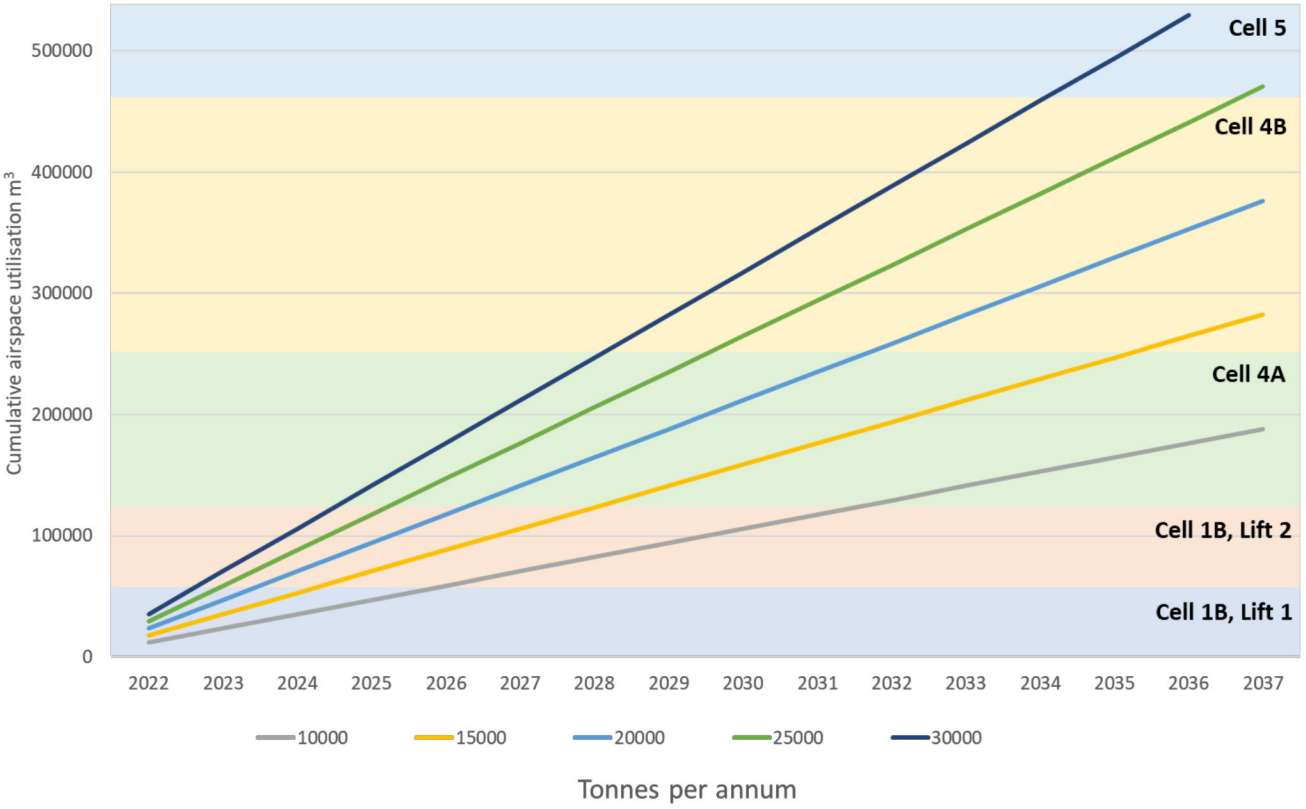


Figure 11: Estimated utilisation of airspace, based on current cell designs

5.2.4 Waste volumes required to operate the Landfill

The key to successfully operating the Landfill over this period, from a financial standpoint, is to secure sufficient third-party waste.

HDC controls approximately 4,500 tpa of waste, of which approximately 1,250 tonnes is sewage sludge. A maximum volume of 10-15% sludge is considered necessary to be able to practically achieve the sludge disposal requirements in the Landfill Management Plan. This means the Levin Landfill needs a minimum volume of approximately 10,000 tonnes per annum to be able to operate, and ideally higher, if HDC's sludge is to be disposed of at the site. [redacted]

Additional tonnes could be sourced from either the private sector or directly from other local authorities. Each potential source of waste has been investigated as part of the market research for this Business Case and is considered below.

Private waste collectors in Horowhenua

The RFP process and subsequent discussions have confirmed that

General public transfer station waste

HDC already controls the transfer station waste from the Foxton and Shannon Transfer Stations. To accept transfer station waste from the public in Levin, HDC would need to construct a new transfer station.

A new transfer station

Other local authorities

MDC's tonnes (approximately 6,300 tonnes per annum) are from kerbside bags and council owned transfer stations and These are available from 2023 onwards.

KCDC's transfer station contracts expire in June 2023. These collect an estimated 20,000 tpa of waste per annum. However, there is strong opposition from Iwi in the Kāpiti district for Kāpiti's waste to go to the Levin Landfill. This has resulted in many submissions from the community to KCDC, including through the LTP process. KCDC has not made any decisions regarding the future disposal destination of its waste. From discussions with relevant parties at KCDC, it appears that it is unlikely KCDC's waste will be available for disposal at the Levin Landfill.

Due to their existing contractual obligations, there would be no tonnes available for the Levin Landfill from other local authorities when HDC took over operations in 2022. [redacted]

[redacted]

Summary – waste volumes

A summary of the waste volumes that may be available is presented below. [redacted]

Table 11: Summary of waste volumes

Source	Tonnes per annum	Availability	Process required to secure tonnes
Other Horowhenua waste contractors (e.g., commercial waste collectors, special waste customers etc)	[redacted]	[redacted]	[redacted]
Public refuse from Levin	[redacted]	[redacted]	[redacted]
Manawatu District Council	[redacted]	[redacted]	[redacted]
KCDC transfer station waste	[redacted]	[redacted]	[redacted]

[redacted] The financial impact on Council of [redacted] is described in covered in the financial analysis in Section 7.

Based on the market research conducted as part of this Business Case preparation, [redacted]

If Council is successful in promoting and implementing waste minimisation strategies, [redacted] This will be an ongoing issue for Council as it will need to [redacted] at the same time meet its obligations through its WMMP and the Waste Minimisation Act. This would be less of an issue if the Landfill had sufficient waste to achieve economies of scale. But [redacted] this is likely to be a problem for Council for as long as the Levin Landfill remains open.

5.2.5 *Disposal of waste at a third-party landfill – from 2026 onwards*

Third party disposal from 2025 onwards would be similar to third party disposal in the 2022 closure option.

The main difference would [redacted] The Levin Transfer Station gate rate could escalate substantially between now and 2025. However, by 2026 there may be other disposal options available, including a potential waste to energy plant in Manawatu and new sludge composting or worm farming operations. The Wellington region landfills [redacted]

In addition, by 2026, Council could have substantially lower refuse volumes to dispose of. If Council decides on this closure date, it is recommended that waste minimisation becomes a major focus over the next four years. Council's current kerbside collection and transfer station contract will have ended by 2026. If HDC was facing a significant price increase, it could reassess the provision of these services. By this time sewage sludge may also be the responsibility of a new Three Waters entity, which would be negotiating separately for its sludge disposal.

HDC would have the same options for future use of the Levin Landfill site in 2025 as it would with a 2022 closure date, as described in Section 5.1.3.

5.2.6 *Risks*

Risks relating to this option are described in the table below.

Table 12: Risks for Option 2, close the Levin Landfill by 2025 and then dispose of HDC's waste at one or more third-party disposal sites

Risk	Recommended actions to minimise risk or impact	Assessment of impact
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

Risk	Recommended actions to minimise risk or impact	Assessment of impact
[redacted]		
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

Risk	Recommended actions to minimise risk or impact	Assessment of impact
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

5.2.7 Greenhouse gas emissions

The estimated annual greenhouse gas emissions associated with the disposal of council-controlled waste under this option is:

- 3,275 tCO_2-e per annum between 2022 and 2025, while council-controlled waste is disposed of in the Levin Landfill, then
- 915 tCO_2-e per annum once the council-controlled waste is diverted to an alternative landfill after 2025.

Over a 15-year period, this will amount to 23,265 tCO_2-e.

There will also be greenhouse gas emissions from the third-party waste placed in the Levin Landfill between the period 2022 to 2025. If the Levin Landfill is shut, these will be lower if the waste is diverted to Bonny Glen, Silverstream or Spicers Landfill and roughly comparable if the waste is diverted to the Southern Landfill.

5.3 Option 3: Close the Levin Landfill in 2037, or sooner if full

This option would see the Levin Landfill operate until May 2037 when its Resource Consents expire, or sooner if full. If Council decides to keep the Levin Landfill operating until 2037, it could also apply for further consents to keep operating it past this date or after the current consenting volume had been filled. This decision would need to be made at the time and has not been factored into this Business Case.

5.3.1 Resource Consent and Landfill Agreement implications

The previous Resource Consent review was a very expensive and time-consuming process, taking over three years, including an appeal to the Environment Court. The next review is scheduled to commence in October 2024 (and then in 2029 and 2034). The Environment Court action from the previous review was settled through the signing of the Levin Landfill Agreement. If HDC chooses a closure date that is not in line with the Levin Landfill Agreement, [redacted] Therefore, HDC would have to allow for the revised consent conditions being challenged through to the Environment Court.

The previous consent review resulted in new conditions that it is estimated to have cost hundreds of thousands of dollars of additional annual operational costs. It is possible that a similar outcome may arise from any future review.

The costs associated with the consent review process (legal, engineering and other advice including staff time) have been factored into the overall financial impact of this option, based on the actual HDC costs from the previous review.

Clause 11.3 of the Landfill Agreement recognises that HDC's Elected Members are able to decide on a closure date after 31 December 2025. If this occurs the obligations under the Landfill Agreement will terminate. The parties to the Landfill Agreement will then be able to take whatever action is available to them.

5.3.2 Governance and operation of the Landfill

For this option, it is recommended that HDC establish a Council Controlled Trading Organisation (CCTO). The success of the Landfill, from a commercial standpoint, will be dependent on selling waste disposal services to commercial users and other local authorities with sufficient margin to operate profitably. This will be more easily managed through a CCTO than through Council. The CCTO would have more commercial freedom than Council that would enable it to better compete against commercial players in the waste industry.

In addition, this could help to separate the waste minimisation and financial imperatives by allowing Council to pursue waste minimisation more aggressively while the CCTO could be promoting its waste disposal services.

5.3.2.1 CCTO establishment

To establish a CCTO HDC must adopt a proposal and subject that proposal to a Special Consultative Procedure. The proposal must contain enough information for an interested member of the community to understand it and make a submission. Such proposals in respect of a CCTO must carefully address commercial and competition aspects. The consultation may be undertaken in conjunction with the Special Consultative Procedure regarding the Landfill closure date.

The financial assumptions in the consultation documents would need to be [redacted]

HDC would also need to develop a Draft Statement of Intent. This will be required prior to recruiting Directors or the General Manager.

5.3.2.2 CCTO responsibilities

The recommended allocation of responsibilities between the CCTO and HDC is as follows and as shown in the figure below. This shows the CCTO acting as an operations manager and marketer of the Landfill.

HDC would:

- Be the sole shareholder of the CCTO, and influence its direction via the annual statement of intent and statement of expectations
- Continue to own the Landfill and hold the Resource Consents and ultimate responsibility for compliance.
- Manage the 5 yearly consent review process (initially in 2024)
- Approve and fund the construction and capping of cell(s) and other works as required
- Be the cornerstone customer of the Levin Landfill

The CCTO would:

- Lease the Landfill site from HDC
- [redacted]
- Contract out the environmental monitoring
- Produce quarterly and annual Landfill performance reports to the requirements of both HDC and HRC
- Produce CCTO quarterly or half-yearly performance reports as required by the Local Government Act
- Contract an independent annual audit report
- Provide input into the 5 yearly consent review process
- Forecast the remaining life of each cell to allow additional cells to be built when required
- Manage the design and construction process for capital works, on behalf of HDC
- Recommend and manage additional capital works that are necessary for the performance of the Landfill, or to enhance the Landfill's environmental performance

Both parties would participate in engagement activities with Iwi, the community and PMG.

Alternatively, the CCTO could be responsible for funding and constructing all capital works. However, this would require HDC to set the CCTO up with significantly more equity as the capital works required within the first two years are estimated to cost in [redacted] The CCTO could possibly borrow money to fund part of the construction costs but as HDC cannot guarantee such loans and the CCTO would have limited equity and assets this could be reasonably expensive. HDC could lend money to the CCTO, but not on preferential terms or conditions. If this was borrowed from a party other than HDC, the CCTO would need to pay commercial interest costs. It is more appropriate that the capital approval and funding should remain Council's direct responsibility.

5.3.2.3 CCTO governance and management

It is envisaged that the CCTO could be governed by a small board of three Directors with a mix of commercial, environmental and waste experience including an independent Chair. [redacted]
Board remuneration would be set by HDC. HDC would need to establish an internal shareholder body, in the form of a Shareholder's Representative Group or similar, to appoint and then interface and work with the Directors and monitor their performance. The Shareholder's Representative Group would be a small group comprised primarily of Councillors, plus potentially an individual with commercial governance experience.

The CCTO Board will need to appoint a General Manager experienced in modern landfill management and sales within the sector. This person would be the key liaison with HDC as a customer and as the Landfill owner. [redacted] The CCTO would also need contracted financial and accounting support (whether from HDC or externally provided) and part time administration support (including secretary to the Board).

Some of the costs associated with the CCTO would be required by Council internally if the CCTO did not exist. These include marketing costs and officer costs to manage external consultants and contractors. Other costs are additional specifically to the CCTO. These include establishment and Board related costs, business planning costs, annual audit fees, insurance costs and establishment of policies including for health and safety.

5.3.2.4 Operations

It is envisaged that all physical and professional services work would be outsourced by the CCTO. This would include day to day operation of the Landfill and weighbridge and monitoring required by the Resource Consents. Unlike the current arrangement, the operations contractor would have no obligation to provide any waste to the Landfill.

The CCTO would fund all on site operational costs internally including daily and intermediate cover, landfill road formation and maintenance, leachate and gas flare maintenance costs.

Estimates of these costs have been made in the financial model. [redacted]

5.3.2.5 CCTO finances

The CCTO would hold a long-term disposal agreement with HDC, based on a minimum annual committed tonnage and a cost index arrangement. The contract would be for the full period until the Landfill closed. This would allow the CCTO to have a cornerstone customer [redacted]

The CCTO would be able to [redacted]

Only minimal assets would be required by the CCTO, as the majority of work would be outsourced. However, the CCTO would require sufficient working capital to allow it to meet its obligations. The CCTO should have sufficient capital to allow it to prudently meet its outgoings (after taking into account revenue from HDC) for a reasonable period consistent with its establishment plan. This would not all need to be called up at once, with three months working capital to hand initially and the rest drawn down as and if required by the Directors. [redacted]

Once the CCTO was established and HDC had provided the equity and working capital, payment flows to and from the CCTO would be:

- From HDC for the placement of council-controlled waste in the Landfill,
- To HDC for the lease of the Landfill site,
- A capital charge to HDC to compensate HDC's costs for constructing and capping cells,
- To HDC for dividend payments and interest on working capital,
- To the operations, monitoring and other contractors and consultants, for work that falls under the CCTO's responsibilities, and
- From commercial waste customers, for the placement of waste in the Landfill.

