NTRLBU | Nelson Tasman Regional Landfill Business Unit

Activity Management Plan 2024– 2034

Mahere Ruapara 2024 – 2034

tasman district council

Nelson City Council
te kaunihera o whakatū

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Quality Assurance Statement

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Cover Photos:
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i. The Purpose of the Plan

The Nelson-Tasman Regional Landfill Business Unit (NTRLBU) was established in 2017. In the Deed of Agreement, dated 13 April 2017, the NTRLBU has been delegated control of all activities and assets used for Gully 1 of the York Valley Landfill and those used for the Eves Valley Landfill, and for the operational control of these areas within both landfills.

The Terms of Reference for the NTRLBU requires that the landfills be operated on a regional basis in accordance with the NTRLBU Activity (Asset) Management Plan (AMP) amongst other plans.

This Landfill AMP summarises the management, financial, engineering, and technical practices to ensure that the required level of service is provided effectively for the landfill activity.

The purpose of this AMP is to ensure that landfill assets are operated and maintained so that they deliver the required level of service to existing and future customers in a sustainable and cost-effective manner.

ii. Asset Description

The Nelson Tasman Regional Landfill Business Unit (NTRLBU) manages the York Valley (currently operating) and Eves Valley Landfill (currently closed to landfilling) assets, which have a replacement value of $13.3M (excluding value of land and value of landfill gas flare, pipe network to Nelson Hospital and boiler plant at the hospital), on behalf of the Nelson City and Tasman District Councils (the Councils). The value of depreciation is directly related to the replacement cost and useful life of assets.

Should upgrades require funding beyond funds available within the closed account, funds are borrowed from the two Councils, as an internal loan on application to and with the approval of both Councils.

Operational activities are funded from landfill charges.

iii. Key Issues

The responsibility for the management of the York Valley and Eves Valley Landfills lies with the NTRLBU. The Nelson-Tasman area is well positioned in this regard with two designated landfill sites located in the region.

Over the next 10 years the landfill activity faces a variety of issues and challenges, as outlined below.

- York Valley capacity will be exceeded on the current design resulting in the requirement for a consent for an extension to landfilling at York Valley or for a new landfill to be consented, constructed, and commissioned either at Eves Valley or a new location.
- Options may be available for extending the life of York Valley Gully 1 and these options need to be investigated and, if possible, implemented.
- Changing legislation and compliance requirements including:
    - The Waste Minimisation Act 2008 established a national waste disposal levy through which central government can influence waste minimisation initiatives. The national waste disposal levy for municipal solid waste is to be increased from the present $50 per tonne to $60 per tonne by July 2024. The costs will be passed on to customers.

  - The Emissions Trading Scheme (ETS) will continue to have a significant impact on solid waste management because the cost of carbon is linked to local commodity markets. This has resulted in the cost of units increasing from less than $2 five years ago to being over $60 per unit.
  - The implications for the NTRLBU are that the ETS is likely to increase the cost of landfill operations over time. This additional cost will be met by increasing the base cost of each tonne of waste to landfill. As for the national waste disposal levy, costs associated with the ETS will also be passed on to customers. However, each year NTRLBU applies for, and is granted, a unique emissions factor that reduces the amount of ETS charges, as discussed in Section 3.1.6, to offset the increase in base cost.
  - The Climate Change Response Act 2002- The purpose of the Climate Change Response Act and Emission Response Plan (ERP) 2022 is to provide a framework by which New Zealand can develop and implement clear and stable climate change policies that contribute to the global effort under the Paris Agreement to limit the global average temperature increase to 1.5 degrees. The implications for the NTRLBU are that the ERP requires the diversion of organic waste from landfill, increased landfill gas capture and a potential national waste licensing scheme and data capture.

- Growing demand will lead to increased usage and expansion of waste services, increasing demand on landfill disposal services:
  - Increasing population, visitors and industry will increase demand for services.
  - The impacts of climate change could increase the demand for investigating and introducing alternative ways of dealing with waste materials other than landfilling (this is a matter for Councils to consider, rather than for the NTRLBU).
- Increasing customer expectations:
  - Improved communication and consultation may be required, which might include carrying out landfill customer surveys.
  - Increased external communication and performance information availability.
- Operational challenges at York Valley Landfill include:
  - Safety at the tipping face, which is proposed to be dealt with by constructing a transfer facility on site;
  - Fire management, with the causes of fires mostly being related to disposal of batteries in the landfill;
  - Improvements are needed for dealing with clean stormwater through cut-off drains above the landfill operational areas;
  - Maximise compaction of waste;
  - The truck wash and need to replace the existing facility;
  - Covering of waste that is proposed to be dealt with by using tarpaulins, which will reduce the need for cover material to be brought into the landfill and will help deal with seagulls;

- The presence of cats is an issue that could be dealt with through having a cull and ongoing pest management programme;
- Water safety around stormwater ponds;
- Site access management to be improved.

For Eves Valley Landfill the following current issues exist:

- The leachate rising main, which has inadequate capacity and pressure rating, will need replacing in the future, but requires interim measures to cope with existing issues;
- The sump collecting flow from the under-liner subsoil drain shows levels of contamination, so requiring the collected groundwater to be treated as leachate, whilst its location has potential to affect the Landfill Stream;
- The cell phone coverage is poor on-site and is a risk for people working alone and remotely; it requires a booster;
- There is a need to improve the capture of data from the SCADA system to make it more accessible;
- Data from the flare and new weighbridge needs to be included into the same online platform being used by NTRLBU;
- Site access management is to be improved;
- H&S procedures need to include the risk of working alone;
- There are water safety issues around leachate pond;
- Some power supply cables are above ground, secured to internal fence lines and are not adequately protected.

The focus of the landfill activity over the next few years will be to implement this Landfill Activity Management Plan.

iv. Levels of Service

The NTRLBU is responsible for ensuring that an accessible and efficient landfill facility is provided for existing and future customers in a sustainable and cost-effective manner.

Levels of service are driven by customer expectations, technical constraints, compliance with legislative requirements and NTRLBU's strategic goals and objectives.

Customer expectations relating to the landfill are:

- That the landfill operations comply with legislation and the requirements of the resource consents;
- That planning and development of the landfills be carried out in a timely manner to ensure continuity of the disposal service;
- That financing of landfill developments, operations and aftercare be done in an equitable way across generations.

The landfill activity contributes to community outcomes in several ways:

- All waste collected by the Councils' operators or delivered to the landfill is disposed of in an appropriate and sustainable manner through activities managed to minimise the impact on the receiving environment;
- Landfill activities are operated in a safe and efficient manner;
- Planning is made for future growth and provision of disposal services that communities are satisfied with.

Enhanced customer engagement will ensure that feedback on the landfill activity informs our planning and activities.

Performance measures have been set in line with the following strategic themes that relate to community outcomes of health, environment, and education:

- Impacts:
    - All landfill activities, facilities and services comply with resource consent conditions, site management plans and appropriate legislative requirements with nil non-compliances;
    - Adequate landfill space is available (a minimum of five years consented and two years developed) to ensure future sustainability of solid waste disposal;
- Costs:
    - Cost effective and sustainable landfill services are available that require no rates and are 100% user pays (gate fees include a local waste levy that subsidises other waste management activities e.g., waste management and minimisation activities undertaken by the Councils, so reducing rates, but there are no rates for landfill activities, as such);
- Demand:
    - NTRLBU operational contracts require minimum standards of waste compaction (> 0.8t/m^3 rising to 0.9 t/m^3 in 2024) to maximise landfill capacity, and the compactor unit is unavailable for less than 2 days per year;
    - Landfills are open at convenient times and 100% of the specified opening hours;
- Health and Safety:
    - Landfill activity provided in a safe manner and pose no health and safety risks to contractors and nearby residents with zero complaints and incidents being recorded;
    - The Landfill is regarded as being a "good neighbour", and there are no formal complaints about the landfill activities from neighbours;
    - Operational health and safety is at a high standard with improvements made iteratively, and borne out through external audit reviews with performance being at or above agreed levels;
- Quality
    - Good quality customer service with a rating of "highly satisfied";

- 90% of inquiries received through the Councils' service request system are acknowledged within 24 hours;

- Environment
  - Odour, litter and stormwater management plans are followed with the improvement observation – incident ratio being greater than 10, and no formal odour complaints are received by neighbours, as confirmed by an independent odour assessor.

v. Future Demand

The total tonnage of residual waste disposed of at municipal landfills in the Nelson-Tasman area tended to trend downwards for the period from 2005/2006 through to 2011/2012. For the next five years it remained constant aside from a small increase in 2013/2014. From 2017 waste quantities have generally increased with a slight reduction in 2018/19 and again in 2022/23. These trends are shown below.

From 2018 all waste in the region has been disposed of at York Valley Landfill. In that year there was also a significant increase in waste quantities with most of it being in the form of special waste (HAIL, Residential NESCS (National Environmental Standard for Assessing and Managing Contaminants in Soil) and Nelson WWTP sludge). Total waste quantities in 2022/23 were 78,000 tonnes.

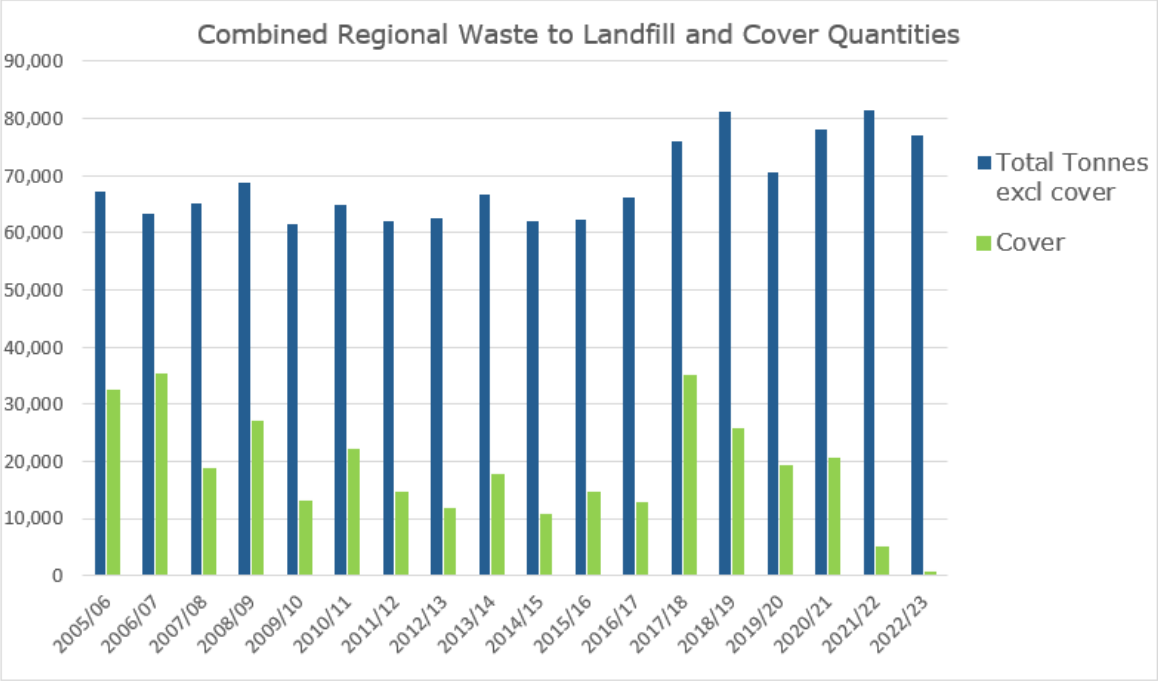

Figure 0-1: Graph of Residual Waste Disposed to Landfill

Analyses of Nelson-Tasman trends suggest solid waste quantities will continue to grow moderately. Reasons for this include population growth and a reduction in the range of products that can be recycled (e.g., some plastics are no longer accepted for recycling), and limited new waste minimisation initiatives in the region. This trend is expected to continue unless action is taken to effect behavioural change in the community or new diversion techniques are introduced, either at a local or national level.