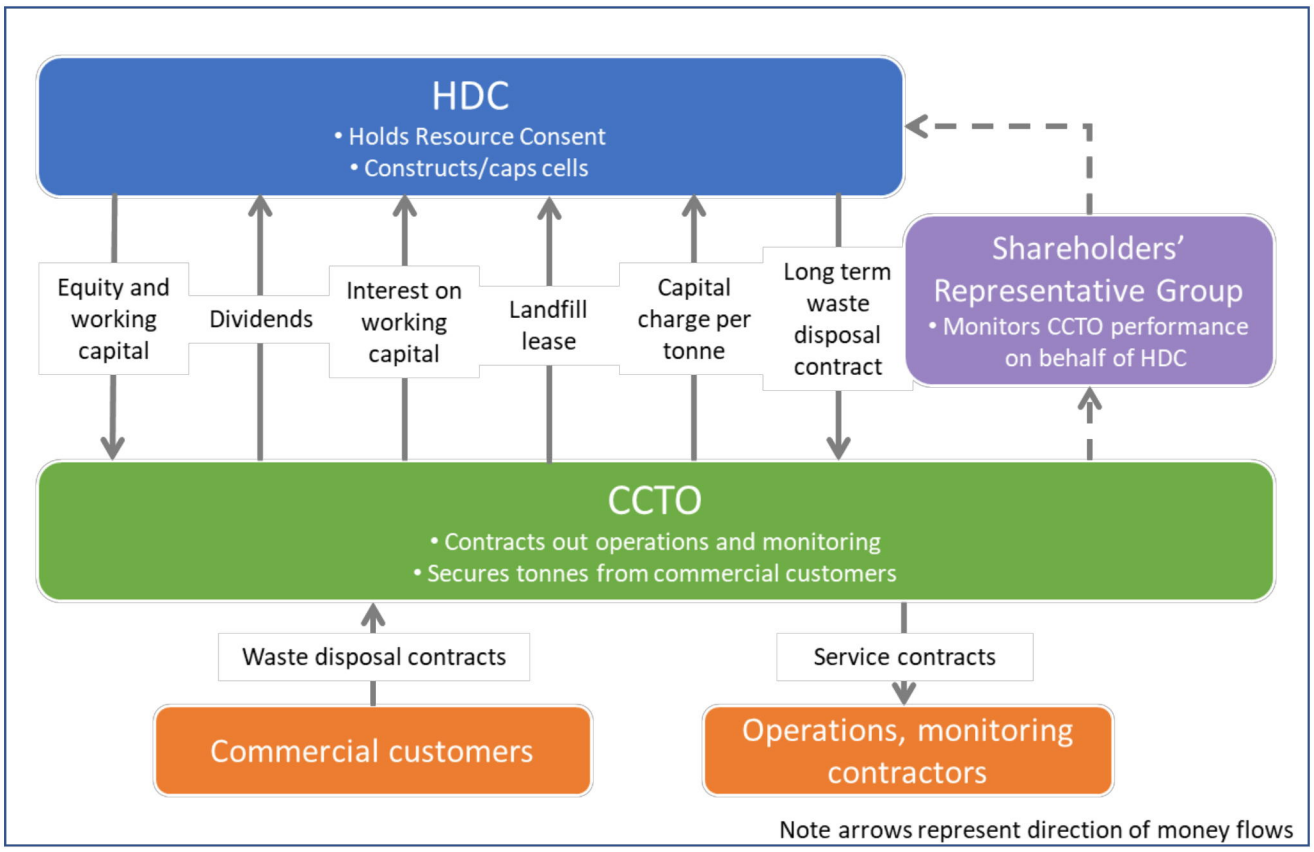


Figure 12: Relationship between HDC, the CCTO and its customers and suppliers

CCTOs are companies under the Companies Act 1993, in addition to being governed by the Local Government Act 2002. S6 of the Local Government Act states that a council-controlled trading organisation means a "council-controlled organisation that operates a trading undertaking for the purpose of making a profit"[38].

The CCTO would need to be able to forecast profitability prior to being established and HDC would need to set its expectations regarding the level of dividends paid by the CCTO.

The LGA also states that: "The principal objective of a council-controlled organisation is to—

a. achieve the objectives of its shareholders, both commercial and non-commercial, as specified in the statement of intent; and
b. be a good employer; and
c. exhibit a sense of social and environmental responsibility by having regard to the interests of the community in which it operates and by endeavouring to accommodate or encourage these when able to do so; and
d. if the council-controlled organisation is a council-controlled trading organisation, conduct its affairs in accordance with sound business practice[39]."

5.3.3 *Capital works required at the Levin Landfill*

The first lift of Cell 1B would need to be constructed prior to any operational contract commencing. [redacted]

Additional cells may also be required if HDC can secure additional commercial tonnes. Progressive temporary and final capping of cells will be required throughout the period. Intermediate cover would likely be classed as operational works and this would be funded by the CCTO. Temporary and final capping would be funded by HDC as capital works.

Table 13: Estimated cell construction requirements for 2037 closure date

Tonnes received per annum (Council-controlled plus commercial tonnes)	Cells required for period 2022-37
Less than 10,000	Cell 1B, Lifts 1 and 2, plus Cell 4A
15,000-25,000	Cell 1B, Lifts 1 and 2, Cell 4A and 4B
25,000-30,000	Cell 1B, Lifts 1 and 2, Cell 4A, 4B and 5A

Based on the estimated available tonnes, the Landfill will have capacity to remain open until consents expire in May 2037. With less than 30,000 tonnes per annum, the Levin Landfill would not have reached capacity prior to its consents expiring in May 2037. Note the cell construction requirements and capacity figures are high level estimates only and depend on cell design and compaction ratios.

The Resource Consents require that agreed leachate remediation works relating to the old landfill must be undertaken and completed by June 2023. This applies to all options.

[38] Local Government Act s6

[39] Local Government Act s59

Transfer Station

To accept transfer station waste from the public, HDC would need to construct a new transfer station. This could take until [redacted] to establish, due to consenting and construction requirements. [redacted]

Stantec has assessed the planning requirements for the establishment of a transfer station[40] [redacted]

5.3.4 Waste volumes required to operate the Landfill

The waste volumes available for the 2037 closure date are anticipated to be similar to those for the 2025 closure date (as outlined in Section 5.2.4), with the following differences.

[redacted]

Other council-controlled waste from around the region, including from Palmerston North City Council may become available between 2025 and 2037. [redacted]

Over time, the natural population increase in Horowhenua would generate additional waste, although this may be offset by the progressive introduction of waste minimisation initiatives over the next 15 years.

[40] Stantec, "Levin Landfill – Alternative uses and transfer stations – Initial Planning Assessment

[redacted]

As with the 2025 closure date, if Council is successful in promoting and implementing waste minimisation strategies, there will be a greater risk of having insufficient waste for the Landfill to operate. This will be an ongoing issue for Council as it will need to maintain landfill viability while at the same time meet its obligations through its WMMP and the Waste Minimisation Act. This would be less of an issue if the Landfill had sufficient waste to achieve economies of scale and was generating surpluses to fund waste minimisation education and initiatives. [redacted] this is likely to be a problem for Council for as long as the Levin Landfill remains open.

5.3.5 *Risks*

Risks relating to this option are presented in the table below.

Table 14: Risks for Option 3, close the Levin Landfill in 2037

Risk	Recommended actions to minimise risk or impact	Assessment of impact
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

Risk	Recommended actions to minimise risk or impact	Assessment of impact
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

5.3.6 *Greenhouse gas emissions*

The estimated annual greenhouse gas emissions associated with the disposal of council-controlled waste under this option is 3,275 tCO_2-e per annum in Year 1, reducing to 2,842 tCO_2-e per annum as new stages of the Landfill are developed. Over a 15-year period, this will amount to 45,351 tCO_2-e.

There will also be greenhouse gas emissions from the third-party waste placed in the Levin Landfill between the period 2022 to 2037. If the Levin Landfill is shut, these will be lower if the waste is diverted to Bonny Glen, Silverstream or Spicers Landfill and roughly comparable if the waste is diverted to the Southern Landfill.

5.4 Summary of risks across short-listed options

A summary of the key risks across the three short-listed options is shown below. Green circles indicate a low risk, orange indicate a medium risk and red indicate a high risk. Some risks are not applicable to that option and are shown with a dash (-).

Table 15: Summary of risks across short-listed options

Risk	Option 1	Option 2	Option 3
H&S and environmental risks at Levin Landfill			
[redacted]			
Increased ETS costs			
Resource Consents get challenged by the community	-		
Resource Consent review results in additional operating costs			
[redacted]			
Cost escalation of landfill costs	-		
Community takes other legal action against the Landfill			
CCTO becomes insolvent	-	-	
[redacted]			

In summary, Option 3 has the highest risk profile of the three options. This is because HDC will retain responsibility for the ongoing environmental and financial performance of the Levin Landfill. By becoming a customer at another landfill, the operator of the landfill is responsible for these matters.

The main risk with Option 1 [redacted] Option 2 has most of the risks associated with Option 3 during 2022-2025 and then with Option 1 from 2026 onwards.

5.5 Summary of greenhouse gas emissions

The estimated greenhouse gas emissions across a fifteen-year period are shown below, with transport and disposal related emissions presented to show the total. This only shows the emissions for council-controlled waste, based on annual disposal tonnage of 3,950t per annum. Transport emissions are based on tendered transport arrangements. The impact of transport has a much smaller impact on the greenhouse gas emissions than it does on disposal costs.

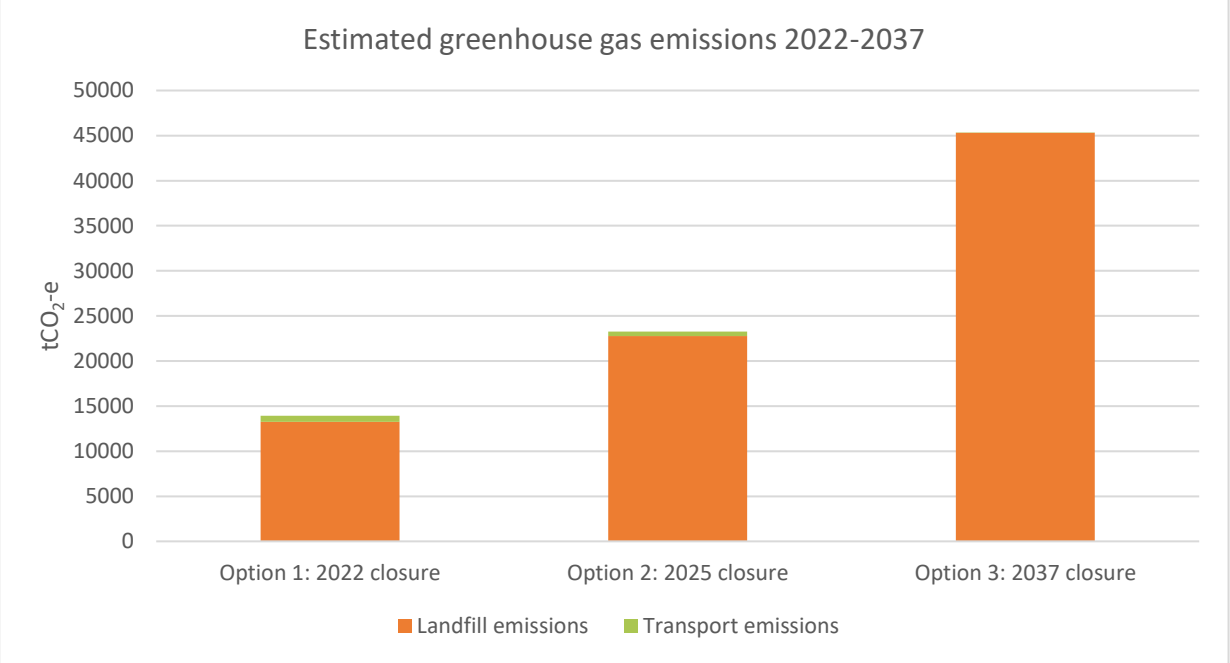
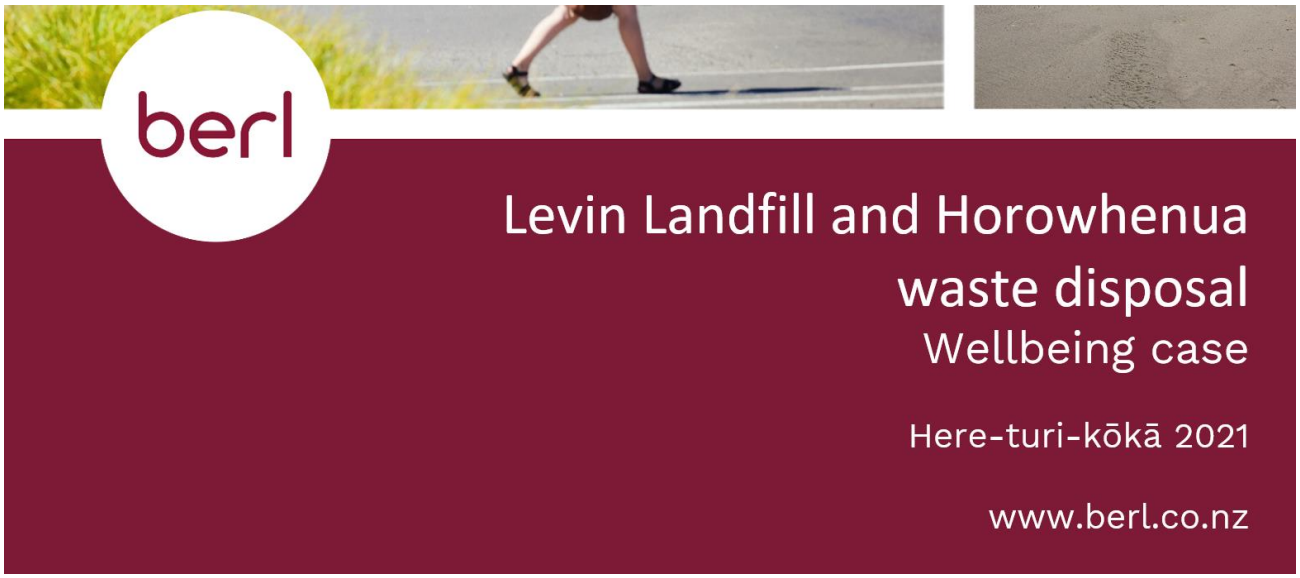


Figure 13: Estimated greenhouse gas emissions over a fifteen-year period

6 WELLBEING ASSESSMENT OF THE OPTIONS

Business and Economic Research Ltd (BERL) were commissioned to assess the wellbeing impact of each of the three short-listed options[42]. Key excerpts from BERL's analysis are presented verbatim below, and the full report is attached to this Business Case as Appendix F.



Introduction

The wellbeing case expands the traditional economic assessment to include the additional three aspects of community wellbeing; cultural, social and environmental. Wellbeing is about people and creating conditions for everyone to thrive across multiple generations.

The wellbeing case assesses the options in the context of how they contribute to, or detract from, the social, economic, environmental and cultural wellbeing of the Horowhenua District and, more specifically, the area surrounding the Landfill. This is achieved by completing a wellbeing multi-criteria analysis (MCA) for each option.

Horowhenua District future of waste disposal wellbeing framework

The wellbeing case uses a wellbeing framework to evaluate the three options. Under each of the wellbeings are outcomes HDC and the community seek from the future of the Levin Landfill and Horowhenua's waste disposal.

The framework, outcomes and weightings were designed and determined using information obtained from HDC councillors and staff, HDC strategic documents, previous Landfill impact reports and the findings from stakeholder engagement with selected members of the community likely to be impacted by HDC's decision.

The framework assigns 25 percent weightings to each of the four wellbeings. The outcomes under each wellbeing are then given a unique weighting as a proportion of the 25 percent. Each outcome is scored between one and five. The weightings of each outcome are then multiplied by the scores to reach a total score from a possible 500.

[42] BERL, 2021. 'Levin Landfill and Horowhenua waste disposal Wellbeing Case'

As the table below shows, the option that scores the highest, and therefore makes the greatest contribution to wellbeing/minimises the negative impacts on wellbeing, is Option 1, followed by Option 2, then Option 3.

Table 16: HDC waste disposal outcomes, wellbeings and total wellbeing scores

Outcomes	Weight	Option 1	Option 2	Option 3
Waste disposal supports healthy lifestyles	8.5	4	3	2
Waste disposal creates a safe and supportive environment	10	5	4	2
Waste disposal supports inclusive and connected communities	6.5	4	3	1
Social wellbeing total	**25**	**110**	**85**	**43.5**
Waste disposal creates and supports jobs and contributes to GDP in the Horowhenua District	5	1	2	5
Waste disposal is affordable for businesses and residents	11	4	1	3
Waste disposal meets the future needs of the District, including population and business growth	4.5	3	3	3
Horowhenua promotes waste reduction, recycling, energy conservation and efficiency	4.5	3	2	1
Economic wellbeing total	**25**	**76**	**43.5**	**76**
Waste disposal meets best practice for environmental management of landfills	12	4	3	2
Waste disposal does not further degrade Horowhenua's rivers, lakes and waterways	8	5	5	4
Waste disposal will not compromise a sustainable environment	5	5	4	3
Environmental wellbeing total	**25**	**113**	**96**	**71**
Horowhenua supports cultural and traditional activities in the area surrounding the current landfill	10	4	3	1
Waste disposal supports the development and capacity building of local Marae, hapū and iwi	6	0	0	0
The landfill decision builds and enhances the relationship between HDC and tangata whenua	9	5	3	1
Cultural wellbeing total	**25**	**85**	**57**	**19**
Total wellbeing score (out of 500)	**100**	**384**	**281.5**	**209.5**

Social wellbeing

The outcomes associated with social wellbeing are related to healthy lifestyles and communities that are supported, included, connected and feel safe. Social wellbeing includes a relationship between the community and HDC that is respectful and sees HDC and the Landfill complying with legal agreements and compliance regulations. Social outcomes will uplift the communities around the Landfill and support community development.

Social wellbeing outcomes

Horowhenua's waste disposal supports healthy lifestyles

The waste disposal will support healthy lifestyles. Waste disposal minimises health problems for the Horowhenua community. It also minimises pollution of the local area and reduces instances of unsafe water.

While closing the Landfill immediately would have the greatest impact on healthy lifestyles, ceasing the disposal of waste, closing the Landfill and restoring the site at any stage would improve the lifestyles of the residents that live in the communities around the Landfill.

Community members are scared by the experience of the old dump at the Landfill site and are concerned that history will repeat itself. Despite the environmental protection measures in place at the modern landfill, residents fear the risk, however small, of potential future impacts on the health of people and the environment, including waterways.

Option 1 would limit the volume of waste in the Landfill and limit odour. This would reduce the possible short- and long-term social impacts of the Landfill. Option 2 would limit the volume of waste going into the Landfill compared with Option 3 and would have the second greatest impact on achieving this outcome. Option 3 would be the most detrimental.

Horowhenua's waste disposal creates a safe and supportive environment

Waste disposal will support the community to feel safe and supported by building trust. Waste disposal will be transparent and honour commitments. Waste disposal complies with legal agreements and compliance regulations.

Parties to the Landfill Agreement want to see the Landfill closed by 31 December 2025 at the latest. Residents would be disappointed and lose further trust in HDC, if the Landfill was to grow larger than its current size, especially if it was to remain open past the end of 2025.

Options 1 and 2 would allow HDC's chief executive to comply with the Landfill Agreement. However, early closure, without further expansion, would be preferred by local residents who would see this as a positive step by HDC in repairing relationships and trust. Continuing to operate the Landfill until 2037 would be detrimental to the relationship between HDC and the community around the Landfill.

Closing the Landfill in 2022 would be seen by residents as a positive sign and a step towards repairing the relationship between HDC and the stakeholders and communities around the Landfill.

Horowhenua's waste disposal supports inclusive and connected communities

Waste disposal does not entrench existing inequalities. Instead, it will enable all members of the community to be included and connected. It will uplift the Hōkio community and will support community development.

Closing the Landfill at any time between 2022 and 2037 would improve the sense of connectivity for the Hōkio community. It would remove the mental and physical barrier that exists between the beach and Levin.

The sooner the Landfill is closed, the sooner potential growth of the Hōkio community could occur. Construction of the Otaki to Levin expressway is set to start in 2025 and be completed in 2029. Faster connections to Wellington present an opportunity to grow the community.

All options involve closing the Landfill at some stage. The potential to maximise this wellbeing outcome is greatest the sooner the Landfill is closed.

Social wellbeing conclusion

The option that provides the greatest contribution to/reduces negative impacts on social wellbeing is Option 1. As Table 17 shows. Option 1 scored 110 from a possible 125 and was the preferred option for each of the three outcomes.

Table 17: Social wellbeing outcome scores

Outcomes	Weight	Option 1	Option 2	Option 3
Waste disposal supports healthy lifestyles	8.5	4	3	2
Waste disposal creates a safe and supportive environment	10	5	4	2
Waste disposal supports inclusive and connected communities	6.5	4	3	1
Social wellbeing total	**25**	**110**	**85**	**43.5**

Economic wellbeing

While waste is a cost to the local authority, it can have a positive impact, if it is managed well. In the context of the Landfill and HDC's waste disposal, economic wellbeing is about minimising the cost to the community and promoting economic activity, while reducing the volume of waste to landfill. It is also important the waste disposal solution meets the District's long term needs.

Economic wellbeing outcomes

Waste disposal creates and supports jobs and contributes to GDP in the Horowhenua District

Horowhenua's waste disposal system will create new employment opportunities for the community and positively impacts GDP. Waste disposal contributes to the local economy.

As Table 18 shows, Option 3 provides the greatest impact on GDP and employment across the Horizons Region. Operational employees will come from within the District and are likely to spend their income within the District. Additionally, although the service providers required to develop the additional cells are likely to come from across the District, and in some cases New Zealand, it is likely that they will spend within the District while working at the Landfill.

Because Option 2 keeps the Landfill open for an additional four years, and requires additional development, it has the second greatest impact on GDP. Option 1 has the lowest impact. All waste is transported to the alternative class one landfill, leaving only a few positions to manage the site and waste contracts, sort waste at the transfer station and transport to the alternative class one landfill.

Table 18: Total economic impact of waste disposal options

	Option 1	Option 2	Option 3
GDP ($)	16,609,189	26,685,128	27,709,730
Employment (FTEs)	162	268	276

Waste disposal is affordable for businesses and residents

Waste disposable is affordable and does not limit economic development in the District. Waste disposal costs limit incidents of fly tipping.

Total cost of waste

The total cost of waste disposal of Options 1 and 3 are similar over the period from 2022 to 2036, as Table 19 shows. Although Option 3 has a $376,000 lower cost over the 2022-2036 period, Option 1 comes out more favorable by $3.8 million, when the outstanding loan repayments payable after 31 December 2036 are included.

Table 19: Total cost of waste disposal

	Option 1	Option 2	Option 3
Total cost 2022-2036 ($2021)	23,993,725	26,477,130	23,617,623
Capital loans repayable ($2021)	3,483,642	5,102,651	7,631,206
Total cost including loans repayable ($2021)	**27,477,367**	**31,579,781**	**31,248,829**

Rates increase required

The cost for HDC residents and ratepayers will increase for all three options. HDC will need to decide how to cover this cost, but will likely be spread across a number of sources including, targeted rates for waste disposal, general rates and kerbside rubbish bags.

As Table 20 shows, the equivalent change in rates required to make up the increased cost of waste, compared to the current arrangement, is estimated to be $57 per year for Option 3 and $58 for Option 1. For HDC's 18,007 ratable units, this is the equivalent of a 2.7 percent increase in the average rate for both options. Option 2 would require a 3.2 percent increase in rates ($67 per year).

The rates increase does not include any potential offset from the Landfill aftercare fund, which is currently $5.4 million, or repayments of capital loans outstanding as at 31 December 2036.

Table 20: Change in rates required to fund increased cost of waste disposal

	Option 1	Option 2	Option 3
Cost increase required ($2021) 2022-2036	15,702,730	18,186,134	15,326,628
Cost increase per year ($2021)	1,046,849	1,212,409	1,021,775
Rating units	18,007	18,007	18,007
Rating unit cost increase per year ex GST ($2021)	58	67	57
Current average rate inc GST ($2021)	2,433	2,433	2,433
New average rate inc GST ($2021)	2,500	2,511	2,499
Rate increase (percent)	2.7	3.2	2.7

Costs for non HDC controlled waste

In the short term the cost of waste disposal at a transfer station in Levin is unlikely to be impacted by the option selected. However, this is not to say that costs could not increase.

The rates for disposal across the nearby local authority areas range from $140 (ex GST) per tonne to $255 per tonne (ex GST). The LRRF cost currently sits just above the median ($173-$186) and just below the average ($193).

In the longer term, [redacted]

Although Option 3 provides a long-term alternative [redacted]

Fly tipping

Fly tipping is not expected to be influenced by price. According to Eunomia, international evidence shows no firm relationship between increases in waste costs and illegal dumping.[43] Cost is not the only reason people illegally dump. Other factors include a lack of appropriate disposal options and weak monitoring and enforcement by authorities.[44]

Horowhenua's waste disposal meets the future needs of the District, including population and business growth

Waste disposal will provide for the future needs of the District. It will be sustainable long-term.

All three options will provide for the needs of the District from 2022-2036, before a new disposal agreement is required. If Levin grows faster than expected and waste volumes also grow, or recycling and other initiatives to reduce waste are not as successful as forecast, all three options have the capacity to take an increased volume of waste. All options have been given an equal score.

[43] Wilson, D., Chowdhury, T., Elliott, T., Elliott, L., Hogg, D. (2017). *The New Zealand waste disposal levy*. Eunomia.

[44] The Rubbish Trip (2019). *Final Levy Consult Summary and Position*.

[redacted] Options 1 and 2 will meet HDC's disposal needs until the end of 2036.

The Landfill is currently at approximately 50 percent of consented capacity. If the Landfill was fully developed, it would have capacity for 977,000 tonnes. Option 3 will enable HDC to dispose of HDC controlled waste until the end of 2036. [redacted]

Horowhenua promotes waste reduction, recycling, energy conservation and efficiency

Horowhenua's waste disposal will provide opportunities for waste reduction and recycling. It will encourage the community to reduce waste and will promote resource recovery.

The higher cost of waste for all three options is likely to promote a reduction in waste and an increase in recycling. Although Options 2 and 3 have a higher cost of waste, the [redacted] reduces the incentive for HDC to promote waste reduction and recycling.

The gate rate [redacted] proposed for the Landfill in Options 2 and 3 is [redacted] If the market for private collection and disposal is competitive, [redacted]

Option 1 presents a direct financial incentive to promote waste reduction and recycling from 2022 onwards. Because Option 1 does not require a minimum waste volume, there is a direct cost incentive to reduce waste sent to landfill. If less waste is sent to landfill, it reduces the cost to HDC, which can be passed onto ratepayers. The savings could be invested to increase/improve other services offered by HDC, including waste reduction and recycling. Additionally, the recycling cost is much less for his option.

Option 2 will have a direct financial incentive to reduce waste from 2025 onwards. Option 3, [redacted] and significantly higher development and management and operational costs, presents the least favourable option for waste reduction and recycling.

Economic wellbeing conclusion

As Table 21 shows, Options 1 and 3 scored equally as the preferred option for maximising the economic wellbeing of HDC's waste disposal. Option 1 was superior to Options 2 and 3 for both the impact on promoting waste reduction and recycling. All three options are equal in meeting HDC's future waste needs. Options 1 and 3 are very similar when it comes to delivering waste disposal that is affordable for businesses and residents. Although Option 3 has a slightly lower waste disposal cost from 2022 to 2036, the outstanding loan payable at the end of the period made the overall cost greater than Option 1. Option 3 would make the greatest contribution to GDP and employment, but this was not enough to overcome Option 1's superior performance across the other three outcomes.

Table 21: Economic wellbeing outcome scores

Outcomes	Weight	Option 1	Option 2	Option 3
Waste disposal creates and supports jobs and contributes to GDP in the Horowhenua District	5	1	2	5
Waste disposal is affordable for businesses and residents	11	4	1	3
Waste disposal meets the future needs of the District, including population and business growth	4.5	3	3	3
Horowhenua promotes waste reduction, recycling, energy conservation and efficiency	4.5	3	2	1
Economic wellbeing total	**25**	**76**	**43.5**	**76**

Environmental wellbeing

The outcomes related to environmental wellbeing are about best practice for environmental management of landfills, environmental degradation of Horowhenua's rivers, lakes and waterways, and limiting greenhouse gas emissions.

Environmental wellbeing outcomes

Horowhenua's waste disposal meets best practice for environmental management of landfills

Waste disposal achieves high environmental management standards for landfills. It will meet all compliance regulations as well as any legal agreements.

The focus of the environmental impacts is on Horowhenua District. Disposing of waste outside the District transfers the risks of disposal to the alternative out of district landfill.

[redacted]

The risk of off-site movement of leachate and landfill gas from the lined and operational site at the Landfill is very low, because of the engineering controls. However, the risk to the environment is higher than a site that has the same engineering controls, but with natural containment, [redacted]

Of the three options available, closing the Landfill and disposing waste at the alternative class one landfill comes [redacted] Option 1 sees waste disposed of at the alternative class one landfill for 15 years, making it the preferred option for this outcome, followed by Option 2.

The disposal of Horowhenua's waste does not further degrade Horowhenua's rivers, lakes and waterways

Waste disposal minimises negative environmental impacts. It will not degrade rivers, lakes and waterways. Instead, the Landfill will manage its waste disposal in a way that promotes and enhances Horowhenua's natural and built environment for current and future generations.