For landfill tonnages to start trending downwards again would most likely require continued intervention by the Councils, however, the effects of the Covid-19 pandemic

are likely to continue to stifle economic growth in the short term, along with the economic recession and it is possible that a further reduction in tonnages may be evident this financial year. Further reversal may be achieved if the Government's priority product stewardship schemes are adopted, which targets wastes such as tyres, batteries, refrigerants and agrichemicals, or new proposed waste legislation is implemented.

Both Councils have stated in the current JWMMP intentions to reduce the amount of solid waste being disposed of to landfill by 10% by year 2030. Based on waste quantities at the time the JWMMP was prepared (~74,000 tonnes), this would imply a reduction down to 66,600 tonnes per year by 2030 which would require significant intervention, either at a local or national level. The New Zealand Waste Strategy targets a reduction in the amount of material that needs final disposal, by 30 per cent per person.

For the purposes of future planning a conservative assessment has been undertaken. This assumes a waste growth in line with current waste per capita tonnages and medium population growth projections.

While introduction of new waste minimisation initiatives to divert waste away from landfill are presently matters for the Councils to consider as part of their JWMMP review and not the NTRLBU, the NTRLBU may have a role in diverting material at the landfill. Any new initiatives also have an impact on the demand for landfill capacity and the life of NTRLBU managed assets.

The potential implementation of a new facility / landfill to accept HAIL material in the next two years will reduce the projected tonnages of waste disposed of at YVL as shown in the figure below.

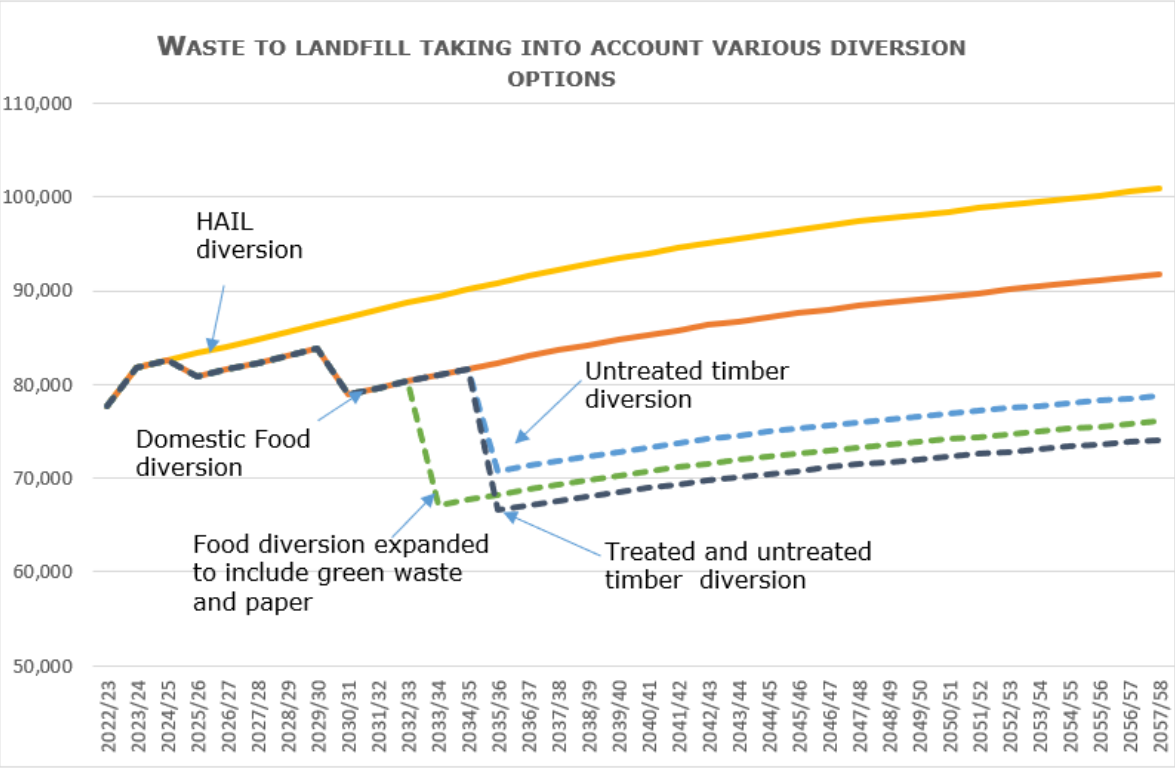

Figure 0-2: Potential impact of future waste diversion on landfill tonnages.

The proposed introduction of domestic food collections and a potential ban of organic material for which an alternative exists by 2030 also reduces this further as shown by the red line. If a regional facility(ies) for food and green waste processing (orange

dotted line) is established or a new facility provided for the diversion of treated (dark blue dotted line) or untreated timber (light blue dotted line) each of these scenarios has a potential impact on the tonnes of residual waste disposed of to landfill annually and the life of the landfill asset.

For the purpose of this AMP future landfill capacity has been assessed on the basis that only HAIL material will be diverted from York Valley Landfill within two to three years and domestic food waste diverted by 2030.

vi. Lifecycle Management Plan

The assets of the landfill activity and those for which the NTRLBU is responsible are the York Valley and Eves Valley Landfills.

The lifecycle of a landfill consists of the following broad phases, which can overlap: planning, conceptual design, resource consenting, detailed design, construction, operations, closure, aftercare and end use. Different stages of the same landfill can be at different phases. For instance, Stage 2 of the Eves Valley Landfill has been closed, whilst Stage 3 is at the start of the planning and conceptual design stages. Gully 1 of York Valley Landfill is in the operations stage.

Landfills are assets that consist of various asset components (e.g., road pavements, pipes, service buildings etc.). Each of these asset components have finite lives and so each have their own asset lifecycle. The York Valley and Eves Valley Landfills do not have identical asset components. For instance, there is no hazardous waste store at York Valley Landfill and Eves Valley Landfill does not have a wheel wash or a kiosk.

For a landfill there are two "levels" of asset lifecycle management. At the higher level there is the landfill facility, taken as a whole and at the lower level there are the physical asset components that make up the landfill asset.

The asset lifecycle management at these two levels is different. The financial management of the landfill asset is undertaken by carrying out a full cost accounting (FCA) exercise that takes account of all the capital and operating costs that will be incurred over the whole life of the landfill, (i.e., from planning through to end use). FCA is a dynamic process that needs to be able to respond to changes over the lifetime of a landfill project. The FCA model should be revised on a regular basis to reflect new and better information.

FCA models have been used to estimate costs for concept designs done for Stages 2 and 3 of Eves Valley Landfill, as well as for Gullies 2 and 3, and the "Spur Area" of York Valley Landfill.

There is between approximately 12 and 20 years of available landfill capacity in Gully 1 at York Valley Landfill, as of the end of June 2023, depending on the compaction density and annual waste tonnage. Note, however, that the resource consent for Gully 1 of York Valley Landfill expires at the end of 2034. So, to use Gully 1 to its fullest extent will require a new resource consent, as well as a combination of reduced waste tonnages, and high waste compaction densities to limit landfill capacity usage to a minimum.

The asset components vary in age and are recorded in separate valuation reports. The level of detail is limited, and further work is required to identify the condition of individual asset components and their remaining lives. This matter is included in the Improvement Plan.

The NTRLBU contracts out the day-to-day operation and maintenance of landfill assets and waste disposal services with the contracts being let on a combination of prescriptive and performance basis. There is a single contract, which covers the

activities at both landfills, and this will terminate in 2024, with procurement activities underway in 2023 for a 5+3+1+1 contract.

The NTRLBU is yet to establish a Disposal Plan for any of the asset components. This will be developed by 2025/26.

vii. Risk Management Plan

The risk management framework adopted for this asset management plan is consistent with the AS ISO 31000: 2018 Risk Management - Guidelines standard.

An assessment of risks at an operational level has been done for the Landfill Activity with three of the identified risks having a rating of "High" following implementation of mitigation control/treatment, as noted in Table 0-1, together with the proposed treatment.

Table 0-1: Risk Priority Rating Matrix for the Landfill Activity (Semi-Quantitative)

Risk #	Risk Title	Control / Treatment	Treatment Description	Likelihood	Severity	Rating
R00524	Landfill: Increase in ETS charges	MC00790	Inform public of changes; offer alternative solutions for waste minimization.	Likely	Moderate	HIGH
R00525	Landfill: Increase in National Waste levy disposal charges	MC00791	Inform public of changes; offer alternative solutions from waste minimization.	Likely	Moderate	HIGH
R00529	Landfill: Fire in the landfill	MC00795	Follow LMP requirements; - Train operators to deal with fire emergencies; - Install thermal imaging cameras; - Reduce batteries sent to landfill through Recycling Depots / Bins. - Install fire tanks and fire appliance on site.	Likely	Moderate	HIGH

viii. Financial Summary

The landfill activity is funded from gate charges and the sale of gas.

A significant component of the gate charges (34%) is used to raise a local waste disposal levy which funds waste management and minimisation initiatives of each Council that are not fully funded directly from non-landfill activity user charges.

The local waste disposal levy has been set at a value of $3,000,000 for the 2024/25 financial year for each Council, increasing by $300,000 per Council in the following years. The value of the local waste disposal levy will be reviewed annually as part of the Annual Plan processes of the Councils in liaison with the Joint Committee of the NTRLBU.

The landfill activity is funded from landfill charges. Table 0-2 summarises the projected operations and maintenance costs for the next ten years (2023/24 costs included for comparison). Similarly, Table 0-3 summarises the projected capital costs. Total operating costs for 2024/25 to 2033/34 are approximately $225 million and capital costs for the same period are approximately $66 million.

Table 0-2: Landfill Operating Costs

Landfill operation and maintenance costs for the next 10 years are summarised below:

Costs (thousands)	2023/24 (this year)	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34
Staff & Admin Expenses	$616	$653	$653	$653	$653	$653	$653	$653	$653	$653	$653
Interest	$524	$1,016	$1,069	$1,459	$1,736	$1,644	$1,616	$1,919	$2,663	$3,339	$3,434
YVLF Expenses	$8,947	$11,023	$11,083	$11,408	$12,828	$12,892	$12,957	$13,017	$13,084	$13,150	$15,361
EVLF Expenses	$3	$420	$681	$691	$701	$701	$701	$701	$701	$701	$701
Local Disposal Levies	$6,000	$6,000	$6,600	$6,600	$6,600	$6,600	$6,600	$6,600	$6,600	$6,600	$6,600
Total	$16,090	$19,112	$20,086	$20,811	$22,518	$22,490	$22,527	$22,890	$23,701	$24,443	$26,749

Table 0-3: Capital Costs

Capital costs for renewals and upgrades of the landfills over the next ten years are summarised below:

Costs (thousands)	2023/24 (this year)	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34
Renewals	$1,100	$300	$-	$-	$-	$145	$500	$-	$-	$-	$-
Upgrades	$3,850	$4,725	$5,510	$12,925	$425	$-	$2,500	$11,350	$17,500	$8,750	$1,100
Un-programmed capital	$4,065	$65	$65	$65	$65	$65	$65	$65	$65	$65	$65
Total	$9,015	$5,090	$5,575	$12,990	$490	$210	$3,065	$11,415	$17,565	$8,815	$1,165

The renewal plan over the next ten years allows for approximately $945,000 of capital expenditure, with a third occurring in year 2024/25, and half of it occurring in 2029/30. Access road development at Eves Valley accounts for $300,000 with overhauling of the landfill gas generator motors accounting for a further $500,000.