There is no evidence that the modern Landfill is currently causing environmental degradation of Horowhenua's rivers, lakes and waterways. However, the best way to minimise the risks of potential future environmental impacts in the District is for operations to cease and for waste to be disposed of at an alternative class one landfill outside the District. Although it will not remove the existing refuse buried at the Landfill site, Option 1 provides the best opportunity to avoid the risk of disposal of Horowhenua's waste causing further degradation of Horowhenua's rivers, lakes and waterways in the future.

Although small, Option 3's combination of the finite life of landfill liners, the Landfill's location on sand dune deposits[45] and the larger Landfill footprint increases the risk to Horowhenua's natural environment in the long term.

Closing the Landfill and sending waste to an alternative class one landfill outside the District promotes and enhances Horowhenua's natural environment by limiting the Landfill footprint. Options 1 and 2 achieve this.

[45] Waste Management Institute New Zealand (2018). *Technical Guidelines for Disposal to Land*. Page 43.

Horowhenua's waste disposal will not compromise a sustainable environment

Waste disposal will support sustainable endeavours. It will enable environmental initiatives and help the community protect natural resources. Waste disposal will limit the contribution of Horowhenua's waste to greenhouse gas emissions.

As Table 22 shows, there is a significant difference between the quantities of greenhouse gas emissions that are created for each of the options, assuming that the landfill gas capture efficiency at the Landfill is not improved beyond current expectations. Transporting and disposing of waste to alternative class one landfill would create significantly less greenhouse gas emissions, given the existing infrastructure to deal with landfill gas.

The alternative class one landfills closest to the District all have superior gas capture than the Landfill. The non-HDC controlled tonnes disposed at the Landfill for Options 2 and 3 will result in higher emissions than if they were disposed of elsewhere.

On the basis of existing infrastructure and operations, closing the Landfill in 2022 will mean that Horowhenua's waste disposal reduces its greenhouse gas emissions quickly and, therefore, significantly. This is important for climate mitigation due to the accumulating nature of greenhouse gas emissions (i.e. the earlier you can reduce greenhouse gas emissions, the better). For these reasons, Option 2 is the second-best option, followed by Option 3.

Table 22: Greenhouse gas emissions for HDC controlled waste disposal over 15 years

	Option 1	Option 2	Option 3
Total greenhouse gas emissions (tCO2e)	13,725	23,265	45,351

Environmental wellbeing conclusion

Option 1 has the greatest impact on minimising the negative impacts of waste disposal on environmental wellbeing. As Table 23 shows, Option 1 scored 113 from a possible 125 and was the preferred option for each of the three outcomes.

Table 23: Environmental wellbeing outcome scores

Outcomes	Weight	Option 1	Option 2	Option 3
Waste disposal meets best practice for environmental management of landfills	12	4	3	2
Waste disposal does not further degrade Horowhenua's rivers, lakes and waterways	8	5	5	4
Waste disposal will not compromise a sustainable environment	5	5	4	3
Environmental wellbeing total	**25**	**113**	**96**	**71**

Cultural wellbeing

The outcomes associated with cultural wellbeing are related to supporting cultural and traditional activities, and the development and capacity building of local Marae, hapū and iwi. It is also about building and enhancing the relationship between HDC and tangata whenua.

Cultural wellbeing outcomes

Horowhenua supports cultural and traditional activities in the area surrounding the current landfill

Waste disposal does not prevent cultural and traditional activities (e.g. eeling) from taking place. Instead, waste disposal facilitates and supports these activities. Disposing Horowhenua's waste maintains and enhances the traditions with ancestral lands, waterways wāhi tapu and other taonga.

For this outcome to be achieved, it is necessary to stop perceived environmental degradation created by the Landfill. Option 1 provides the best chance of achieving this as it limits the volume of waste that remains in the Landfill once the Landfill closes. In addition, moving away from using this land as a landfill will support the Landfill site restoration.[46]

Option 2 would have similar positive impacts to Option 1, although the positive impacts would be delayed by four years. Option 3 is the least beneficial option as it delays closure until 2037.

Horowhenua's waste disposal supports the development and capacity building of local Marae, hapū and iwi

Waste disposal provides opportunities for local Marae, hapū and iwi, and it enables capacity and capability building.

The current design of the options do not explicitly provide opportunities for local Marae, hapū and iwi, and do not enable capacity and capability building.

Leachate remediation works could incorporate hapū and iwi and be designed to provide development and capacity building that would be beneficial to local Marae, hapu and iwi.

The decision on the future of the Landfill builds and enhances the relationship between HDC and tangata whenua

HDC takes a proactive approach to Te Tiriti o Waitangi and its principles and partners with the tangata whenua to enable them to make decisions alongside HDC.

Cultural and Environmental Impacts on Ngāti Pareraukawa and Ngātokowaru Marae report and the Levin Landfill - Social Impact report are clear that tangata whenua wish for the early closure of the Landfill. As such, Option 1 is the best pathway to achieving this outcome as it is the earliest possible closure.

If the Landfill closure date is past 2025, time and resources will likely be diverted to efforts to prevent the Landfill remaining open, instead of other activities tangata whenua might engage in.

Cultural wellbeing conclusion

Option 1 provides the greatest contribution to improving cultural wellbeing. As Table 24 shows. Option 1 scored 103 from a possible 125 and was the preferred option for each of the three outcomes.

Table 24: Cultural wellbeing outcome scores

Outcomes	Weight	Option 1	Option 2	Option 3
Horowhenua supports cultural and traditional activities in the area surrounding the current landfill	10	4	3	1
Waste disposal supports the development and capacity building of local Marae, hapū and iwi	6	0	0	0
The landfill decision builds and enhances the relationship between HDC and tangata whenua	9	5	3	1
Cultural wellbeing total	**25**	**85**	**57**	**19**

[46] Landfill restoration refers to the process of covering a landfill once it has reached its maximum capacity and transforming it into usable land.

7 FINANCIAL ASSESSMENT OF THE OPTIONS

Stantec has undertaken financial modelling for each of the three short-listed options, as well as the status quo. The financial modelling output is summarised below. More detailed assumptions are provided in Appendix G.

7.1 Financial model overview

7.1.1 Model overview

The modelling results are based on a Net Present Value (NPV) financial model.

Initially the modelled term was based on the remaining consented lifespan of the Levin Landfill, which is 15 years from the start of the new contract in 2022. However, the status quo[47] would only have been able to continue for approximately 14 years until the Levin Landfill is completely full. Therefore, this was taken to be the period over which all the scenarios were modelled, so as to compare "like with like".

For each option a base case has been modelled and then a sensitivity analysis carried out changing some of the key input assumptions that are subject to change over time.

The model looks at the overall costs to HDC and does not allow for internal charging between departments or the way that HDC recovers these costs e.g. rates, fees or charges. This is discussed further in Section 7.6.

7.1.2 Remaining Capital Costs

HDC's accounting practice is to pay off capital loans over a 25-year period. For an asset such as the Levin Landfill where capital development occurs regularly, the capital development costs in each year are added to the remaining capital loan amount and the annual principal payments are recalculated annually.

As at the beginning of 2021 the outstanding capital loan for development works associated with the Levin Landfill amounted to $4,424,536.

Some of the scenarios assume further development of the Levin Landfill which would require additional capital. To take account of the differences in capital funding between the various scenarios, the remaining capital cost in the year after the modelled term has been converted to a net present value and added to the NPV of costs for each scenario, in accordance with financial modelling best practice.

7.2 Modelled options

The three short-listed options have been modelled.

- Option 1: Close the Levin Landfill in 2022 and dispose of HDC's waste at one or more third-party disposal sites. A number of sub-options were modelled for this option as described below.
- Option 2: Close the Levin Landfill by 2025 and then dispose of HDC's waste at one or more third-party disposal sites.
- Option 3: Close the Levin Landfill in 2037, or sooner if full.

[47] Assuming total waste to landfill of 32,700 tonnes per annum

Three sub-options were modelled for Option 1:

1. [redacted]
2. [redacted]
3. [redacted]

These three sub-options were considered by the Proposal Evaluation Team (PET) that was established under the RFP process. The PET recommended to the Project Sponsor, and the Project Sponsor agreed, [redacted]

For Option 2, [redacted]

There are potentially other third-party disposal sites but they remain in the planning stages and therefore have not been modelled. If any other competitive disposal sites are in operation at the time of any disposal contract renewal dates these would be considered then.

7.3 Key assumptions

Modelling assumptions are set out in the Appendix. Selected base case assumptions are presented below.

7.3.1 Waste volumes

Table 25 lists the base quantities and sources of waste that have been assumed for HDC's council-controlled waste. Note these are based on 2020 volumes to be comparable to the volumes used in the RFP process earlier this year. A sensitivity analysis using higher and lower volumes, including 2021 actual figures of 4,500 tonnes per annum has also been carried out.

Table 25: Council-controlled waste volumes used for financial modelling

Waste Description	Annual quantity (tonnes)
Municipal solid waste	
Foxton and Shannon Transfer Stations	1,650
Kerbside collection waste	550
Parks and general waste	700
WWTP sludge (dewatered)	1,050
Total waste to landfill	**3,950**

Table 26 shows the total waste volumes modelled for each scenario. As described in Section 5 for Options 2 and 3, the base case assumes a total volume of [redacted] tonnes per annum going into the Levin Landfill. [redacted]

[redacted]

The impact of higher and lower third-party volumes has been considered in the sensitivity analysis.

Table 26: Total waste volumes used for financial modelling

Waste Description	Annual quantity (tonnes)
Option 1: Close Levin Landfill in 2022	
Council-controlled municipal solid waste	2,900
Council-controlled sludge	1,050
Option 2: Close Levin Landfill in 2025	
Council-controlled municipal solid waste	2,900
Council-controlled sludge	1,050
[redacted]	[redacted]
Total waste to Levin Landfill	[redacted]
Option 3: Close Levin Landfill in 2037	
Council-controlled municipal solid waste	2,900
Council-controlled sludge	1,050
[redacted]	[redacted]
Total waste to Levin Landfill	[redacted]
Status quo	
Council-controlled municipal solid waste	2,900
Council-controlled sludge	1,050
Third-party controlled waste	28,750
Total waste to Levin Landfill	**32,700**

7.3.2 Disposal gate fees

For the base case analysis, revenue of [redacted] to HDC for third-party waste has been modelled. This excludes the Waste Levy, ETS charges, transport costs and GST. This would result in a gate fee of approximately [redacted] based on the current ETS and Waste Levy charges. This is depicted in the following figure.

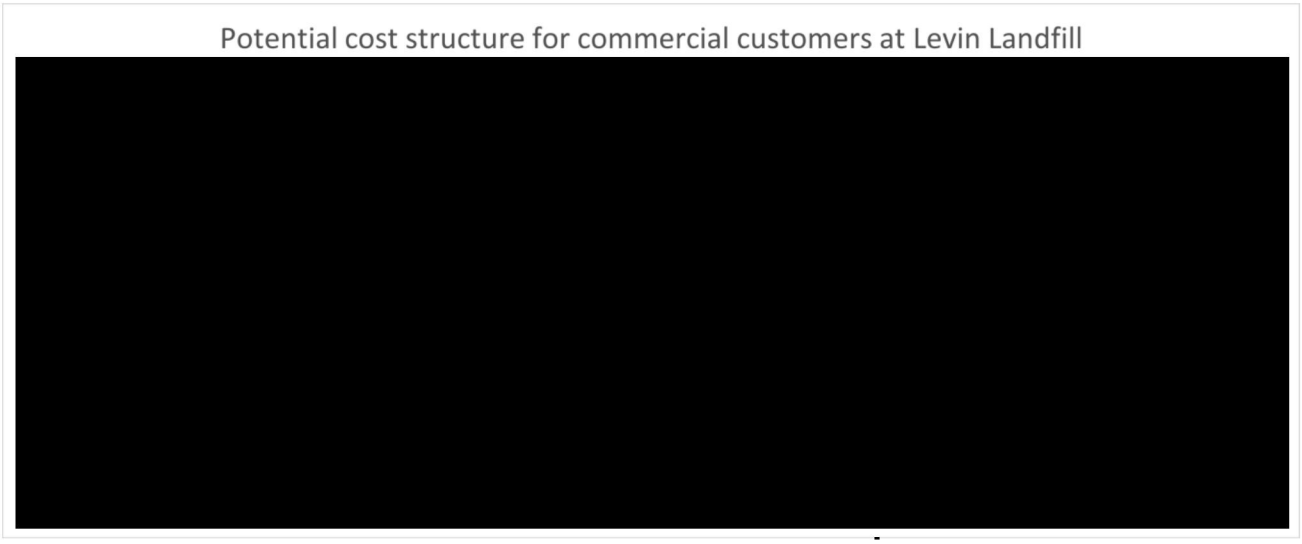


Figure 14: Potential cost structure for commercial customers at Levin Landfill with a

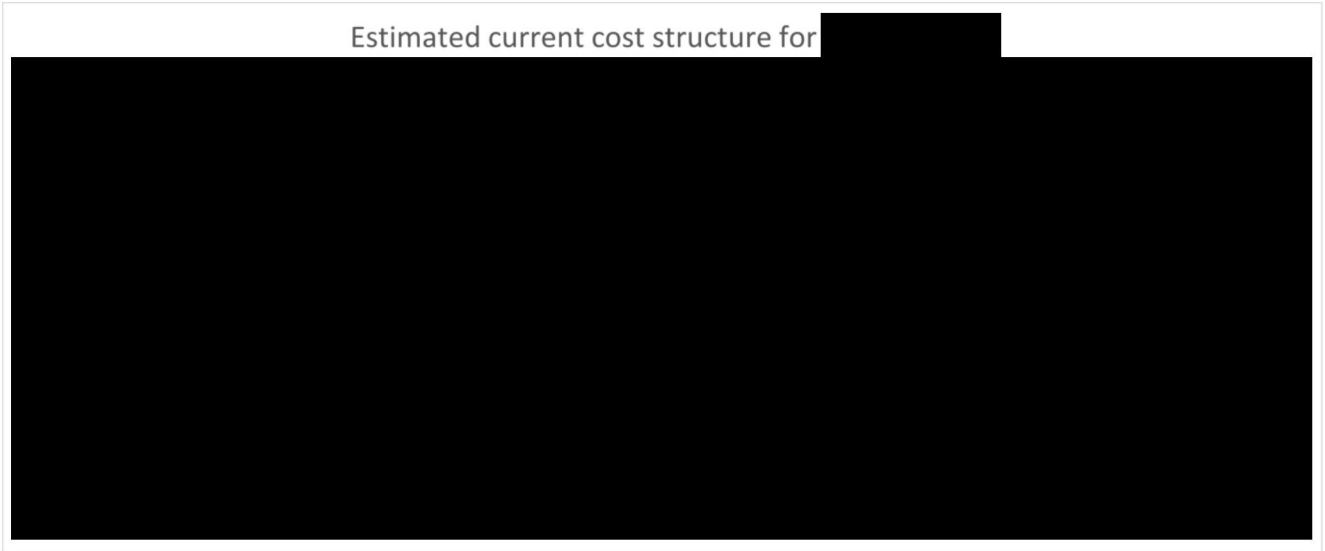


Figure 15: Estimated current cost structure for with a

The presence of two competing players in the Levin waste market will put downwards pressure on prices. This will particularly be the case for commercial customers who will almost certainly request prices from all disposal solutions prior to committing to a long-term contract.

Based on disposal rates in other districts, actual user charges in a competitive environment could be lower than this.

The gate rate at the South Taranaki Transfer Station is [redacted]

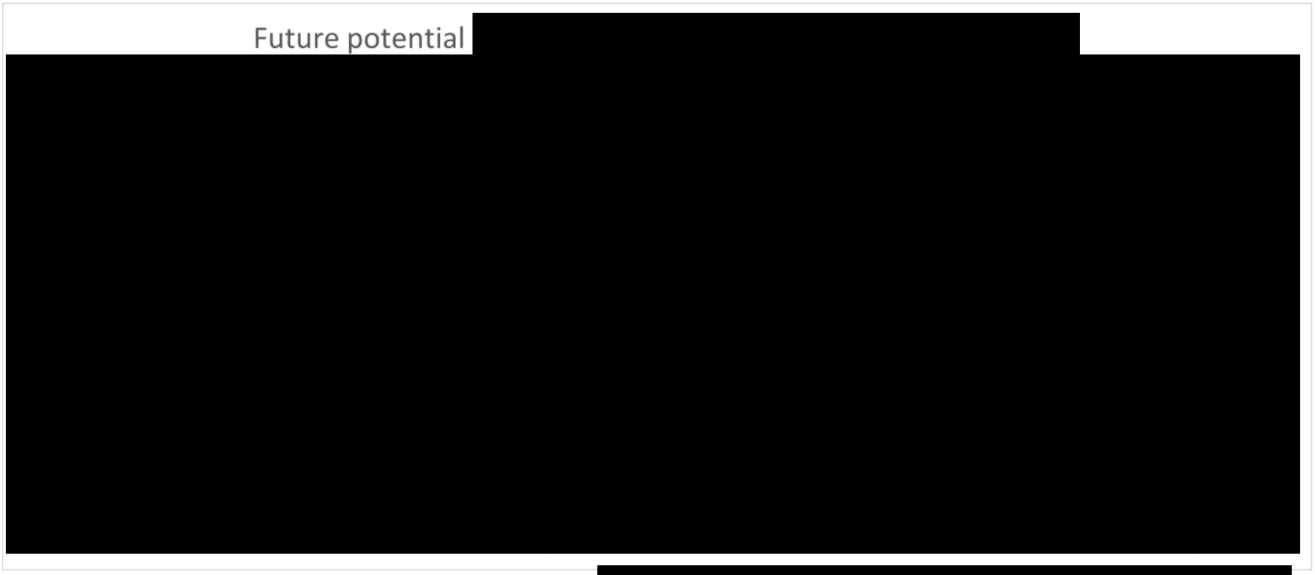


Figure 16: Potential future disposal cost structure for [redacted]

If waste was to come from [redacted]

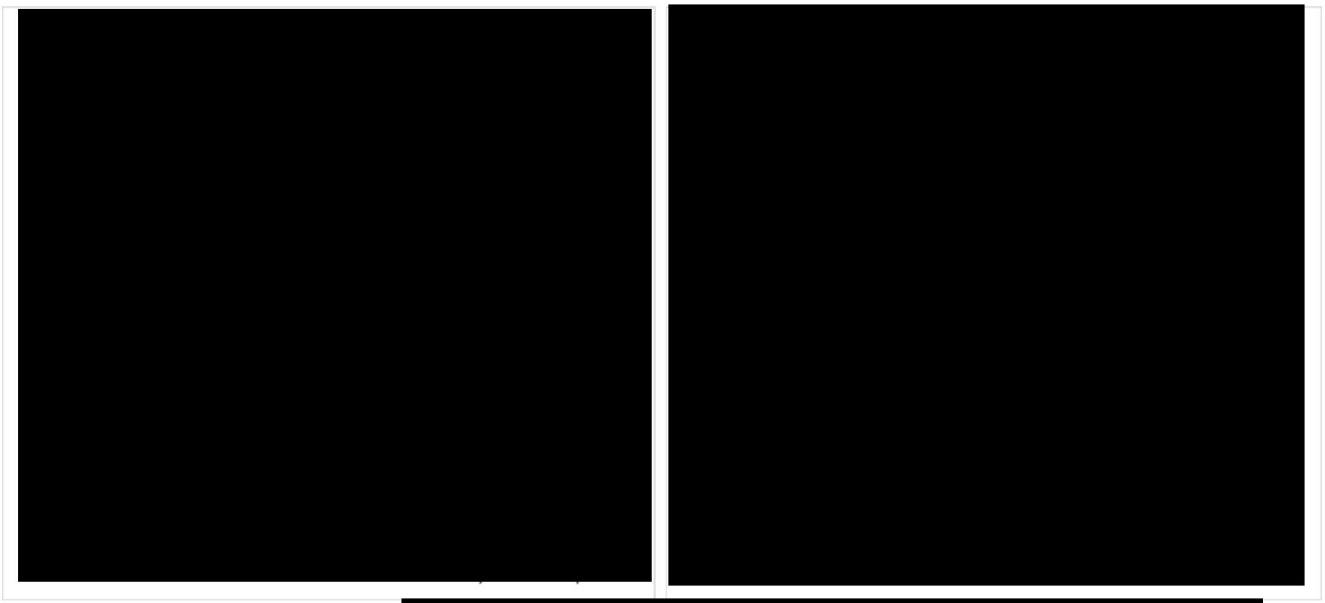


Figure 17: Comparison of HDC and [redacted]

7.3.3 Public recycling station in Levin

The provision of a public recycling station in Levin was included in the RFP process and therefore in the financial model. [redacted]

7.3.4 Costs to dispose of HDC's waste at another disposal location

For Option 1: Close the Levin Landfill in 2022, the disposal costs [redacted] For Option 2, closure in [redacted] Transport costs, where appropriate, have been added to the gate fees.

7.3.5 Waste Levy and ETS charges

Waste Levy payments allow for the increases set out by MfE, as described in Section 2.6.2.

ETS charges are modelled in the base case using a price of $58 per ETS unit, with a range of scenarios tested through the sensitivity analysis up to a price of $70 per ETS unit plus 10% annual increase on top of inflation.

7.3.6 Consent review, renewal

Irrespective of whether the Levin Landfill is closed before the current resource consent expires in 2037, HDC is obliged to comply with its Resource Consents which require ongoing environmental monitoring and reporting. These requirements will vary depending on whether the landfill is operational or closed.

When the current resource consent expires in 2037, it will need to be renewed for relevant ongoing discharges, even when waste disposal operations have ceased.

7.3.7 Operational costs

The assumed landfill operating costs have been based on costs associated with other landfills in New Zealand and also by comparing these with the estimated costs in the MfE Full Cost Accounting guide. Note total operating costs for other landfills will vary significantly based on resource consent conditions and the location and surrounding environment of the landfill.

Following closure of the Landfill there are ongoing annual costs to manage the closed landfill assets. Costs relate to activities such as mowing, spraying for weeds, carrying out inspections and topographic surveys, repairing and maintaining final cover. Aftercare costs associated with the closed landfill are also included.

Landfills continue generating leachate even when they are closed. For the Levin Landfill, this will continue to be captured and treated at the Levin WWTP in accordance with the Resource Consent requirements. The rate of leachate generation is linked to the area of the landfill and the extent to which it is capped. The costs of maintenance of this system have been incorporated into the model based on the number of stages constructed and capped for each scenario each year.

The cost of remediating the leachate discharge from the old landfill is a separate issue. This is a Resource Consent requirement and must be complete by June 2023. These costs will be incurred in all options. However, as the scope of works is still being agreed through the PMG under the Landfill Agreement, it is not included in any of the models.

The landfill gas operations incur annual fixed and variable costs. When the Landfill closes, landfill gas will continue to be generated as waste decomposes and so the flare needs to be kept running which would require ongoing costs.

Where scenarios assume that the Levin Landfill will continue to operate beyond the end of 2021, it is assumed a CCTO will operate the Landfill. Costs for establishing and operating a CCTO have been included. For the 2025 closure option, the Landfill could alternatively be run in-house with oversight by a Landfill Advisory Board however a well set up CCTO model would be more likely to be successful for a longer-term operation. A range of other sundry operating costs have been included in the model and are described in the Appendix.

7.3.8 Capital costs

Capital costs for landfill development are fixed, one-time expenses incurred to construct additional landfill capacity or purchase equipment, such as landfill gas infrastructure. HDC also considers that costs to review or renew resource consents required for the Landfill should also be treated as capital costs.

Capital costs have been factored into the model based on the assumed rate of airspace consumption while the Levin Landfill remains operational.

7.4 Financial modelling results

7.4.1 Base results

The output of the financial modelling, using the 'base case' assumptions, is shown below.

This shows the NPV over fourteen years for each option, including the NPV of the outstanding capital costs at 2036 and the cost of the public recycling station in Levin.

Table 27: Financial modelling of options: base case (NPV over 14 year period)

	Option 1 - Close Levin Landfill in 2022	Option 2 - Close Levin Landfill in 2025	Option 3 - Close Levin Landfill in 2037
Waste Disposal Income from third-party waste	[redacted]	[redacted]	[redacted]
Public recycling station costs			
Landfill development costs, including existing loan repayments			
Landfill operational costs and out of district disposal costs			
NPV of total capital costs outstanding at 2036	-$1,722,554	-$2,523,104	-$3,560,776
Total NPV over 14 years	**-$19,063,195**	**-$21,496,621**	**-$20,550,845**
Financial ranking of options	**1**	**3**	**2**

The modelling shows that, using the base case assumptions, there is a higher NPV cost overall to continue developing and operating the Levin Landfill (Options 2 and 3) than to dispose of waste to an out-of-district disposal facility from 2022 (Option 1).

All NPVs are negative, irrespective of the option modelled, showing that the waste disposal activity has a net cost to HDC.

There are a range of modelled parameters that could be varied through a sensitivity analysis to determine how that would affect the overall results. Selected scenarios are presented below.

7.4.2 Changes to the third-party tonnes and revenue

Stantec modelled the impact of different third-party tonnes, ranging from [redacted] for Options 2 and 3[redacted]. A range of revenue scenarios were also modelled [redacted] This is the revenue to HDC. The gate rate will be higher to allow for the Waste Levy, ETS charges and GST.

A summary of the output is shown below. This shows that Option 3 is only better financially than Option 1, if HDC can [redacted] with a minimum revenue [redacted] This would result in a gate rate of approximately [redacted] Alternatively, HDC would need to [redacted] This would result in a gate rate of [redacted]

If HDC is [redacted] the NPV of Option 3 [redacted] This demonstrates the [redacted] In addition to this, there would be [redacted] if at any time there was [redacted] The disposal rate for [redacted] not including transport costs. This has not been factored into the results below.

Option 2 is not the best option, from a financial perspective, in any of the scenarios.

[redacted]

Table 28: Impact of increased third-party tonnes and revenue

Third-party tonnes per annum	Revenue per tonne from third party tonnes	NPV Option 1: Close Levin Landfill in 2022	NPV Option 2: Close Levin Landfill in 2025	NPV Option 3: close Levin Landfill in 2037	Financially better Option
[redacted]					

7.4.3 *Effect of Increasing ETS Charges*

An increased ETS price, in line with the Ministry for the Environment's latest advice on the Cost Containment Reserve[49], has been modelled. This will increase the difference in cost between disposing of waste at a landfill with high gas capture versus a landfill with lower gas capture. For every $10 increase in the ETS price, the current ETS charges at the Levin Landfill will increase by $8.29 compared to [redacted]

In this scenario, Option 1 remains the most favourable option. Option 2 in this scenario is slightly more favourable than Option 3, as HDC would be taking advantage of the higher gas capture [redacted] from 2026 onwards.

As described in Section 2.6.3, the actual cost of ETS units will be set by the market and cannot be easily predicted.

Increased ETS costs may also reduce the revenue that HDC receives for third-party waste in the 2025 and 2037 closure options as it seeks to remain competitive with landfills with higher gas capture. The impact of this will depend on the nature of the contracts with waste providers and this has not been modelled.

For this analysis all other factors were held constant including [redacted] of third-party waste per annum, with revenue to HDC [redacted]

[49] Note, this is not a cap or a target, but merely a price at which additional units are released to the market to dampen demand.

Table 29: Impact of increased ETS charges

Option	NPV Base case: ETS units at $58/tonne	NPV latest MfE Cost Containment Reserve Price: ETS units at $70/tonne plus 10% inflation
1: Close LL in 2022	-$19,063,195	-$21,342,903
2: Close LL in 2025	-$21,496,621	-$22,414,630
3: Close LL in 2037	-$20,550,845	-$22,978,921

7.4.4 Improving the Efficiency of the Levin Landfill Gas Collection System

The present Landfill Gas (LFG) collection efficiency of the Levin Landfill is low [redacted] The financial model has a base assumption that the efficiency of the LFG collection system will be improved by 5% per stage as the Levin Landfill is developed further.

Even with this assumption, [redacted]

Improving the LFG collection efficiency at Levin Landfill would require investment in more gas wells and LFG collection network infrastructure. There is insufficient information available to determine accurately how much it would cost to improve the LFG collection efficiency at Levin Landfill and whether, from a financial perspective, the benefits would outweigh the costs.

A wide range of scenarios have been modelled for increased gas capture at the Levin Landfill.

The output of this shows that HDC would need to [redacted] even assuming a conservative carbon price of $58 per ETS unit. This would require increasing the gas collection efficiency from [redacted] and maintaining the same high level of efficiency for all future cells. This level of improvement [redacted]

7.4.5 Impact of waste minimisation

Both commercial and environmental drivers are likely to lead to increased waste minimisation over the assessment period.

The impact of reduced council-controlled waste has been modelled for each option. This shows that waste minimisation has the potential for significant savings across all options. Savings will be higher if the Levin Landfill is closed as most of the third-party disposal costs are variable. If HDC is no longer responsible for the disposal of sewage sludge as a result of Three Waters reform, the new water entity may also look at alternative disposal solutions at a regional scale. This would also reduce the total tonnes of council-controlled waste to dispose of.

For any period that the Levin Landfill remains open, the fixed costs associated with the Landfill will reduce the savings available from minimising council-controlled waste. For Options 2 and 3, it is assumed that the amount of third-party waste received at the Levin Landfill does not change in these scenarios.

[redacted]

The output shows that across all waste minimisation scenarios, Option 1 is the most favourable option, from a financial perspective. While the NPV difference between Options 1 and 3 is $1.5 million in the base case scenario, if HDC has reduced its council-controlled waste down to 2,175 tonnes per annum, by achieving a 25% reduction in general waste and disposing of sludge elsewhere, the NPV difference will widen to almost $4 million. If council-controlled waste drops below 3,000 tonnes per annum, Option 2 will become the second most financially attractive option, as there will be lower third-party disposal costs after the Levin Landfill closes in 2025. This modelling does not take into account the cost of disposing of the sludge elsewhere.