Figure 0-3 shows the projected capital expenditure for the landfills for the following ten years. The following comments are made:

- Almost half of the capital expenditure in year 2024/25 is for developing a transfer facility at York Valley Landfill.
- In 2025/26 capital expenditure is evenly spread with four areas (i.e., YVLF stormwater, YVLF gas reuse, YVLF hospital gas generation, and shredding at YVLF) each being allocated $1 million or slightly over.
- In 2026/27 the bulk of the capital expenditure ($12 million) is allocated to gas reuse at York Valley Landfill.
- Consenting of a new regional landfill accounts for $2.6 million between years 2024/25 and 2027/28. This is increased to $41 million between years 2029/30 and 2033/34 when development of the next landfill is expected to occur, accounting for almost all the capital expenditure between those years.

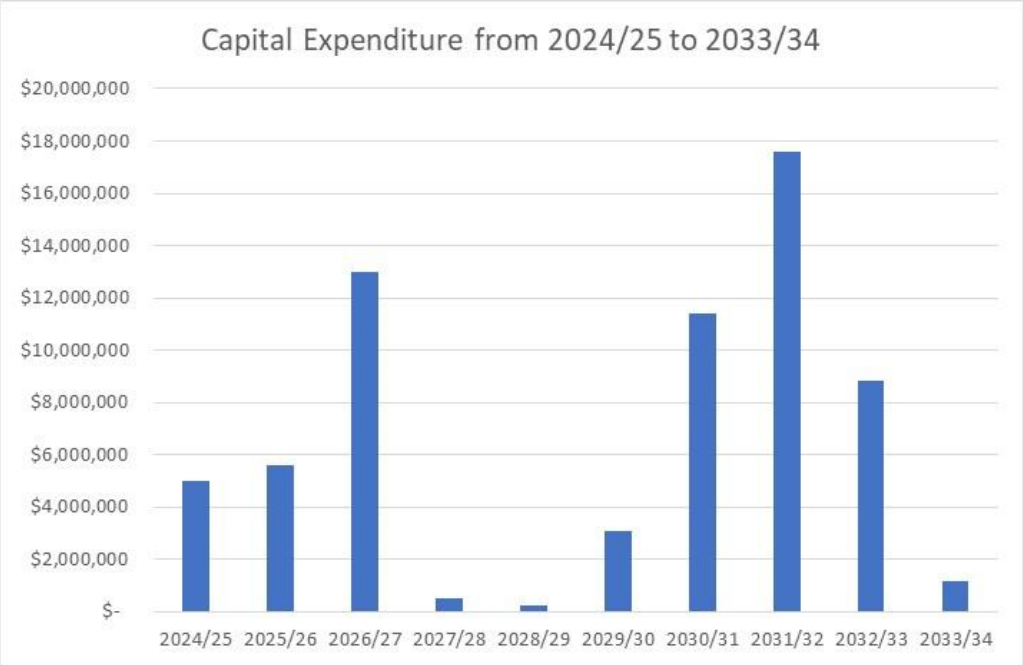

Figure 0-3: Capital Expenditure from 2024/25 to 2033/34.

ix. Asset Management Practices

The AM practices adopted by the NTRLBU are aligned with those which are used by Nelson City Council.

Asset information for both York Valley and Eves Valley Landfills have been collated in an Excel spreadsheet for accounting purposes. All landfill assets in the assets register should be reviewed and audited, including in-field inspections to assess conditions, and a check needs to be done to ensure that the nominal working lives assigned to different classes of assets are the same for each landfill. These activities have been included in the Improvement Plan.

At a technical and operational level, the NTRLBU has three staff who also manage the Nelson Regional Sewerage Business Unit: General Manager, Operations Manager and Contracts and Sustainability Engineer. From time to time, professional service providers will be appointed, generally through a tender process, to assist with the landfill capital works programme, support the activity management practice and the management of the operations and maintenance contracts.

It is clear from the work profile over the next ten years that a significant amount of capital development work will be required on an ongoing basis, and it is intended that NTRLBU will take on additional staff to undertake these activities. The intent is that contracted staff be engaged as required, rather than continually.

The NTRLBU procured a 5-year operations contract (No. 3912) in December 2018 with Downer that covers operational and maintenance activities at both the York Valley and Eves Valley Landfills. This contract terminates in 2024 and work is underway to procure a new 5+3+1+1 contract for the future.

Section 17A of the Local Government Act requires Councils to review the cost effectiveness of their current arrangements for providing local infrastructure, services, and regulatory functions at regular intervals. Reviews must be undertaken when service levels are significantly changed, before current contracts expire, and in any case not more than six years after the last review. A review of the delivery of landfill services has been undertaken recently, the outcome being a new service contract to be procured for 2024.

x. Monitoring and Improvement Programme

Table 0-4 below sets out the actions to be undertaken to improve the management of the Landfill assets.

Table 0-4: Actions to be undertaken for improvement

	Actions	**Resource Requirements**	**Progress**
AP-1	Include Eves Valley Landfill assets in Infor (NCC's Asset Management System) and valuation model, and check that the valuation model includes all assets (e.g., upgraded access road at YVLF; new stream crossing and weighbridge at EVLF; acquired LFG assets at YVLF).	Internal and consultant	Complete by FY 2025/26
AP-2	Review and audit all landfill assets in the assets register, including in-field inspections to assess conditions.	Internal and consultant	Complete by FY 2025/26
AP-3	Check to ensure that the nominal working lives assigned to different classes of assets are the same for each landfill, where appropriate. There may be valid reasons for varying nominal working lives.	Internal and consultant	Complete by FY 2025/26
AP-4	Review of clean stormwater management at York Valley Landfill and develop long term strategy	Internal and consultant	Funding allowed for in capital budget for 2024/25 through to 2025/26.
AP-5	Develop an Asset Disposal Plan	Internal and consultant	Complete by FY 2025/26

	Actions	Resource Requirements	Progress
AP-6	Investigate the feasibility of developing special wastes landfill.	Internal and consultant	Complete by FY 2023/24
AP-7	Amend the Deed of Agreement and get Commerce Commission approval to do so.	Internal and consultant	Complete by end of FY 2023/24
AP-8	Obtain resource consents for Gullies 2 and 3 of York Valley Landfill	Internal and consultant	Complete by end of FY 2025/26
AP-9	Trial the use of alternative waste cover systems, e.g., tarpaulins.	Internal and contractor	Complete by end of FY 2023/2024
AP-10	Undertake monitoring of cats and other vermin at York valley Landfill.	Internal and contractor	Complete by end of FY 2023/24
AP-11	Improve the collection of groundwater from the subsoil beneath the EVLF base.	Internal and consultant	Complete by end of FY 2023/24
AP-12	Investigate standby power requirements for a generator at YVLF.	Internal and consultant	Complete by end of FY 2023/24
AP-13	Investigate methods of measuring and calculating the carbon footprint of the landfills that reflects actual improvements made and supports Councils Reporting requirements	Internal and consultant	Complete by end of FY 2024/25

1. Introduction (Why we need a Plan)

The Nelson-Tasman Regional Landfill Business Unit (NTRLBU) was established in 2017. In terms of the Deed of Agreement, dated 13 April 2017, the NTRLBU has been delegated control of all activities and assets used for Gully 1 of the York Valley Landfill, and those used for the Eves Valley Landfill, and for the operational control of these areas within both landfills.

The terms of reference for the NTRLBU requires that the landfills be operated on a regional basis in accordance with the NTRLBU Activity Management Plan (AMP), amongst other plans.

This Landfill AMP combines the management, financial, engineering, and technical practices to ensure that the required level of service is provided effectively for the Landfill activity.

Note that each council will continue to prepare a Solid Waste Activity Management Plan encompassing all other activities of solid waste management that are not delegated to the NTRLBU.

The format of this AMP is largely based on that prescribed for Nelson City Council Activity Management Plans.

1.1. Background

1.1.1. Objective of Asset Management Planning

The overall objective of asset management planning is to:

Deliver the required level of service to existing and future customers in a sustainable and cost-effective manner.

1.1.2. Purpose of Plan

The purpose of this Landfill AMP is to ensure that assets are operated and maintained, so that they provide the required level of service for present and future customers in a sustainable and cost-effective manner.

The Landfill AMP supports the purpose by:

- Demonstrating responsible, sustainable management and operation of landfill assets which are significant, strategic and valuable assets belonging to Nelson City and Tasman District;
- Identifying funding requirements;
- Demonstrating linkages to stated levels of service.

1.1.3. Interpretation of Terms

For this Landfill AMP, waste includes material disposed of to landfill and diverted material includes materials handled by current council and non-council services (e.g., recyclables such as glass, paper, cardboard, plastics, steel and aluminium cans, and garden organics). This interpretation is consistent with the interpretation given in the Waste Minimisation Act 2008 (WMA) and it enables a description of the collection, recycling, recovery, treatment, and disposal services provided within the region.

For reference, the interpretations given in the WMA for waste, diverted material, disposal facility and household waste are:

Waste means

(a) anything disposed of or discarded; and

(b) includes a type of waste that is defined by its composition or source (for example, organic waste, electronic waste, or construction and demolition waste); and

(c) to avoid doubt, includes any component or element of diverted material, if the component or element is disposed of or discarded.

Cover material means earthen material placed on the surface of the active face of a municipal solid waste landfill at the end of each operating day to control vectors, fires, odours, blowing litter and scavenging.

Diverted material means anything that is no longer required for its original purpose and, but for commercial or other waste minimisation activities, would be disposed of or discarded.

Disposal facility means:

(a) a facility including a landfill, -

(i) at which waste is disposed of; and

(ii) at which the waste disposed of includes household waste; and

(iii) that operates, at least in part, as a business to dispose of waste; and

(b) any other facility or class of facility at which waste is disposed of that is prescribed as a disposal facility.

Household waste means waste from a household that is not entirely from construction, renovation, or demolition of the house.

Both the York Valley Landfill and Eves Valley Landfill are disposal facilities, as defined by the WMA, and for the purpose of this Landfill AMP, they are classed as **municipal solid waste landfills,** which accept **municipal solid waste (MSW)**.

The WasteMINZ Technical Guidelines for Disposal to Land (2022) define these terms as follows:

Municipal solid waste (MSW) means any non-hazardous, solid waste from household, commercial and/or industrial sources. It includes putrescible waste, garden waste, biosolids, and clinical and related waste sterilised to a standard acceptable to the Ministry of Health. All municipal solid waste should have an angle of repose of greater than five degrees (5°) and have no free liquid component.

It is recognised that municipal solid waste is likely to contain a small proportion of hazardous waste from households and small commercial premises that standard waste screening procedures will not detect. However, this quantity should not generally exceed 200 ml/tonne or 200 g/tonne.

Municipal solid waste landfill means any Class 1 landfill that accepts municipal solid waste.

1.1.4. Relationship with other Documents

This Landfill AMP is a key document for the NTRLBU's planning processes.

Other documents and legislation that either informs this Landfill AMP, or are important for managing and planning the landfill activity include:

- Deed of Agreement [(1)] for the Nelson-Tasman Regional Landfill Business Unit, April 2017

- Terms of Reference (1) for the Nelson-Tasman Regional Landfill Business Unit, May 2019
- Annual Business Plan (2) (the latest version is the 2023/2024 Plan)
- York Valley Landfill Management Plan (3), July 2023
- Eves Valley Landfill Management Plan (3), October 2021
- York Valley Landfill Annual Monitoring Report (2) - July 2021 to June 2022, dated November 2022
- Eves Valley Landfill Annual Report (2) – September 2021 to August 2022, dated October 2022
- Contract No. 3912 (4): York Valley and Eves Valley Landfills Operation and Maintenance, December 2018
- Te rautaki para, Waste Strategy 2023
- Waste Minimisation Act (WMA) 2008
- Emissions Trading Scheme
- Zero Carbon Amendment Act 2019.

Notes:

(1) A review of the Deed of Agreement and Terms of Reference commenced in December 2021 and is currently ongoing.

(2) The business plan and landfill monitoring reports are updated annually and so the latest version of those reports should be referenced.

(3) Landfill management plans need to be updated periodically (e.g., every three to five years) to reflect good solid waste management practice and consider changes that may have occurred in the operating environment.

(4) The Operation and Maintenance Contract may change from time to time, as contract variations are introduced. When referring to the Contract Document ensure that the latest version is being referenced.

1.1.5. Planning Inputs, Controls, and Implementation of the Landfill Activity

The Landfill AMP and each Council's LTPs also form part of each Council's statutory planning requirements for solid waste management and minimisation under the WMA.

The specific planning inputs into the Landfill AMP, and the way it is controlled and implemented are diagrammatically represented below in Figure 1 below.

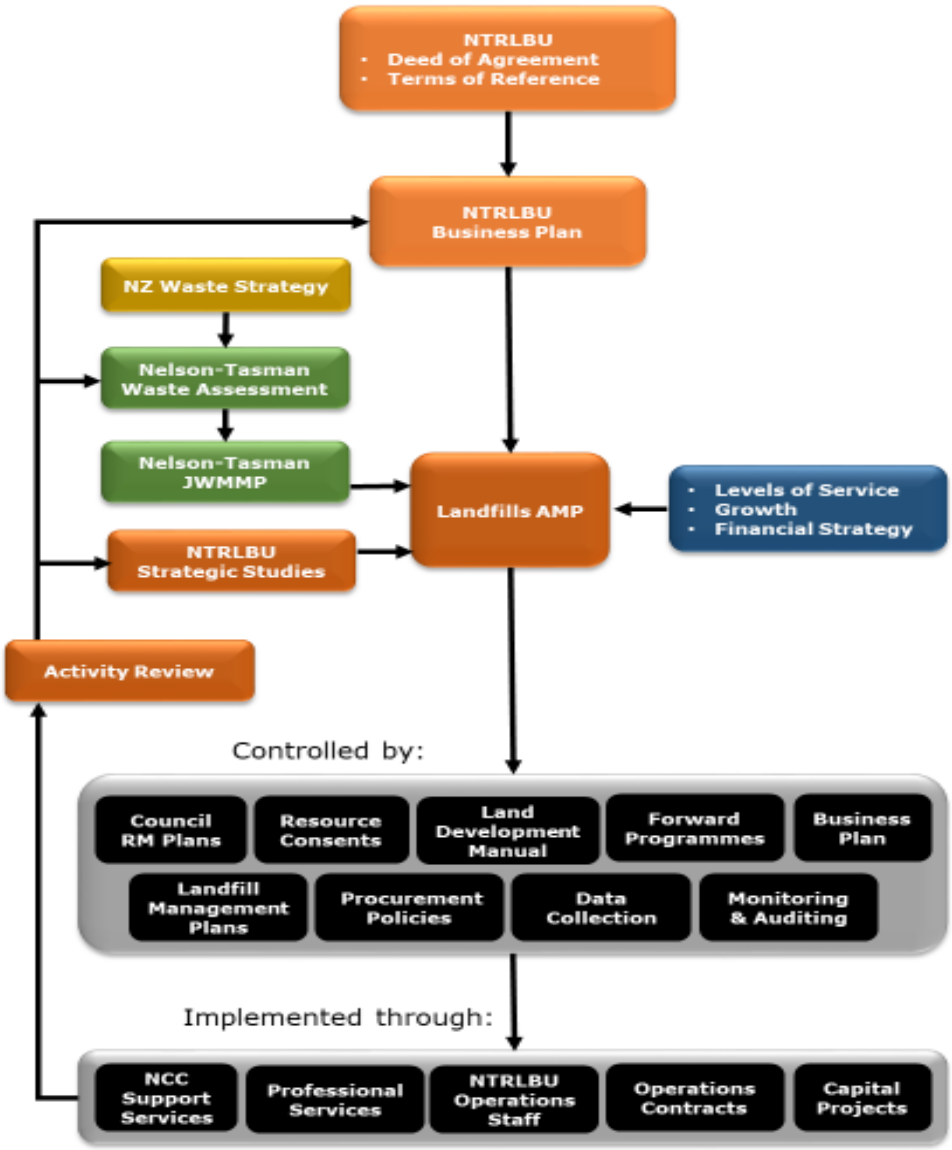

Figure 1-1: Specific planning inputs for the Landfill AMP, with controls and manner of implementation.

1.1.6. Service Delivery Review

Section 17A of the Local Government Act 2002 requires all local authorities to review the cost-effectiveness of its current arrangements for delivering good quality local infrastructure, local public services, and performance of regulatory functions at least every six years.

This was done in 2022 and resulted in the decision to re tender the Landfills Operation and Maintenance Contract in 2024.

1.1.7. Infrastructure Assets Included in the Plan

The Deed of Agreement sets out how the Councils' landfill assets are to be used:

- From 1 July 2017 the York Valley Landfill is the primary regional landfill facility until Gully 1 is at capacity. Depending on the quantity of waste disposed at the landfill, it has an estimated remaining life of between 12 and 20 years from June 2023, depending on annual waste tonnages and compaction densities. This

gives an estimated closure date of between June 2035 and 2043, noting, however, that the resource consents expire before then in December 2034. Note that the remaining life is dependent on several factors, which are discussed in more detail in section 4.3.2 of this Landfills AMP.

- Stage 2 of the Eves Valley Landfill is to be consented to accept up to one years' waste from the Nelson-Tasman region, in case of unforeseen temporary closure of the York Valley Landfill. The renewal of resource consents for Eves Valley Landfill has not yet been finalised.
- Stage 3 of the Eves Valley Landfill is to be retained for future use as a potential regional landfill facility.

The Deed of Agreement also states that the land and assets of both the York Valley and Eves Valley Landfills are to remain owned separately by each Council. However, the control of all activities and assets used for Gully 1 of the York Valley Landfill and Eves Valley Landfill, and operational control within the areas of both landfills has been delegated to the NTRLBU.

In 2022 Nelson City Council purchased the landfill gas treatment and conditioning plant, gas pipeline and boiler plant from Pioneer Energy, together with existing supply and service agreements. These assets are managed by the NTRLBU and are included in this Landfills AMP.

York Valley Landfill

The York Valley Landfill is in Bishopdale, approximately 4km south of Nelson City centre, and is accessed off Market Road. It receives municipal solid waste from transfer stations, resource recovery centres and approved commercial operators.

Figure 1-2: York Valley Landfill Location

Gully 1 is currently in use and is consented to accept solid waste until 2034. Gullies 2, 3 and 4 are potential land for future development and are designated for landfill activity but their use is not anticipated by the Deed of Agreement.

The landfill is a valley type landfill and occupies approximately 4ha. The site has been filled in 3m lifts across the site progressing up the valley sides in a controlled manner.

The waste disposal area has been built up around seven stone chimney drains connected to a leachate collection system, which is piped into the city sewer system.

The chimney drains which are extended as the landfill is built up serve as ducts to vent landfill gas from the landfill. The chimney drains were capped in 1998 and connected to a gas extraction system.

The introduction of the NZ Emissions Trading Scheme (NZ ETS) regulations under the Climate Change and Control Act resulted in the Nelson City Council (as consent holder) being liable for New Zealand Emission Units (NZU's) from 2013. Each year the consent holder is required to report on landfill activities and is required to surrender NZU's equivalent to the emissions assessed for the landfill activity, based on the tonnage of waste entering the landfill.

The NTRLBU may, however, apply for a unique emissions factor (UEF) under the Climate Change (Waste) Amendment Regulations 2015 that allows for a reduction in the amount of NZUs to be surrendered for landfills that have gas collection and destruction systems. An application submitted in January 2023 for a UEF was successful in achieving a UEF of 0.091, which is the lowest UEF that can be achieved and is based on a collection and destruction efficiency of 90%. The UEF obtained in the previous year was 0.518 which was based on a collection and destruction efficiency of 56.5%.

The extracted landfill gas is de-watered and piped to Nelson Hospital for steam generation, which supplies 90% of its heating needs.

Based on the most recent available waste disposal information and future estimates, York Valley Landfill has between 12 and 20 years of airspace available, as discussed further in section 4.3.2.

The available airspace is based on the landfill profile as depicted in **Error! R eference source not found.**. The latest survey in July 2023 showed that there is approximately 1,300,000 m^3 of airspace capacity available in Gully 1, taking account of the capping layer that would need to be constructed.

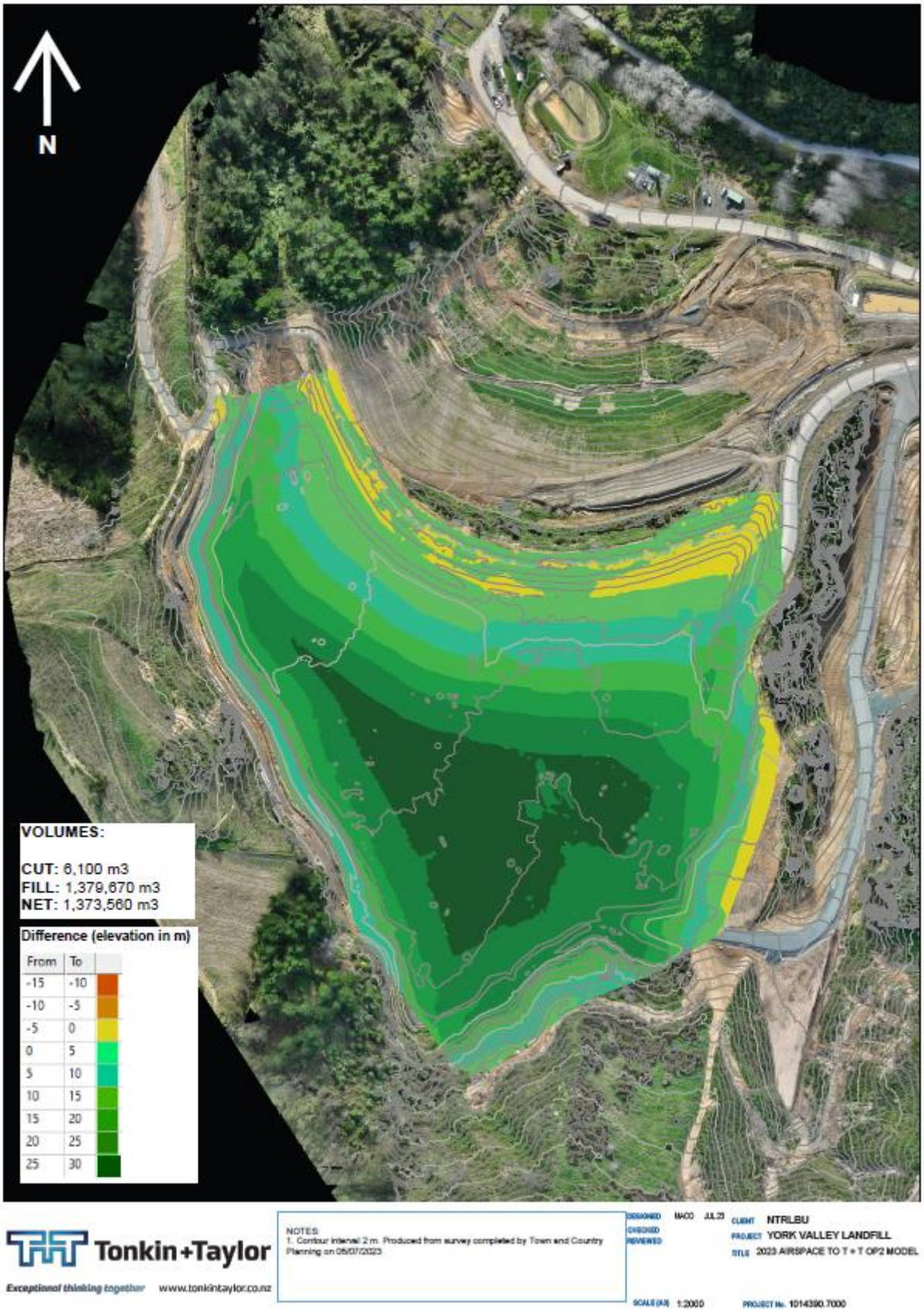

Figure 1-3: Gross available airspace at Gully 1 of York Valley Landfill.