Table 30: Impact of reducing council-controlled waste

Scenario	Base case	25% reduction in general waste	HDC sludge disposed of elsewhere	25% reduction in general waste plus HDC sludge disposed of elsewhere
General Waste	2900	2175	2900	2175
Sludge	1050	1050	0	0
Total council-controlled tonnes	**3950**	**3225**	**2900**	**2175**
1: Close LL in 2022	-$19,063,195	-$17,345,029	-$15,633,026	-$13,914,859
2: Close LL in 2025	-$21,496,621	-$19,945,974	-$18,485,232	-$16,941,285
3: Close LL in 2037	-$20,550,845	-$19,493,741	-$18,989,368	-$17,908,663

Alternatively, HDC may look to minimise waste in its District by controlling a larger share of the waste stream. This would enable Council to incentivise greater recycling, reuse or diversion of waste. One example of this would be for Council to introduce a rates funded kerbside collection with separate food and green waste collection. This could increase council-controlled waste by an estimated 1,000 tonnes per annum[51]. Controlling a larger share of the District's waste through Council involvement in other waste activities may be challenging to achieve as Council would need to compete directly with the commercial waste operators in the District.

The table below shows the impact that higher council-controlled waste would have on each option.

This shows the opposite of the previous table, which had a larger difference in NPV as the waste volumes got smaller. Here, the difference in the NPV gets smaller with larger council-controlled waste volumes. Option 1 remains the most favourable from a financial perspective across all scenarios, but the difference in NPV between Option 1 and Option 3 reduces from $1.5 million to 0.15 million as the council-controlled waste volumes increase from 3950 to 5450 tonnes per annum.

For Options 2 and 3, it is assumed that the amount of third-party waste received at the Levin Landfill does not change in these scenarios. This would assume that the increased council volumes were not being taken from the third-party customers of the Landfill.

[51] Assuming Council's share of the kerbside market increases to 100% but that separate green and food waste collections reduce the total volume by 35%.

Table 31: Impact of increasing council-controlled waste

Scenario	Base case	2021 waste volumes	Additional 1,000 tpa	Additional 1,500 tpa
General Waste	2900	3250	3900	4400
Sludge	1050	1250	1050	1050
Total council-controlled tonnes	**3950**	**4500**	**4950**	**5450**
1: Close LL in 2022	-$19,063,195	-$20,546,021	-$21,433,080	-$22,618,022
2: Close LL in 2025	-$21,496,621	-$22,790,279	-$23,622,263	-$24,699,566
3: Close LL in 2037	-$20,550,845	-$21,290,377	-$22,010,645	-$22,775,207

7.5 Use of aftercare provision

HDC has a landfill aftercare provision. HDC's 2020 Annual Report notes:

> "It represents the future costs of the landfill as it was at balance date (i.e. assuming no extra cells or capacity is created) through to the current expected closure date of 2032 and the ongoing post closure costs through to 2062. This significant increase in the future costs has come about through changes to the consent conditions and the costs of monitoring these new conditions over the years until the finish of the aftercare period of 30 years to 2062.[52]"

The size of the aftercare fund in the last three financial years has been FY20: $6.455M; FY19: $4.841M; FY18: $3.543M[53]. This amount is recalculated yearly based on Stantec's estimates of future costs and updated inflation and discount rates. As noted in the Annual Report, the new consent conditions have added significant additional aftercare cost.

The purpose of this fund is to provide for the aftercare activities associated with the landfill for a 30-year period after closure. Aftercare is generally recognised as including the following activities: "administration, regional council liaison, site inspections, maintenance (of cover, vegetation, leachate system, gas system, stormwater system), environmental monitoring, removal of remaining facilities, and end of post-closure certification"[54].

If HDC decides to close the landfill earlier than 2032 (the closure date assumed in the Annual Report), then the aftercare period will be brought forward. As aftercare costs will be incurred sooner, the actual cost may be higher than the provision as the provision will have discounted the future liability back to a present value today.

If HDC decides to keep the Landfill open, the aftercare provision will need to continue to increase until closure to allow for new cells.

[52] HDC Annual Report 2019-2020

[53] HDC Annual Report 2019-2020

[54] MfE, Landfill Full Cost Accounting Guide for New Zealand, 2004

The financial model includes the costs associated with the aftercare of the old landfill and closed cells in the new landfill until 2036. It also includes the costs associated with aftercare of the whole landfill from the date the Levin Landfill is closed until 2036. Note even with a 2022 closure date the aftercare period will continue until at least 2052 so the model does not include all aftercare costs for any of the options.

Once the closure date is known, the aftercare provision will need to be updated. After this the size of the aftercare provision is expected to go up or down each year depending on the estimates of the remaining aftercare requirements and the prevailing discount and inflation rates.

This fund is not intended to pay down the debt associated with the Landfill.

7.6 Financial impact on Council

7.6.1 Overall impact on Council revenue

BERL has calculated the impact of each of the three short-listed options on Council's overall revenue. This could come from a combination of general or targeted rates, fees and charges. For the sake of comparison, the cost of each option is shown in two parts:

- a percentage impact on average rates over the period 2022-2036
- residual debt owing at 2036 that would need to be repaid out of future rates.

This reflects Council's current debt repayment policy of repaying capital costs over 25 years. This approach results in Option 1 and Option 3 having a roughly comparable impact on rates during the period 2022 to 2036, however Option 3 having a much higher residual debt at the end of the assessment period, which would be gradually repaid over the following 25 years. If the debt was repaid during the assessment period, this would make the impact on rates of Option 3 significantly greater than Option 1.

BERL assessment of rating impact

Option 1:

The cost to dispose of HDC controlled waste will increase by $1.1 million per year. HDC will need to decide how to cover this cost, not all costs will be recouped via rates, but will likely be spread across a number of sources including, targeted rates for waste disposal, general rates, kerbside rubbish bags or other fees and charges. This is intended to provide a quick comparison.

The additional cost per rating unit for the 18,007 rating units in the District is $58 per year. The equivalent of 2.7 percent.

The rates increase does not include any offset from the Landfill aftercare fund, currently $5.4 million, or repayment of $3.5 million of capital loans due for repayment after 31 December 2036.

Option 2:

The cost to dispose of HDC controlled waste and recycling will increase by just over $1.2 million per year. The additional cost per rating unit is $67 per year, the equivalent of a 3.2 percent rates increase.

The rates increase does not include any potential offset from the Landfill aftercare fund, which is currently $5.4 million, or repayment of $5.1 million of capital loans due for repayment after 31 December 2036.

Option 3

The cost to dispose of HDC controlled waste and recycling will increase by just over $1 million per year. The additional cost per rating unit for the 18,007 rating units in the District is $57 per year. This is the equivalent of a 2.7 percent rates increase.

The rates increase does not include any potential offset from the Landfill aftercare fund, which is currently $5.4 million, or repayment of $7.6 million of capital loans due after 31 December 2036.

Summary

The cost for HDC residents and ratepayers will increase for all three options. HDC will need to decide how to cover this cost, but will likely be spread across a number of sources including, targeted rates for waste disposal, general rates and kerbside rubbish bags.

As Table 20 shows, the equivalent change in rates required to make up the increased cost of waste, compared to the current arrangement, is estimated to be $57 per year for Option 3 and $58 for Option 1. For HDC's 18,007 rateable units, this is the equivalent of a 2.7 percent increase in the average rate for both options. Option 2 would require a 3.2 percent increase in rates ($67 per year).

The rates increase does not include any potential offset from the Landfill aftercare fund, which is currently $5.4 million, or repayments of capital loans outstanding as at 31 December 2036.

Table 20: Change in rates required to fund increased cost of waste disposal

	Option 1	Option 2	Option 3
Cost increase required ($2021) 2022-2036	15,702,730	18,186,134	15,326,628
Cost increase per year ($2021)	1,046,849	1,212,409	1,021,775
Rating units	18,007	18,007	18,007
Rating unit cost increase per year ex GST ($2021)	58	67	57
Current average rate inc GST ($2021)	2,433	2,433	2,433
New average rate inc GST ($2021)	2,500	2,511	2,499
Rate increase (percent)	2.7	3.2	2.7

7.6.2 Source of additional funding

The current funding allocations between ratepayers and users is presented in Section 2.4.

Going forward the additional cost of the refuse disposal activity (incorporating the public recycling facility in Levin) will need to be incorporated into rates, fees and charges.

While this is a matter for Council to decide, the following funding allocation could be considered.

Table 32: Current and potential source of funding

Description of costs	Current source of funding	Potential source of funding
Levin Landfill: Closed landfill aftercare costs and repayment of landfill debt	Solid waste targeted rate, user fees and charges	• Solid waste targeted rate
Disposal costs for wastewater treatment plant sludge	Wastewater targeted rate	• Wastewater targeted rate
Disposal costs for parks refuse	General rate	• General rate
Disposal costs for kerbside bag refuse	Solid Waste Targeted Rate: 0-15% Fees and Charges: 85-100%	• Combination of Solid Waste targeted rate and fees and charges. • The ratio of public to private good may need to be reconsidered for this item, to address affordability issues for users of the kerbside bag, or to smooth the transition to new bag prices. Any shortfall would need to be made up through the solid waste targeted rate. Council will also need to consider its waste minimisation objectives when setting bag charges. • Council's market share of the kerbside collection market is likely to decrease further if bag prices increase. This will reduce Council's costs to dispose of this refuse.
Disposal costs for Foxton and Shannon transfer station refuse	Solid Waste Targeted Rate: 30-40% Fees and Charges: 60-70%	• Combination of Solid Waste targeted rate and fees and charges. • Increasing fees and charges for these transfer stations may reduce the waste volumes they receive. • This would reduce Council's costs to dispose of this refuse. • Council's contractual arrangements with its current Transfer Station operator [redacted] • Increased waste charges may result in some waste minimisation. However, without investing in alternate reuse, recovery or recycling options, most waste would either continue to be disposed of at these transfer stations, be diverted to the Levin Transfer Station, be disposed of commercially (i.e., skip bins) or be disposed of inappropriately (fly tipping etc).

7.7 Impact on waste producers

There are two main groups of waste customers in Horowhenua. Commercial customers include businesses disposing of large quantities of general or special waste, and waste collection and skip hire companies. These customers will typically have an account with the transfer station or landfill operator and may have sufficient volumes to be able to negotiate their own disposal rates. General customers users make use of the transfer stations with smaller volumes and will pay the published gate rates.

For commercial users, the ongoing operation of the Levin Landfill, either until 2025 or 2037, [redacted] reduce their waste disposal costs. These operators will be able to request a quote from HDC [redacted] prior to signing up for either a short or long term contract. HDC's [redacted] This will be beneficial for [redacted] but will mean that [redacted] must pay a larger share of the costs associated with the landfill operations.

General customers will not be able to negotiate between the two parties in the same way. Unless HDC builds a transfer station they will need to continue to pay the Levin Transfer Station gate rates. These rates could be higher or lower than in a scenario where the Levin Landfill was closed.

7.8 Summary – financial analysis

The financial analysis shows that, under the base case assumptions, Option 1: Close the Levin Landfill in 2022, is the most financially advantageous option to HDC.

The model is quite sensitive to the volume of, and revenue from, third-party waste received at the Levin Landfill. If HDC [redacted]

- [redacted]
- [redacted]

then Option 3: Close the Levin Landfill in 2037, would become the most favourable option from a financial perspective. Note third party waste sourced from out of district would face higher disposal costs than this because transport costs would be additional.

However, if the carbon price increases in future, the Levin Landfill will become less competitive. Gate rates would need to increase in line with the increase in carbon costs each year, or HDC would have to reduce its revenue to offset the higher ETS charges.

As described in the previous section, [redacted] commercial customers' waste, HDC would need to offer [redacted] This will make it very difficult for HDC to be able to charge the gate rates that would make continued operation of the Levin Landfill the most favourable financial option. For both Option 2 and 3, HDC would need to have [redacted] that the Levin Landfill was operational. Any years where lower tonnes were received would need to be compensated for by a comparably higher volume in subsequent years.

8 COMMERCIAL CASE

The Commercial Case outlines the proposed procurement and contractual arrangements for each option.

A full procurement process, including a Request for Proposals and proposal evaluation, has been completed as part of the preparatory work for this Business Case.

Discussions were held with HDC's Elected Members and the PMG regarding high level aspects of the proposed contract and procurement approach. This led to the incorporation of the wellbeing approach in the Business Case analysis.

8.1 Procurement plan

The procurement followed HDC's Procurement Policy and was based on a Procurement Plan. The key points are summarised below.

In analysing the market, HDC engaged with suppliers through a Registration of Interest process. This identified that there were multiple potential suppliers in the market.

Based on HDC's procurement policy and the value the procurement an open competitive tender was held. This process allowed all ROI registrants, plus any other market participants, the opportunity to tender for the contract.

[redacted] operators in the district were identified who both have sufficient market share of commercial tonnes and landfill operations experience to operate the Levin Landfill, should it remain open for part of the contract term. The ROI revealed the potential for other third-party interest, which could provide an opportunity for achieving an additional competitive market response.

The Proposal Evaluation Team comprised individuals with expertise in procurement and landfill engineering. Due to the value of the contract, [redacted] and the high level of scrutiny from the community, a Probity Auditor was appointed to oversee the procurement process. All contract documents were reviewed by Simpson Grierson prior to being released to the market.

The RFP sought responses based on the following scenarios:

Scenario 1: Operation of Landfill followed by disposal of Council Controlled Waste to other landfill or facility with options of Levin Landfill closures:

- no later than 31 December 2025 followed by disposal at another facility elsewhere until 30 May 2042.
- no later than 24 May 2037 or earlier if consented capacity is reached followed by disposal at another facility elsewhere until 30 May 2042.
- until an alternative closure date between 31 December 2025 and 24 May 2037 followed by disposal at another waste disposal facility elsewhere until 30 May 2042.

Scenario 2: Disposal of Council Controlled Waste to other landfill or facility:

- Disposal of HDC Waste at another disposal facility nominated by the respondent until 30 May 2042 with no operation at Levin Landfill.

The procurement process to date has involved the following key milestones.

Table 33: Timeline to date

Action	Date
Pre-procurement market engagement (Registration of Interest)	Sept-Oct 2020
Request for Proposals Tender period	May-June 2021
Evaluation of proposals and initial recommendation to Project Sponsor	July 2021
Distillation of financial and non-financial material for input into the Business Case	August-October 2021

8.2 Outcome of the RFP process

[redacted] in response to the RFP. [redacted]

[redacted]

[redacted] been used as the basis of Option 1, close the Levin Landfill in 2022, throughout this Business Case. [redacted]

As no tenders were received for ongoing operation of the Levin Landfill under Options 2 or 3, the financial modelling for these options is based on estimates of cost prepared by Stantec. If Council decides to close the Levin Landfill in 2025 or 2037, a further procurement exercise will be required to secure an operator for the Levin Landfill.

The RFP process required tenderers to formally commit some or all of their own commercial tonnes to the Levin Landfill for the period that it remained operational in Options 2 and 3. As no tenders were received for these options, this means that HDC [redacted]

As part of the Business Case development process, other potential third-party tonnes have been investigated, as set out in Section 5.2.4. [redacted] of a formal procurement exercise in line with current contract expiry dates. As a result, [redacted] organisations to seek to form a contract with them prior to establishing the CCTO.

8.3 Proposed contractual arrangements

The planned contractual arrangements are outlined below.