The following asset components at York Valley Landfill are managed by the NTRLBU:

- land, resource consents and designation;
- leachate collection system, including stone drains, and gravity main;
- stormwater collection and settling ponds, including cut-off drains;
- gas collection system, including stone chimney vents, and a gas flare;
- gas treatment and conditioning system, gas pipeline to Nelson Hospital, and gas boiler;
- pavements including sealed and unsealed roadways;
- weighbridge and kiosk;
- vehicle wheel wash;
- signs, fencing, and landscaping.

Error! Reference source not found. provides a list of the resource consents held by Nelson City Council for York Valley Landfill.

Table 1-1: York Valley Landfill Resource Consents

Consent No.	Consent Type	Effective Date	Expiry Date
RM975261V2-A	Water permit to divert stormwater	03/06/2021	31/12/2034
RM975261V2-B	Water permit to dam stormwater	03/06/2021	31/12/2034
RM975261V2-C	Water permit to take leachate and groundwater	03/06/2021	31/12/2034
RM975261V2-D	Discharge consent to discharge leachate into ground	03/06/2021	31/12/2034
RM975261V2-E	Discharge consent to discharge contaminated stormwater to the York Stream	03/06/2021	31/12/2034
RM975261V2-F	Discharge consent to discharge contaminated landfill gases and contaminants into air	03/06/2021	31/12/2034
RM975261V2-G	Discharge consent to discharge contaminants in stormwater	03/06/2021	31/12/2034
RM975261V2-H	Land disturbance consent to carry out site works	03/06/2021	31/12/2034
RM975261 V2	General conditions	03/06/2021	31/12/2034

provides details of the designation held by Nelson City Council for York Valley Landfill.

Table 1-2: York Valley Landfill Property Designation

ID	Location of Site	Site Name / Purpose	Duration of Designation
DN1	York Valley	Refuse disposal	Indefinite – given effect

Eves Valley Landfill

The Eves Valley Landfill is located approximately 5km north-west of Brightwater. Access to the landfill is gained via a sealed road from an intersection with Eves Valley

Road, 2km west of Waimea West Road. **Error! Reference source not found.** shows t he layout of the landfill.

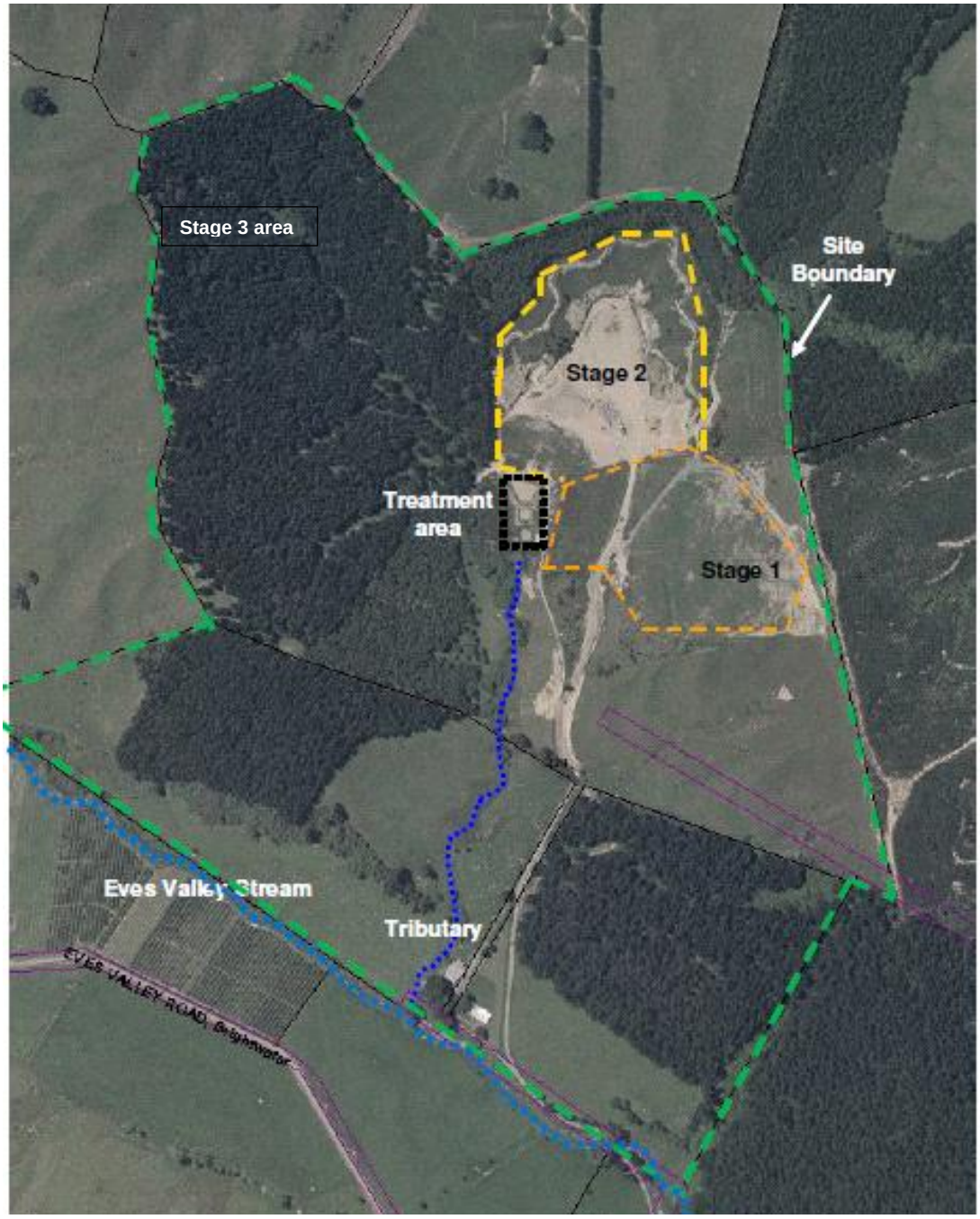

Figure 1-4: Layout of Eves Valley Landfill

Stage 1 of the landfill was filled in July 2002, with the final capping being completed in March 2005. It had a capacity of approximately 184,500 tonnes (217,000m^3).

Stage 2 construction was completed in August 2000 and filling commenced in July 2002 with a design capacity of 435,000m^3 in a valley-type landfill. By 30 June 2017, when waste disposal operations ceased, approximately 418,200 tonnes of solid waste had been placed in Stage 2.

The construction of Stage 2 included an HDPE liner in the base of the landfill on clayey gravels which formed a natural liner above the base footprint.

In the last few years of operation Stage 2 was progressively shaped for closure and covered with intermediate soil cover. In 2019 Stage 2 was capped using clayey soils, and in 2020 it was top soiled and grassed.

Landfill gas is collected via stone chimney vents that were installed in the waste pile during the landfilling process. The vents have been sealed with the capping of the landfill and a pipe system installed to collect the gas to divert it to a gas flare, which was installed in 2021.

The introduction of the NZ Emissions Trading Scheme (NZ ETS) regulations under the Climate Change and Control Act resulted in the Tasman District Council being liable for New Zealand Emission Units (NZUs) from 2013. Each year the Council reported landfill activities and was required to surrender NZUs equivalent to the emissions assessed for the landfill activity.

Liability for NZUs under the NZETS ceased for Stage 2 when it was closed at the end of June 2017. However, if Stage 2 is re-opened and when Stage 3 becomes operational, liability for NZUs will re-commence.

Leachate is currently collected from the bases of Stages 1 and 2 of the landfill, and from collectors placed at the interface of succeeding layers of solid waste. Leachate is collected in a storage pond on site and pumped to Brightwater where it joins the Tasman District Council sewerage network and is ultimately disposed of at the Nelson Regional Sewerage Business Unit (NRSBU) treatment plant at Bell Island.

Survey and design work has been undertaken for Stage 2 to determine a final profile for when the landfill is full, assuming it needs to be re-opened under contingency conditions for acceptance of up to one year of regional waste.

The Eves Valley Landfill Management Plan provides guidance on how Stage 2 is to be re-opened, filled and then re-closed, should it be required.

Future Stage 3 is proposed for the third and largest of the three gullies on the site (Figure 4, west of Stage 2 area). Development of this gully as a series of sub-stages, as well as filling of the main valley, which is linked to the side gullies constituting Stages 1, 2 and 3 could result in an estimated capacity of up to 6,121,000m^3, depending on the total area utilised. Services such as the leachate ponds and stormwater ponds would need to be relocated prior to this part of the site being developed.

The following asset components at Eves Valley Landfill are managed by the NTRLBU:

- land, resource consents and designation;
- 20m^3 water tank and supply lines (connected to the Redwood Valley Rural Water Supply);
- hazardous waste store;
- leachate collection system, including stone drains, leachate pond and emergency storage tanks, pump station and rising main (to Brightwater);
- stormwater collection and settling pond, including cut-off drains;
- landfill capping;
- gas venting system, including stone chimney vents, landfill gas collection pipes and a landfill gas flare;
- pavements including sealed and unsealed roadways and an access bridge over the Landfill Stream;
- weighbridge, with access control including traffic lights and barrier arm system;
- HAIL storage facility consisting of 8 ISO containers and an arched tarpaulin roof spanning between two lines of containers;
- signs, fencing, and landscaping.

Some of these assets have reached the end of their economic life with the closure of Stage 2 and NTRLBU needs to consider what it will do to dispose or renew these assets.

Error! Reference source not found. provides a list of the resource consents held by T asman District Council for Eves Valley Landfill.

Table 1-3: Eves Valley Landfill Resource Consents

Consent No.	Consent Type	Effective Date	Expiry Date
NN970122V2	Discharge to land	22/08/2014	1/10/2015*
NN970123	Discharge to air	24/02/1998	1/10/2015*
NN970272V1	Discharge to air	23/03/1998	1/10/2015*
NN970271V2	Discharge to water	23/03/1997	1/10/2015*

* On 31 March 2015 Council applied for replacement resource consents for the operation of the Eves Valley landfill (RM150348, RM150349, RM150351, RM150352 and RM150353). The consent was processed with limited notification to affected parties. The consent process has not yet been finalised (as at end June 2023).

Error! Reference source not found. provides details of the designation held by Tasman D istrict Council for Eves Valley Landfill.

Table 1-4: Eves Valley Landfill Property Designation

ID	Location of Site	Site Name / Purpose	Duration of Designation
D163	Eves Valley	Sanitary landfill solid waste disposal	Indefinite – given effect

1.1.8. Key Stakeholders in the Plan

The customers of and the stakeholders in the landfill activity are essentially a sub-set of those of the solid waste activity.

The landfill assets have the following external stakeholders:

- Residential, commercial and industrial waste generators;
- Waste industry service providers;
- Local Iwi;
- Landfill neighbours;
- Environmental Interest Groups.

Internal stakeholders include:

- Elected Members;
- Trade Waste Officers;
- Environmental officers;
- Asset, Operations and Maintenance staff.

The York Valley Landfill is accessible only for disposal purposes by commercial customers and contractors who have negotiated access with the NTRLBU.

The customers for the landfill activity are therefore limited to the following:

- Contractors bringing in waste;
- Commercial customers;
- Council contractors.

1.1.9. Organisation Structure

For the NTRLBU to deliver the levels of service for the landfill activity it needs to have a team that implements the required functions to ensure the activity is managed effectively and efficiently. Figure 6 illustrates the structure of this team.

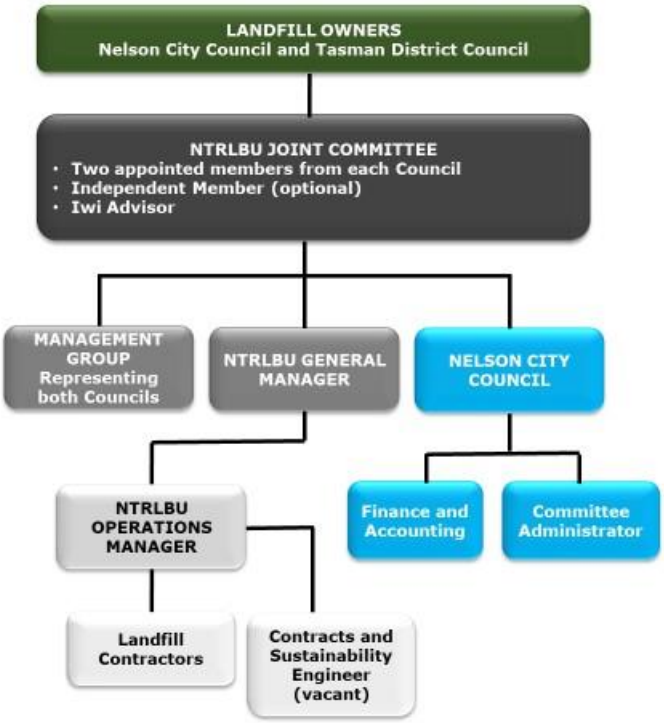

Figure 1-5: Organisational Structure for the Landfill Activity

1.2. Goals and Objectives of Asset Ownership

1.2.1. Reasons and Justification for Asset Ownership

One of Councils' principal roles is to provide core services that meet the needs of the community. The purpose of solid waste assets is to provide an accessible, efficient and resilient solid waste collection and disposal system, which protects public health and is environmentally friendly.

It is important to note that many of the solid waste activities, including disposal to landfill, are voluntary rather than mandatory. This means that councils can opt out of many of the provisions of their solid waste services if they wish. This assumes that the private sector would be offering alternative services.

The legal authority for councils to be involved in the provision of solid waste services and ownership of assets is contained in the provisions of several government statutes including:

Local Government Act 2002 (LGA) and the 2014 Amendment Act

The LGA allows councils to provide any activity that is considered appropriate for the effective management of waste, to own, maintain and operate works and facilities necessary to implement their waste management and minimisation plan. The Act also allows councils to make bylaws and policy relating to the management of waste.

Health Act 1956

This Act allows for local authorities to facilitate the collection and disposal of refuse and other offensive matter and for the licensing of offensive trades.

Te rautaki para Waste Strategy 2023

Te rautaki para, Aotearoa New Zealand's waste strategy (NZWS), contains high-level guidance that aims to help New Zealand transition to a low-waste, low-emissions, circular economy, where extracted materials are used and reused for as long as possible. For technical or synthetic materials, the ideal scenario is that they are reused forever. Biological (organic) materials will eventually be returned to the soil to enrich it.

While all the NZWS goals, priorities and targets aims to reduce the amount of waste sent to landfill, the following are relevant to the NTRLBU in managing Councils' Landfill Activities.

By 2030, enabling systems are working well and behaviour is changing:

- We look for ways to recover any remaining value from residual waste, sustainably and without increasing emissions, before final disposal.
- Emissions from waste are reducing in line with our domestic and international commitments.
- Contaminated land is sustainably managed to reduce waste and emissions and enhance the environment.

By 2040, residual waste is minimal:

- We are extracting the maximum value from materials and products before or during final disposal, where appropriate and sustainable.
- Residual waste has reduced to a minimum, as has the need for final disposal facilities.

The priorities for reducing emissions from waste focus on generating less waste that produces emissions when it is disposed of, recycling organic material instead of sending it to landfills and capturing more of the greenhouse gases being produced by organic material in landfills. NTRLBU, in managing the regional landfills, has a role to play in meeting these goals.

Waste Minimisation Act (WMA) 2008

The WMA states that councils must promote effective and efficient waste management and minimisation within their district. The Act aims to protect the environment from harm by encouraging the efficient use of materials and a reduction in waste.

Under this legislation councils are required to prepare a Waste Management and Minimisation Plan. This plan sets the strategic direction for councils for solid waste management and must "have regard to the New Zealand Waste Strategy" or any equivalent government policy (Section 44 of the WMA).

Nelson City Council and Tasman District Council have elected to prepare a Joint Waste Management and Minimisation Plan (JWMMP). The existing JWMMP is currently under review, so this AMP reflects the goals and objectives of the current JWMMP.

The Ministry for the Environment is currently developing new waste legislation to replace the current Waste Minimisation Act 2008 and the Litter Act 1979, which is

dated and has limited tools to address key environmental issues and greenhouse gas emissions. The new legislation will support delivery of many significant initiatives including the waste strategy and waste elements of the Emissions Reduction Plan (ERP). These have the potential to have a significant impact on waste management and minimisation practices and the long-term development of the landfill.

Emissions Reduction Plan (ERP) 2022 Te hau mārohi ki anamata - Towards a productive, sustainable and inclusive economy

Aotearoa New Zealand's first emissions reduction plan contains strategies, policies and actions for achieving our first emissions budget, as required by the Climate Change Response Act 2002. In doing so, it also outlines how we intend to play our part in global efforts to limit warming to 1.5°C above pre-industrial levels. While the waste sector contributes a small percentage to NZ's overall GHG emissions, waste emissions where biogenic methane are largely generated by the decomposition of organic waste (such as, food, garden, wood and paper waste). The ERP seeks to:

- minimise the amount of organic waste we produce;
- divert organic waste to beneficial uses so that it is not sent to landfill;
- reduce emissions from organic waste when it does end up in a landfill – capture biogenic methane emissions for energy.

It is likely that further organic waste processing and resource recovery infrastructure will be required in the region to meet the requirements of the ERP.

Future changes are also being explored as part of the development of the new waste legislation on whether regulations should be introduced to require businesses, households and transfer stations to separate out organic materials for recovery – including cardboard and paper waste and investigate banning of all or some types of organic materials to landfill by 2030.

1.2.2. Links to both Council's Visions, Missions, Goals and Objectives

The existing JWMMP was reviewed in 2019 and is a key strategic document relating to Regional solid waste activities which includes the landfill activity and the goals outlined in the JWMMP are the goals for this Landfill AMP. The JWMMP is currently under review, and it is anticipated that the new plan will reflect the requirements of the NZWS and ERP.

The shared Vision of the Councils in relation to waste management and minimisation is:

"*The communities of the Nelson Tasman region work together to reduce waste*".

The goals of the JWMMP are:

Goal 1: Avoid the creation of waste.

Goal 2: Improve the efficiency of resource use.

Goal 3: Reduce the harmful effects of waste.

The following core principles have been adopted to guide the Councils in their implementation of the JWMMP.

1. The Waste Hierarchy
2. Global Citizenship
3. Kaitiakitanga and Guardianship
4. Product Stewardship
5. Full-cost Pricing
6. Life cycle Principle
7. Precautionary Principle

Each of the three Goals are underpinned by Objectives, Policies and Methods. The following Methods are relevant to the NTRLBU in managing Councils' Landfill Activities and they have been restated accordingly:

- Method 7.1.3. The Councils will continue to jointly own and manage the Eves Valley and York Valley landfills through the Nelson Tasman Regional Landfill Business Unit.
- Method 7.3.1. The Councils will carry out financial reviews of disposal charges to encourage the separation and diversion of materials as alternatives to waste disposal to landfill.
- Method 7.4.1. The Councils may subsidise the disposal and treatment of waste that cannot be funded by user charges.
- Method 7.5.1 The Councils, through the Regional Landfill Business Unit, will investigate options to provide on-going landfill capacity in the region, including further development at Eves Valley and York Valley landfills and consents for development of facilities.
- Method 7.5.2 The Councils will investigate options for pre-processing and diversion of materials prior to landfill in association with landfill capacity investigations.
- Method 7.5.3 The Councils will investigate options other than a municipal landfill to provide disposal of contaminated soil in the region, including consideration of naturally high background mineral levels in regional soils and development of contaminated soil guidance for landowners.
- Method 7.6.1 The Councils, through the Regional Landfill Business Unit, will continue to provide a landfill disposal service for approved waste from Nelson and Tasman.
- Method 7.6.2 The Councils, through the Regional Landfill Business Unit, will manage the landfill service such that consented landfill airspace is monitored and maintained to ensure that, at any time, there is at least five years consented airspace and the ground has been prepared so that waste can be placed without further construction for the next two years.
- Method 8.1.1. The Councils will annually review compliance with resource consents for operational and closed waste facilities.
- Method 9.1.1 The Councils will review and change, where appropriate, the health and safety practices followed for any existing waste management and minimisation initiatives where concerns are raised.
- Method 9.1.2 The Councils will investigate and review health and safety impacts for all methods proposed to improve waste management and minimisation before implementing new initiatives.

1.3. Mission Statement of the NTRLBU

The NTRLBU's mission statement is:

To manage and operate the regional landfill facilities and plan for the future needs of the community in a cost efficient and environmentally sustainable manner in accordance with the objectives of the JWMMP.

1.4. Strategic Goals of the NTRLBU

The NTRLBU aspires to achieve the following goals:

- Provides sanitary landfill capacity for the needs of the Nelson-Tasman region.
- Costs of disposal of residual solid waste are affordable.
- Risks associated with the activity are identified and mitigated to a level agreed.
- Engages the right people with the right skills and experience and has sufficient capacity to deliver the works programme.
- Operates sustainably and endeavours to remedy or mitigate any adverse environmental, social and cultural impacts.
- Monitors, manages, mitigates and reduces greenhouse gas emissions in a responsible manner.
- Maintains good relationships with stakeholders.
- Meets all statutory obligations.

2. Levels of Service (What we provide)

One of the key objectives of asset management planning is to ensure that the levels of service a local authority strives to provide matches the desired levels of service the community expects. It enables the relationship between levels of service and the cost of the service (the price/quality relationship) to be determined.

This section of the AMP aims to define the proposed levels of landfill service the NTRLBU plans to deliver to the Nelson-Tasman region within the 2023/2033 financial planning period. It also defines the tools that will be employed in measuring, monitoring and evaluating how these levels of service are delivered.

The levels of service the NTRLBU will ultimately provide to meet the requirements of stakeholders are dependent on the following parameters:

- Imposed Standards (Legislative Requirements) – these are "mandatory".
- Resource consent requirements – these are "mandatory".
- Customer Expectations and Technical Constraints – these are "desired".