8.3.1 Option 1: Close the Levin Landfill in 2022

If the Levin Landfill has closed, a supply contract will be used with the successful waste disposal supplier.

The proposed payment approach will be based on a measure and value approach with set rates for each item that will be paid monthly based on the volumes of waste.

HDC will pay for each tonne of council-controlled waste transported to and disposed of in the supplier's disposal facility, including the Waste Levy and ETS costs.

The responsibility for managing delivery under the contract, as well as supplier relationship management, will pass to the Water and Waste Services Manager on the signing of the contract. A contract and relationship-management plan will be developed in consultation with the successful supplier.

[redacted]

- [redacted]
- [redacted]
- Cost index based on recognised Statistics New Zealand indices
- [redacted]
- No minimum or maximum volumes of waste to be delivered each year,
- [redacted]

[redacted]

8.3.2 Option 2: Close the Levin Landfill in 2025

The proposed payment approach will be based on a measure and value approach with set rates for each item that will be paid monthly based on the volumes of waste.

Between 2022 and 2025, HDC will:

- pay an operations contractor for the operations of the Levin Landfill
- pay a construction contractor(s) as required for cell construction and capping, and other capital works
- pay the environmental monitoring contractor(s) for any specialist monitoring required
- pay the Government for the Waste Levies for council-controlled waste and commercial waste

- surrender ETS units for both council-controlled and commercial waste
- receive payments from general and special waste customers who have contracts to place their tonnes in the Levin Landfill, including the Waste Levy and ETS component

After 2025, HDC will need to enter into a supply contract with one or more waste disposal operators.

The responsibility for managing delivery under the contracts, as well as supplier relationship management, will pass to the Water and Waste Services Manager on the signing of the contracts. Contract and relationship-management plans will be developed in consultation with the successful suppliers, where appropriate.

8.3.3 Option 3: Close the Levin Landfill in 2037

The proposed payment approach will be based on a measure and value approach with set rates for each item that will be paid monthly based on the volumes of waste. The payment flows for this option are more complex due to the arms-length relationship between HDC and the CCTO.

- HDC will:
  - pay the CCTO for each tonne of council-controlled waste disposed of in the Levin Landfill, including the Waste Levy
  - pay for Construction contractor(s) as required for cell construction and capping, and other capital works
  - surrender ETS units for both council-controlled and commercial waste
- The CCTO will:
  - pay the operations contractor for the operations of the Levin Landfill
  - pay for the governance, management and administration costs to run the CCTO
  - pay the environmental monitoring contractor(s) for any specialist monitoring required
  - pay HDC a capital works allowance for each tonne of waste disposed of in the Levin Landfill (both council-controlled waste and commercial waste)
  - pay HDC for the ETS units for commercial waste
  - pay the Government for the Waste Levies for council-controlled waste and commercial waste
  - receive payments from general and special waste customers who have contracts to place their tonnes in the Levin Landfill, including the Waste Levy and ETS component.

The CCTO will be responsible for supplier contractual arrangements and relationship management.

9 MANAGEMENT CASE

9.1 Decision-making requirements

The Hōkio Landfill is listed in HDC's Significance and Engagement Policy as a strategic asset.

The policy states:

> "By way of guidance, a proposal or decision will not be deemed to be significant unless it is of similar importance to the following examples:
>
> - Involves an activity that will significantly affect capacity or cost to Council
> - Alteration of the level of service of a significant activity as defined in Council's LTP
> - Alteration to the mode by which a significant activity is undertaken
> - Transfer of ownership, control, construction, replacement or abandonment of a strategic asset
> - A change to the LTP
> - Draft LTP
> - Annual Plan (where matters of significance are identified)
>
> Matters which do not satisfy these criteria may have a high degree of significance where it is known that the decision will nevertheless generate a high degree of controversy."

The closure of the Levin Landfill is therefore considered significant under the first, third and fourth bullet points above. The continued operation of the Landfill is also considered to have a high degree of significance due to the high degree of controversy regarding the Landfill operations.

It is likely that a Special Consultative Procedure will be required for each of the short-listed Options 1, 2 and 3.

9.2 Project programme

The proposed timeline for the completion of the procurement is shown below.

Table 34: Proposed timeline for completion of procurement

	2021			2022				
	10	11	12	01	02	03	04	05
Council decision on preferred option		10/11						
SCP Consultation period		30/11		19/01				
Hearings				31/01	11/02			
Final Council decision					14/02			
New cell construction (if required)					14/02			10/05
Final negotiations and award of contract								
Long term contract commencement								01/05

9.3 Risk Assessment

A detailed risk assessment is attached as Appendix H.

10 RECOMMENDED OPTION

In our independent opinion, the preferred option is Option 1, close the Levin Landfill in 2022. This is because it provides the best outcome for Council from a strategic, financial, wellbeing and risk perspective.

The financial assessment has shown that Option 1 provides the best financial outcome to Council in the base case scenario and in the majority of sensitivity analyses carried out. Option 3 is the preferred option from a financial perspective [redacted] however [redacted] is not guaranteed. If Council or its CCTO were unable to [redacted] HDC could have to provide significant additional funding to keep the Landfill operating. From a financial perspective, Option 2 is never the preferred option due to the high costs of operating the Landfill for less than four years, followed by disposal at a third-party landfill [redacted]

The wellbeing assessment completed by BERL showed that Option 1 was the preferred option when measured against the social, environmental and cultural wellbeings. Option 1 and Option 3 were first-equal for economic wellbeing, with the lower number of jobs within the District in Option 1 being offset in the scoring by the lower disposal costs of this option. Option 2 was the second ranked option from a wellbeing perspective, with Option 3 last despite the high economic score.

From a risk perspective, Option 1 provides the lowest commercial and operational risk. The most significant risk with this Option 1 [redacted] if Council decides to proceed with this option it should take steps to mitigate this risk.

For Options 2 and 3, there are ongoing environmental, health and safety, cost escalation and human resources risks while the Landfill remains operational. HDC will also have to compete with commercial operators to secure tonnes [redacted] Finally, if Option 3 is chosen, the Landfill Agreement would terminate. As well as the reputational damage to HDC from the perspective of Ngāti Pareraukawa, Muaūpoko and other Hōkio stakeholders, Council would risk spending significant time and money on legal proceedings against part of its community.

Finally, as this is part of the solid waste activity, Council's stated aim is to have the outcome align with its WMMP. Option 1 is the strongest aligned as it provides the greatest incentive for waste minimisation. The cost of disposal under Option 1 decreases much more rapidly if HDC can reduce its council-controlled waste.

This recommendation is summarised in the table below.

Table 35: Summary of each option's performance against the key assessment areas

	Option 1: Close the Levin Landfill in 2022	Option 2: Close the Levin Landfill in 2025	Option 3: Close the Levin Landfill in 2037, or sooner if full
Strategic alignment with WMMP	🟢	🟡	🔴
Wellbeing - cultural	🟢	🟡	🔴
Wellbeing – social	🟢	🟡	🔴
Wellbeing – environment	🟢	🟡	🔴
Wellbeing - economic	🟢	🟡	🟢
Financial	🟢	🔴	🟡
Risk	🟢	🟡	🔴

APPENDICES

Appendix A Levin Landfill Agreement

Attached separately

Appendix B Levin Landfill Closure Social Impact Report

Attached separately

Appendix C Cultural and Environmental Impacts on Ngāti Pareraukawa and Ngātokowaru Marae

Attached separately

Appendix D Cultural and Environmental impacts on Muaūpoko-Tamarangi Hapū

Attached separately

Appendix E Tonkin and Taylor Leachate Remediation Best Practicable Options report

Attached separately

Appendix F BERL "Levin Landfill and Horowhenua waste disposal Wellbeing Case"

Attached separately

Appendix G Financial modelling assumptions

The following assumptions have been used by Stantec in the financial model, in addition to the assumptions set out in Section 7.3.

G.1. *Capacity of Levin Landfill*

For the scenarios that assume ongoing development and operation of the Levin Landfill, assumptions have been made regarding the capacity of future landfill stages.

The area for future landfill development is dictated by the resource consent which includes a plan showing the extent of allowable landfill footprint. Future stages are assumed to be developed within this footprint with the landfill side slopes having a maximum grade of 1V:3H, which then determines the overall height of the completed landfill.

Table 36: Capacity of future Levin Landfill stages

Future Stage	Capacity (m^3)
Stage 1B, 1st Lift	48,000
Stage 1B, 2nd Lift	70,000
Stage 4A	133,000
Stage 4B	213,000
Stage 5	76,000
TOTAL	**540,000**

The life of Levin Landfill is determined by the rate at which the landfill capacity is used. This is clearly directly related to the rate (i.e., tonnes per year) at which waste is disposed of in the landfill, but also the extent to which the waste is compacted.

The spreadsheet models assume a compaction ratio of 0.85 tonnes / m3. This means that each tonne of waste and soil cover is assumed to occupy 1.18m3 of space within the landfill. The compaction ratio of 0.85 has been selected based on the compaction that has been achieved in the past at Levin Landfill, which has generally exceeded this ratio. In other words, in the past, waste and soil cover have been compacted to a higher degree, so taking up less space within the landfill.

It is noted that the resource consent requires waste to be compacted to a density of between 0.6 and 0.8 tonnes /m3 (this is assumed to be a minimum density) so the assumed compaction ratio is above this range.

G.2. *Waste Levy*

Currently, under the Waste Minimisation Act (WMA) 2008, Waste Minimisation (Calculation and Payment of Waste Disposal Levy) Regulations 2009every tonne of waste disposed of at a municipal landfill attracts a waste levy of $20 per tonne.

Waste levy payments are scheduled to increase over the next three years, as shown in the table below and have been allowed for in the financial model.

Table 37: Waste levy payments

Period	Waste Levy Payment / tonne
1 July 2021 – 30 June 2022	$20
1 July 2022 – 30 June 2023	$30
1 July 2023 – 30 June 2024	$50
1 July 2024 onwards	$60

G.3. *Emissions Trading Scheme Charges*

Price of NZUs

The NZ Emissions Trading Scheme (ETS) has been established under the Climate Change Regulations. Under the ETS landfill owners must surrender NZ Trading Units (NZUs) calculated by a formula to convert tonnes of waste to equivalent tonnes of CO2 generated from the decomposition of waste in the landfill.

NZ ETS has price controls that act as safety valves to help manage the risk of the NZU price at auction. The upper price control is the 'cost containment reserve' and the lower price control is the 'auction reserve price'. Most trading of NZUs happens in the secondary market where some trading platforms provide a daily spot price. Currently the spot price is approximately $65.00 per NZU.

Table 38: Cost of NZU prices in the financial models

Cost of NZUs	Annual Increase (%)	Comments
$58.00	0% plus inflation	Base rate applied to all models
$58.00	2% plus inflation	Used in sensitivity analyses
$64.00	5% plus inflation	Used in sensitivity analyses
$70.00	10% plus inflation	Used in sensitivity analyses

Unique Emissions Factors

Landfill owners may apply for a reduction in charges under the ETS if they can show through audited processes:

- that the characteristics of the waste being disposed of in their landfill will generate less methane than the default waste composition stated in the regulations, and/or
- that the collection and destruction of landfill gas is sufficiently efficient to reduce greenhouse gas emissions from the landfill, above a certain threshold.

The audited process, where successful, will grant landfill owners a Unique Emissions Factor (UEF) which can be applied to the formula to reduce the number of NZUs that need to be surrendered annually.

All of the landfills used in the financial modelling have been granted UEFs on account of the landfill collection and destruction systems in place at the landfills.

Where a landfill does not have a UEF, the landfill owner is obliged to surrender 1.19 NZUs for every tonne of waste disposed of at the landfill[55].

[55] It is noted that the Government has been consulting on lowering the Default Emissions Factor for waste from 1.19 to a lower value of 0.91. Refer to: "Proposed changes to NZETS and SGG levy regulations 2021", MfE Consultation Document, April 2021.

Landfills that have more efficient landfill gas collection and destruction systems need to surrender less NZUs per tonne of waste. Using the UEF values in the ETS regulations formula one can work out the efficiency of the respective landfill's gas collection and destruction system.

The Levin Landfill currently has the lowest calculated LFG collection efficiency. In the financial models it has been assumed that the efficiency will be progressively improved at a rate of [redacted] by expanding the gas collection network within Levin Landfill. The proposed capping project for Stages 1A, 2 and 3 will improve the gas collection but without closer spacing of wells the gas collection will still be lower than for the alternative landfills.

G.4. *Financial assumptions*

The table below summarises the financial assumptions that have been used in the NPV spreadsheet models. These are based on information provided by HDC's accounting staff for NPV assessments done recently for the HD landfill liability.

Table 39: Financial assumptions

Parameter	Assumed value	Comments
Annual Inflation rate	1.5% per annum	
Discount rate for NPV calculations	4.5%	
Existing capital loan	$4,424,536	Payable over 25 years
Interest payable on capital loans	3.75%	

G.5. *Operational Costs*

Transport costs

A transport cost of $0.35 per tonne.km has been allowed for scenarios where the quoted rates do not include transport. This is based on the full distance for the round trip.

Landfill operating costs

Options 2 and 3 assume that HDC (or its CCTO) will continue to operate the Levin Landfill and will engage a Landfill Contractor to undertake this work.

Information has been sought regarding typical NZ landfill operating costs to use in the financial models for these options.

Another useful source of information is the MFE's Landfill Full Cost Accounting Guide (2004). Operational costs are provided for a range of landfill sizes and for various direct and indirect costs. The operating cost figure allows for placement of refuse, daily cover, nuisance control (litter, odour, birds), general maintenance and salaries. Applying an escalation factor to the costs, one can derive a range of costs for various annual tonnages. The results of this are shown in the table below.

Table 40: Operating cost per tonne estimate – MFE Full Cost Accounting guide

Annual Tonnes	Cost per Tonne
3,950	[redacted]
5,000	
10,000	
15,000	
20,000	

These figures have then been compared with actual operating costs of three small New Zealand landfills. This shows a close correlation with the MfE data, particularly for volumes [redacted]

Governance and management costs

It is assumed that additional resource will be required to manage the Levin Landfill while it is operational. An allowance of [redacted] for HDC staff time has been made in the years that Landfill is open. In Options 1 and 2, once the Levin Landfill is closed, this allowance drops back to [redacted]

Where scenarios assume that the Levin Landfill will continue to operate beyond the end of 2021, it is assumed that HDC will establish a CCTO to operate the landfill. Costs of [redacted] have been applied for establishing a CCTO with operating costs being set at [redacted] the [redacted] cost allowed for additional HDC staff time as this workload would shift to the CCTO.

Annual CCTO costs will likely include:

- Board costs: [redacted]
- General Manager costs: [redacted]
- Audit costs: [redacted]
- Administration and financial support costs: [redacted]
- Sundry (insurance, subscriptions, office costs, legal etc) [redacted]

If HDC continued to operate the landfill internally, but with a Landfill Advisory Board, the costs would be comparable but potentially slightly lower.

Borrow pit operational costs

There is a borrow pit on the Levin Landfill property where sand is excavated for use as cover on the landfill. Areas of the borrow pit that have already been excavated should be rehabilitated each year by shaping the borrow pit, topsoiling and grassing it. The financial models allow for ongoing annual borrow pit closure costs of [redacted] which is applicable to those scenarios where it is assumed that Levin Landfill will continue to be developed and operated beyond 2021.

Environmental Monitoring and Reporting

Irrespective of whether the Levin Landfill is closed before the current resource consent expires in 2037, HDC is obliged to comply with its resource consent which includes undertaking environmental monitoring and reporting on a quarterly basis.

When the current resource consent expires in 2037, it will need to be renewed for relevant ongoing discharges, even if waste disposal operations have ceased.

The environmental monitoring and reporting costs are shown below, split between the costs that can be attributed to the old, unlined landfill and those attributed to the new, lined landfill. The costs are based on the current cost of these activities. Environmental and monitoring costs have been assumed to increase by [redacted] on each occasion that the resource consent is reviewed (in 2024, 2029 and 2034).

Table 41: Environmental monitoring and reporting costs

Cost Centre	Old Landfill	New Landfill	TOTALS
Environmental Monitoring	[redacted]	[redacted]	[redacted]
Environmental Reporting			
TOTAL			

Post-Closure Aftercare

Following closure of the landfill there are ongoing annual costs to manage the closed landfill assets. Costs relate to activities such as mowing, spraying for weeds, carrying out inspections and topographic surveys, repairing and maintaining final cover.

The MfE FCA Guide provides a range of costs based on a "per hectare" basis that may be used as a general guide. These have been applied to each option based on the number and area of cells that will have been developed and filled by the time the landfill is closed.

Table 42: Aftercare cost estimates

Activity	Adopted Rate
Inspections	$700/ha/year
Annual topographic survey	$5,100/year
Repair and Maintain Final Cover	$4,700/ha/year
Reseed Vegetation	$4,700/ha/year
Mowing of Vegetation	$4,700/ha/year

Pumping of Leachate, Trade Waste Charges, Pump Replacement and Maintenance Costs

Landfills continue generating leachate even when they are closed. The rate of leachate generation is linked to the area of the landfill and the extent to which it is capped.

Using data of leachate generation from Levin Landfill, Stantec has previously estimated how much of the annual rainfall, on average, would become leachate for areas of capped and uncapped landfill. The infiltration rates are approximately 45% for an uncapped stage and 16% for a capped stage.

Comparing the present situation (84% of Stage 1A, 2 and 3 is uncapped) to future situations, and knowing the existing costs for pumping, trade waste and pump replacement and inspection costs, the costs for future stages can be assessed on a pro-rata basis by multiplying the costs by the ratio of the future landfill areas divided by the present area.

Table 43: Estimated leachate costs

Operative Stage	Overall Infiltration Rate	Leachate Pumping Costs	Trade Waste Costs	Pump Replacement and Maintenance Costs
Stage 1B, 1st Lift	0.40	[redacted]	[redacted]	[redacted]
Stage 1B, 2nd Lift	0.21			
Stage 4A	0.18			
Stage 4B	0.23			
Stage 5	0.18			
Full Landfill	0.16			

Landfill Gas Operations

The landfill gas operations incur annual fixed and variable costs. The fixed costs are related to the servicing of the landfill gas flare, power costs to run the flare and auditing costs to support the UEF application. Based on existing costs, these annual costs amount to:

- Flare maintenance and servicing [redacted]
- Power costs [redacted]
- Auditing costs [redacted]

When the landfill closes, landfill gas will continue to be generated as waste decomposes and so the flare needs to be kept running which would require ongoing maintenance, servicing and power costs. At closure, ETS charges are no longer applied to the landfill and so the auditing costs will fall away.

A further operational cost for the landfill gas infrastructure is the monitoring of the gas wells which is a resource consent requirement. Presently the cost is $21,300 for 14 gas wells. If the landfill is kept open, it is assumed that further gas wells will be developed to help improve the efficiency of the LFG collection system. The table below shows how many gas wells are anticipated when each additional stage is developed. The costs of monitoring those gas wells have been pro-rated by the present number of operational wells. The costs are also shown in the table.

Table 44: Estimated landfill gas well monitoring costs

Operative Stages	Total Number of LFG Wells	LFG Well Monitoring Costs
Stages 1A, 2 and 3	14	[redacted]
Stage 1B, 1st Lift	18	
Stage 1B, 2nd Lift	21	
Stage 4A	28	
Stage 4B	37	
Stage 5	40	

Sundry Operational Costs

Various other operational costs have been assumed for Levin Landfill in the financial models. They are summarized in the table below. These costs have been applied to all scenarios, except for the "Weighbridge Calibration" and "Workplace H & S Training" costs which are only applicable to when the Levin Landfill is assumed to be operational. These operational costs are extra to the costs of running the landfill e.g. placing, compacting and covering wastes etc.

Table 45: Sundry Operational Costs

Costs	Cost / Year	Comments
Asset Management / Maintenance / Cleaning / Alarm	[redacted]	Ongoing
Weighbridge Calibration		Only when LF is operational
Workplace H & S Training		Only when LF is operational
Annual Insurance		Ongoing
Spraying and Mowing (areas outside of landfill cells)		Ongoing
Horizons Annual Consent Fees for Levin Landfill		Reduce to 10% when LF closes
Professional Legal Fees		Reduce to 10% when LF closes
Professional Engineering Services		Reduce to 10% when LF closes
HDC Staff Overheads		Reduce to 10% when LF closes

G.6. Capital costs for developing Levin Landfill

Capital costs for landfill development are fixed, one-time expenses incurred to construct additional landfill capacity or purchase equipment, such as landfill gas infrastructure. HDC also considers that costs to review or renew resource consents required for the landfill should also be treated as capital costs.

HDC's accounting practice is to fund capital costs by way of loans that are repaid over a 25-year period. For an asset such as the Levin Landfill where capital development occurs regularly, the capital development costs in each year are added to the remaining capital loan amount and the annual principal payments are recalculated annually.

Cell Construction Costs

Construction costs have been estimated for future stages of the Levin Landfill. Recent prices have been received for tenders for the bulk earthworks and liner construction for the first lift of Stage 1B and the rates that were tendered have been applied to future stages.

For all future stages, estimates have been made for the following:

- Contractor's Preliminary and General Costs
- Site preparation
- Bulk earthworks
- Protection of slopes
- Geocomposite liner construction
- Leachate collection layer construction

Construction estimates for each stage have been increased by 10.5% to allow for fees to cover design procurement, construction management and HDC staff costs. Additionally, except for the 1st lift of Stage 1B for which tender prices have been received, all construction cost estimates have had a contingency of 20% added to them.

The table below summarises the staged construction costs. These costs are assumed to occur in the year prior to the stage being needed.

Table 46: Cell construction costs

Stage	Construction Costs
Stage 1B, 1st Lift	[redacted]
Stage 1B, 2nd Lift	
Stage 4A	
Stage 4B	
Stage 5	

Borrow Pit Remediation

The borrow pit is presently 2.7ha in extent and requires remediating by shaping it, topsoiling and grassing it. The cost of doing this is estimated to be $203,000 and is assumed to be spread over 2022 and 2023.

Temporary and Permanent Capping

The resource consent requires temporary clay capping to be placed over inactive areas of the landfill. It is assumed that temporary capping will not be recovered in the future when the area covered by temporary capping is later landfilled.

Permanent capping is required when the stage is full. It is assumed that each stage is capped in the year after it is full. Because there is extensive capping to be done on existing Stages 1A, 2 and 3, the costs of constructing that capping have been assumed to be spread over three years.

Rates for temporary and permanent capping have recently been received from a contractor for Levin Landfill. Taking account of all costs (i.e., including P&Gs, stripping costs, capping trial costs, clay purchase and placement, and capping protection and topsoiling etc), the rates amount to an all-up cost of about [redacted] for temporary capping and [redacted] for permanent capping.

The following are the assumptions used for assessing the temporary and permanent capping costs:

- Temporary capping layer is 0.2m thick
- Permanent capping is 0.7m thick with 0.1m of topsoil
- Cost of supply and placement of clay for temporary capping is [redacted]
- Cost of supply and placement of clay for permanent capping is [redacted]
- Cost of topsoil is [redacted]
- Cost of hydroseeding is [redacted]
- 10% Contractor's P&G allowance
- 3% construction supervision allowance
- 10% contingency allowance

The total cost for each stage is shown in the table below. In the financial models the costs per stage for temporary capping have been divided by the life (in years) of each stage and the annual cost applied for the stage duration.

Table 47: Temporary and Permanent Capping Costs

Stage	Temporary Capping Costs	Permanent Capping Costs
Stages 1A, 2 and 3	[redacted]	[redacted]
Stage 1B, 1st Lift		
Stage 1B, 2nd Lift		
Stage 4A		
Stage 4B		
Stage 5		

LFG Development Costs

As the landfill is developed so additional landfill gas infrastructure is required to collect landfill gas and convey it to the LFG flare.

Gas collection is assumed via vertical wells which capture the gas within a 20m radius of the well. Vertical wells are assumed to be connected to each other by means of 160mm HDPE pipes and the whole of the gas field has a 200mm diameter HDPE pipe ring main. Condensate traps are assumed at regular intervals around the ring main.

LFG infrastructure cost estimates have been increased by 10.5% to allow for fees to cover design procurement, construction management and HDC staff costs.

Gas wells are usually installed during the operation of each stage and are progressively extended in length as the waste is filled within the stage. So, to account for this the total costs of developing LFG infrastructure within each stage have been divided by the stage duration and the costs applied each year over the course of each stage.

Table 48: LFG Infrastructure Development Costs

Stage	LFG Infrastructure Development Costs
Stage 1B, 1st Lift	[redacted]
Stage 1B, 2nd Lift	
Stage 4A	
Stage 4B	
Stage 5	

Sundry Capital Costs

The following capital costs have also been assumed for the Levin Landfill. In general, cost estimates are based on past experience at the landfill. The review and renewal of resource consents are applicable to all scenarios whereas the other costs are only applicable to the scenarios where the landfill continues operating after 2021.

Table 49: Sundry Capital Costs

Description	Capital Costs	Comments
Road Repairs	[redacted]	Every 5 years, starting in 2023
Upgrade Weighbridge		In 2021
Desludging of Leachate Pond		Every 10 years, starting in 2025
Review of Resource Consent		For closed landfill scenarios, every 5 years from 2024
Review of Resource Consent		For open landfill scenarios, every 5 years from 2024
Renew Resource Consent		Spread over 2036 and 2037

Appendix H Detailed risk assessment

Key risks in delivering the overall decision-making process

Risk	Pre			Mitigation action	Post			Responsible
	L	C	Rating		L	C	Rating	
Legal challenge/judicial review of decision-making process resulting in process having to be abandoned and restarted	**P**	**H**	Amber	Process documented in Approved Procurement Plan Review of key documents by probity auditor Seek advice from Council's legal advisor where appropriate Include SCP into process, regardless of Council's preferred closure date	U	**H**	Amber	Chief Executive
Legal challenge/judicial review of decision-making process resulting in delays and additional cost to Council	**L**	**M**	Amber	Process documented in Approved Procurement Plan Review of key documents by probity auditor Seek advice from Council's legal advisor where appropriate Include SCP into process, regardless of Council's preferred closure date	**L**	**M**	Amber	Chief Executive
Landfill receives enforcement order/abatement notice during the decision-making process	**U**	**H**	Amber	Ongoing monitoring of contractor performance to achieve consent conditions Ongoing compliance by HDC with consent conditions	U	H	Amber	Water and Waste Services Manager
Decision making delayed resulting in no remaining developed airspace in landfill	**P**	**M**	Amber	Interim disposal solution available. All parties aware of key deliverable dates.	U	M	Amber	Chief Executive
Council chooses option that is not covered by procurement process	**U**	**H**	Amber	Briefing of Councillors prior to tender process, wide scope of options included in procurement.	R	H	Yellow	Chief Executive

Key procurement risks

Risk	Pre			Mitigation action	Post			Responsible
	L	C	Rating		L	C	Rating	
Preferred tenderer withdraws during decision making process	**P**	**H**	Amber	Requirement to keep tenders open Ongoing communications with tenderers during process	**P**	**H**	Amber	Project Sponsor
Political interference	**P**	**M**	Amber	Officer/External evaluation	**P**	**M**	Amber	Project Sponsor
Poor evaluation of pricing proposals	**P**	**M**	Amber	Internal peer review, scenario testing	**P**	**M**	Amber	Financial advisor
Conflict or bias in evaluation	**U**	**L**	Yellow	Conflict of interest declarations	**U**	**L**	Yellow	Probity Auditor

Key risks during the operational phase (WHILE LANDFILL OPEN)

Risk	Pre			Mitigation action	Post			Responsible
	L	C	Rating		L	C	Rating	
Unworkable or commercially unviable Resource Consent conditions after 2025	**P**	**E**	Red	Clear communications of risk, contingency plan if Option 3 chosen. Scenario modelling to include more onerous consent conditions and associated cost for Option 3	**P**	**E**	Red	Chief Executive
Successful contractor lacks the capability or capacity to deliver on the contract requirements, resulting in an enforcement order/abatement notice	**P**	**H**	Amber	Robust tender evaluation and reference checks Regular monitoring of contractor performance, action taken if non-compliances occur	**P**	**M**	Amber	Evaluation Panel Engineer to Contract
Successful contractor becomes insolvent	**P**	**H**	Amber	References, financial checks, parent company guarantees if required	**P**	**H**	Amber	Evaluation Panel
HDC contract management results in significant non-compliances with Resource Consent conditions	**L**	**H**	Amber	Provide sufficient resourcing to have robust contract management Outsource specialty tasks where there is insufficient capacity or capability in-house	**L**	**H**	Amber	Engineer to Contract, Chief Executive
Changes to regulations result in landfill costs escalating beyond worst case scenario in Business Case	**U**	**H**	Amber	Ongoing monitoring of future legislation changes and submission on proposed changes Wide range of scenarios covered in Business Case	**U**	**H**	Amber	Water and Waste Services Manager
Changes to regulations make landfill operation no longer feasible	**R**	**E**	Amber	Ongoing monitoring of future legislation changes and submission on proposed changes	**U**	**H**	Amber	Water and Waste Services Manager
Transition to new supplier results in temporary reduction in service levels	**P**	**L**	Yellow	Detailed Transition Plan prepared, and sufficient resource allocated to implement it	**P**	L	Yellow	Water and Waste Services Manager

Key risks during the operational phase (AFTER LANDFILL CLOSES)

Risk	Pre			Mitigation action	Post			Responsible
	L	C	Rating		L	C	Rating	
[redacted]	P	H	Amber	[redacted]	U	H	Amber	[redacted]
Successful contractor becomes insolvent	U	H	Yellow	References, financial checks, parent company guarantees if required	U	H	Yellow	Evaluation Panel
Successful contractor lacks the capability or capacity to deliver on the contract requirements	U	M	Yellow	Robust tender evaluation and reference checks Regular monitoring of contractor performance, action taken if non-compliances occur	U	M	Yellow	Evaluation Panel Engineer to Contract
Transition to new supplier results in temporary reduction in service levels	P	L	Yellow	Detailed Transition Plan prepared, and sufficient resource allocated to implement it	P	L	Yellow	Water and Waste Services Manager