2.1. Legislative Requirements

The provision and maintenance of landfill services by the NTRLBU is subject to the following legislative requirements (refer to Appendix 1 for further details).

2.1.1. Statutory Acts and Regulations

Waste management and minimisation planning within NZ is guided by the following legislative and policy framework:

- Waste Minimisation Act 2008 (WMA) and associated Regulations (New, more comprehensive waste legislation is being developed and is expected to be introduced to Parliament later in 2022. Once adopted, the new legislation will replace the WMA 2008 and the Litter Act 1979)
- Local Government Act 2002 (LGA) and the 2014 Amendment Act, particularly with respect to consultation, bylaws and service reviews
- Resource Management Act 1991 (RMA), particularly in relation to land disposal (landfills and cleanfills);
- Climate Change Response Act 2002, Climate Change (Waste) Regulations 2010
- Emissions Trading Amendment Act 2008 (ETAA) which has implications for some landfills;
- Climate Change Response (Emissions Trading Reform) Amendment Act 2020
- Hazardous Substances and New Organisms Act 1996 (HSNO) where hazardous wastes are present in the solid waste stream; Hazardous Substances and Noxious Organisms Act (HSNO) 2004
- Health Act 1956 (Health Act), as solid waste management must consider the potential impacts on public health;
- Litter Act 1979 (Litter Act) which sets out provisions for prevention and enforcement of litter offences; and
- Health and Safety at Work Act 2015 (HSWA) which recognises that a well-functioning health and safety system relies on participation, leadership, and accountability by government, business and workers
- Local Government (Rating) Act 2002

- Building Act 1994
- Health & Safety Act in Employment Act 1992
- Civil Defence Emergency Management Act 2002
- Public Works Act 1981

2.1.2. National policies, regulations and strategies

In addition to the legislation provided above, the Ministry for the Environment has also released the following documents which relate to the landfill activity:

- Te rautaki para, New Zealand Waste Strategy (NZWS) 2023
- Te hau mārohi ki anamata, New Zealand Emissions Reduction Plan (ERP) 2022
- National Environmental Standards for Air Quality.
- National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NESCS).
- National Policy Statement for Freshwater Management 2020 (Freshwater NPS2020).

2.1.3. National guidelines and standards

There are many national guidelines and standards which relate to the landfill activity. Two of the most recent guidelines are listed below, with others being referenced in Appendix 1:

- Technical Guidelines for Disposal to Land, Waste Management Institute of New Zealand, October 2022.
- Health and Safety Guidelines: for the Solid Waste and Resource Recovery Sector – parts one to five, Waste Management Institute of New Zealand, January 2021.

2.1.4. Regional and local policies and strategies

Both Councils also have several planning policy and/or management documents detailing their responsibilities under the legislation listed above. Those which impact on the provision of the NTRLBU's landfill activity are:

- Nelson – Tasman Joint Waste Management and Minimisation Plan 2019
- Nelson Resource Management Plan (NRMP) and the Whakamahere Whakatū Nelson Plan when it becomes operative.
- Tasman Resource Management Plan (TRMP)
- Regional Policy Statements
- Council Long Term Plans / Annual Plans /Annual Reports
- Engineering Standards and Policies including the Nelson Tasman Land Development Manual
- Procurement Strategies
- Various Bylaws

2.2. Resource consent requirements

Compliance with resource consents is a key deliverable for the NTRLBU. Additionally, there are requirements to be met under various National Environmental Standards.

All landfill activities, facilities and services are to comply with resource consent conditions, landfill management plans and appropriate legislative requirements, with the annual target being "nil" non-compliances.

2.2.1. Performance Measuring and Monitoring

Environmental monitoring is undertaken quarterly for air, groundwater, surface water and leachate quality and the results are reported in the landfills annual monitoring reports.

The landfill management plans require records to be kept of waste tonnages and types of waste disposed to landfill, and the volume of landfill capacity used up annually. From this information, the level of waste compaction is determined annually.

2.2.2. Actions to limit environmental impacts

The following actions are proposed to address aspects of environmental impacts:

- Reduce long-term stability and environmental risks from the York Valley Landfill by upgrading the leachate system;
- Optimise landfill cover application and usage;
- Maximise landfill gas harvesting, including landfill gas collected at Eves Valley;
- Undertake a feasibility assessment, and identify options for reuse of York Valley landfill gas;
- Identify options for reducing airspace consumption, including waste diversion or treatment.

2.3. Customer Expectations and Satisfaction, and Community Consultation

2.3.1. Customer Expectations

Customer expectations are one of the key considerations that are used to determine the acceptable target levels of service prescribed for the landfill activity. Common public expectations relating to the landfill are:

- That the landfill operations comply with the requirements of the resource consents.
- That planning and development of the landfill be carried out in a timely manner to ensure continuity of the disposal service.
- That financing of landfill developments, operations and aftercare be done in an equitable way across generations.

The customers of and the stakeholders in the landfill activity are essentially a sub-set of those of the solid waste activity and they are listed in section 1.1.8 of this Landfill AMP.

2.3.2. Community Engagement

The Councils have consulted their various stakeholders as part of setting the service levels and expectations they have towards waste management and minimisation. Landfill charges are reviewed annually, and proposed changes are consulted on through the long-term plan and annual plan processes.

NTRLBU has continued to expand our engagement with the community this year with visits from Enviroschools (6 schools; Birchwood Primary, Hira School, Victory Primary, Central School, Nelson Intermediate & Primary School Caretakers from across the region), landfill neighbours open day and a presentation to the Nelson Rotary & Probus.

All visits to the landfill were well received, educating the community on what happens to their waste once it enters the landfill and showing the visitors our gas collection/destruction system and new environmental protection structures/systems.

NTRLBU will continue to engage with the community with more Enviroschools visits scheduled for this coming year and a presentation to Rutherford Probus Club of Nelson.

2.3.3. Customer Satisfaction Surveys

Customer satisfaction surveys regarding the solid waste activity have been carried out regularly out by the Councils, with a particular focus on waste minimisation and recycling activities, rather than on the landfill activity.

NTRLBU have worked with the site operators to develop a direct engagement plan that seeks customer feedback on the landfill activity. The Operations and Maintenance contractor has completed customer surveys for the landfill users in 2022/23 which were complimentary in relation to using the landfill facilities.

2.4. Current Level of Service

Levels of service (LoS) can be defined as the service quality for a given activity against which service performance may be measured and usually relates to core parameters such as quality, quantity, and reliability.

Performance measure is a quantitative measure that we will use to tell our customers:

- how well we are doing/performing,
- whether or not we are meeting our goals/targets,
- whether or not our customers are satisfied with the way we are performing; and
- what improvements, if any, are necessary?

The LoS targets are presented in **Error! Reference source not found.** below.

Table 2-1: Landfill Levels of Service Targets

Related Community Outcomes	Strategic Themes	Levels Of Service	Performance Indicators	Method of Measurement	Target
SOLID WASTE DISPOSAL - NTRLBU will provide a landfill for waste disposal					
Health Environment Education	Impacts	All landfill activities, facilities and services comply with resource consent conditions, site management plans and appropriate legislative requirements.	Compliance with resource consents.	Number of non-compliances	Nil
		Adequate landfill airspace available to ensure future sustainability of solid waste disposal.	Available landfill space that has been consented.	Years of available consented landfill space	>5 Years
			Available landfill space that has been developed.	Years of available developed landfill space	>2 Years
	Costs	Cost effective and sustainable landfill services available.	No rates required to support landfill activities.	User Pays %	100%
	Demand	NTRLBU operational contracts require minimum standards of waste compaction to maximise landfill capacity.	Waste compaction density exceeds minimum target level.	Surveyed compaction	> 0.9t/m^3
			Period when landfill compactor is unavailable for compaction.		< 2 days per year
		Landfills are open at convenient times.	Hours and days that the landfill is available for disposal.(1)	Opening hours specified	100%

Related Community Outcomes	Strategic Themes	Levels Of Service	Performance Indicators	Method of Measurement	Target
	Health and Safety	Landfill activity provided in a safe manner and pose no health and safety risks to nearby residents. The Landfill is regarded as being a "good neighbour". Operational health and safety to be a high standard with improvements made iteratively, including external audits.	No reported incidences of injury or illness attributable to use of facilities. No formal complaints about landfill activities from Neighbours. Audit review, non-conformance reporting and remedial actions implemented and verified.	Complaints and incident forms. Complaint forms. External review.	Nil Nil Contractors' performance at or above agreed levels.
	Quality	Good quality customer service. Inquiries received through the Councils' service request system are acknowledged within 24 hours.	Customers are content with the services offered. All requests responded to in compliance with Council customer service policy.	Customer satisfaction survey Service request response time	>90% of customers are highly satisfied [(2)]. 90%
	Environment	Odour, litter, and stormwater management plans are followed.	Incident reports and investigations are completed in a timely fashion. No formal odour complaints are received from Neighbours.	Incident register is audited by NTRLBU. Number of service requests received.	Improvement observation – incident ratio greater than 10. No confirmed odour complaints by independent odour assessor.

(1) York Valley hours of operation, as detailed in Contract 3912:
Monday to Friday between 08.00 AM – 4.30 PM.
Saturdays between 12.00 PM – 4.00 PM.

Public Holidays* between 10.00 AM - 2.00 PM.

* Excludes Christmas Day and Good Friday.

(2) This is a new measure which will be assessed through a landfill customer survey.

2.5. Desired Level of Service

If the Councils decide to amend the targets and/or implement new LoS for their Solid Waste activity, which impact the Landfill activity, then the affordability of the different options will be assessed and evaluated. The decision as to the most reasonable action that can be implemented will then be based on consultation with the community through one of, or a combination of, the following consultative processes:

- review of the JWMMP
- Councils' Long-Term Plans and/or
- Councils' Annual Plan consultation processes or
- special consultative processes.

At this stage for future planning purposes no consideration has been given to changing the current levels of service.

3. Future Demand (Planning for the future)

This section of the Landfill AMP provides details on the current demand, future demand and the impact that any change in demand will have on the operations, maintenance and the level of service that the landfill assets will be required to deliver over the next 30 years.

3.1. Demand Drivers

Demand forecasting is used to obtain an understanding of the current and future demands on the landfill activity and its associated assets. Understanding these demands allows the NTRLBU to plan the assets to meet the desired community outcomes.

The demand for landfill capacity (or airspace) is related both to the production of waste (i.e. tonnage) and the extent to which that waste can be compacted in the landfill.

The production of waste is driven primarily by the following drivers:

- Demographic change (e.g., population and/or household changes);
- Change in commercial and industrial activity and economic conditions;
- Impact of waste flows from other areas;
- Impact of technological changes;
- Consumer behaviour - consumption patterns / product quality;
- National policy, legislation and regulation;
- Impact of waste minimisation programmes, services and future initiatives (demand management strategies);
- Community expectations.

Secondary drivers also impact on demand for waste services but are indirect in nature. Examples of such drivers are climate change that may lead to increased or decreased vegetation growth and subsequently increased or decreased organic waste. Due to the uncertainty of their impact and difficulty in measuring them, they are not discussed in detail.

The density of waste is determined by the extent to which the waste can be compacted, which depends on:

- Waste composition;
- Moisture content;
- Type of compaction plant used.

Waste composition and moisture content may be affected by some of the drivers stated above. For instance, the NTRLBU may choose to restrict the disposal of certain organic materials at the landfill and thereby change the make-up of the waste going into the landfill.

However, the type of compaction plant used, and to a certain extent the moisture content of the landfill (through water entering the waste from stormwater run-off) are determined by operational aspects and so they do not drive demand, but they do affect it.

Historically two key separate municipal landfills existed within the Nelson – Tasman region (York Valley Landfill and Eves Valley Landfill) and waste generated was disposed of at one or other of these facilities. The gate fee at each facility impacted on where commercial waste was directed and the demand for each facility. In 2017 York Valley Landfill became the regional facility and all

material was directed to a single facility. Figure 3-1 shows the tonnages of waste that have been disposed of at York Valley Landfill over time.

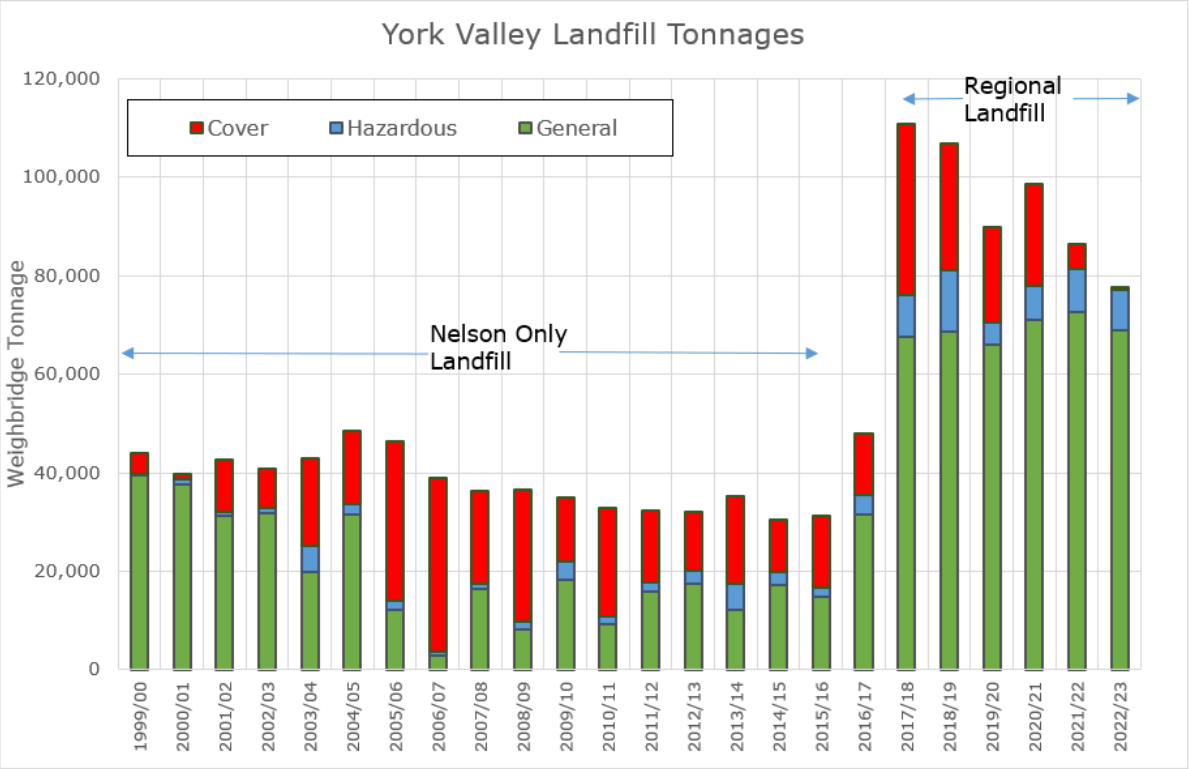

Figure 3-1: Tonnage of waste disposed to York Valley Landfill over time.

If additional facilities are established within the region that can manage part or all the waste stream, this has potential to impact on the demand for NTLBU facilities.

3.1.1. Demographic Change

It is generally accepted that as population increases so the amount of solid waste produced increases in direct proportion, and similarly for economic growth. A reduction in solid waste (or diversion of materials) is directly related to the extent and effectiveness of waste prevention and minimisation initiatives that may be introduced.

Tasman–Nelson currently has a population just over 115,000 with the region having experienced higher population growth than the average across the rest of New Zealand.

Overall, waste to landfill per person in the region decreased from 731 kg per person in 2005-2006 to a low of 612 kg per person in 2015-16, increasing through to 2018-2019 to 743kg per person. There was a decrease in 2019-20 to 636kg per person which increased 719kg per person in 2021/22 and dropped again to 671kg per person in 2022/23. Some of this variability in waste per capita is influence by changes in the amount of HAIL material being accepted at the facility each year. The amount of general waste per capita has remained between 600kg and 640kg per person for the past six years.

Collection and disposal services to the region are expected to be able to cope with local change in population, with new development areas being added to the existing collection routes. However a growth in population in the area will have an ongoing increase in demand for landfill capacity without further diversion initiatives.

3.1.2. Changes in Commercial and Industrial / Economic Activity

A key indicator of commercial and industrial activity is Gross National Product (GNP). Across New Zealand, GNP has fluctuated over the last decade dropping into a recessionary period in 2008-2009 but returning to a positive growth towards the end of 2009. The global financial situation and response to natural events, such as the earthquakes and pandemics will continue to influence local economic activity.

Traditionally waste generation has been coupled to economic activity indicators, such as GNP. It is generally anticipated that without significant intervention in how waste is managed (e.g., increased diversion / resource recovery activity or changes to legislation) growth in waste per capita is likely to continue along previous trends.

Another specific example of change to commercial and/or industrial activity that impacts the demand for waste services is one-off large-scale infrastructure and development projects. In 2018 the Nelson North Wastewater Treatment plant was de-sludged resulting in the disposal of 4,933 tonnes of sludge to landfill.

There have also been significant housing developments in the region resulting in considerable quantities of construction and demolition waste coming to landfill.

There was a short-term reduction in waste during COVID 19 level 4 lockdown, however waste volumes have returned to pre-COVID 19 Levels.

3.1.3. Waste Flows from Other Areas

The policy, services, and facilities of one district can dramatically impact on demand for services in neighbouring districts.

Pricing of landfill disposal is a useful method for managing demand for landfill services. This issue has been a key reason for the Councils to establish a joint landfill operation.

Any increase in gate charges for general refuse at the Councils' landfills may have a flow-on effect of increased material being diverted to other facilities in the region.

Only waste from Buller District is believed to originate from outside the region.

3.1.4. Technological Changes

Technological change can impact on the demand for solid waste services. These changes can reduce or increase the demand for solid waste infrastructure. Relevant examples which would reduce the demand for landfill capacity are:

- Industry altering the design of packaging to become more environmentally friendly, reducing packaging or allowing more reuse, recycling or composting of packaging wastes;
- Development of more economic recycling or composting technology;
- Development of alternative waste disposal technologies, such as incineration of waste. Over the past several years, there have been proposals floated to establish waste incinerators in the South Island. The first focussed on the West Coast, and more recently the focus shifted to Waimate District. Whilst the feasibility of the projects has been questioned, their viability would require waste from most of the districts in the South Island. The proposals have generated strong community backlash, and it is unlikely that an incineration project would go ahead, but if it did it would have a significant effect on the need for landfill assets in the Nelson-Tasman region in the medium to long-term.

The NTRLBU is pursuing the following initiatives that have potential to divert waste from landfill:

- The installation of a facility at Eves Valley for the diversion of HAIL material from landfill, including blending and testing equipment. This is proposed for year 2025/26 and has the potential to divert approximately 2,000 tonnes of HAIL material annually. A dedicated HAIL facility may also attract other HAIL material that is not currently sent to York Valley Landfill due to gate fees or waste acceptance criteria requirements.

It is important for the NTRLBU to be aware of continued technological changes to adequately predict demand trends and the effect on infrastructure requirements.

3.1.5. Consumer Behaviour

Consumer behaviour is a key driver for household waste generation and there are several factors that influence this.

Such behaviours are the target of many New Zealand policies and programmes, both at a local and national level, that have the common aim of reducing waste generation at a household level.

The Councils are anticipated to continue with existing initiatives to influence waste disposal behaviour and demand for waste services and improve on them over time.

3.1.6. National Policies, Legislation and Regulation

Legislation, such as the Waste Minimisation Act, encourages waste avoidance, a reduction in the amount of waste that is generated and disposed of in New Zealand and aims to lessen the environmental harm of waste. Provisions such as the national waste disposal levy and product stewardship schemes help encourage waste minimisation, protect the environment, and provide wider social, economic, and cultural benefits. There are also a variety of local regulatory measures that can affect demand for services.

The Government is developing new waste legislation to replace the current Waste Minimisation Act 2008 and the Litter Act 1979. The new legislation will support delivery of many significant initiatives including the New Zealand Waste Strategy and waste actions of the emissions reduction plan.

The NZ Waste Strategy aims to introduce nationwide, standardised kerbside collection of household food scraps, and potentially garden waste, and support the investment in infrastructure to collect, process, manage and recycle organic waste (food, garden, construction and demolition waste). This is the largest fraction of waste currently being received at the landfill with paper, timber and putrescible making up over 50% of the waste.

The NZWS also aims to reduce the volume of soil disposed of at landfills, by increasing soil diversion and reuse. In determining the future life of the NTRLBU landfill facilities a drop off in the amount of food waste and HAIL material is expected prior to 2030.

The NZWS also sets three national targets to achieve by 2030

1. Waste generation: reduce the amount of material entering the waste management system, by 10 per cent per person.
2. Waste disposal: reduce the amount of material that needs final disposal, by 30 per cent per person.
3. Waste emissions: reduce the biogenic methane emissions from waste, by at least 30 per cent.

All of which will affect the future demand for landfill capacity and landfill gas management systems.

The Waste Minimisation Act 2008 includes a power to control or prohibit how something is disposed of and the introduction of product stewardship schemes. This power is likely to continue in the new waste legislation.

One of the emissions reduction plan's main initiatives is to investigate limiting or banning organic waste from landfills by 2030, as long as viable alternatives are available that people can use. It includes initiatives around waste with key actions being to increase the amount of organic waste diverted from landfill, including requiring food waste to be diverted from landfill by 2030. For the Nelson-Tasman region the diversion of domestic food waste would amount to a reduction of about 6,000 tonnes to the landfill annually.

National Waste Disposal Levy

The national waste disposal levy on residual waste disposed of at municipal landfills has the potential to act as a disincentive to wasteful behaviour. Since 1 July 2021 the Government has been progressively increasing landfill levies, and since 1 July 2022, has started applying it to other classes of landfill than Class 1, which is landfills that accept municipal solid waste.

From 1 July 2023 Class 1 landfills are levied at $50 per tonne, increasing to $60 per tonne after 1 July 2024.

From 1 July 2023 Class 3 and 4 landfills (includes those that accept HAIL material) will be levied at $10 per tonne.

The impacts of changing the national waste disposal levy are significant and are one of the drivers for establishing a separate cleanfill (no levy currently proposed), or a controlled landfill, e.g., for HAIL material (levy of $10 per tonne), within the region.

Product Stewardship

Product stewardship relates to a process through which those involved in the lifecycle of a product or service are involved in identifying and managing its health, safety and environmental impacts from the development and manufacture of a product through to its use and final disposal.

There are two types of product stewardship schemes; mandatory and voluntary (industry or company led) schemes with the WMA having provision for both types of schemes.

A mandatory product stewardship scheme would be of benefit to the NTRLBU through a reduction in problematic wastes such as tyres, e-waste and agricultural chemicals and plastics.

Emissions Trading Scheme (ETS)

The Climate Change Amendment Act 2008, and the associated New Zealand Emissions Trading Scheme (NZ ETS), is the Government's principal policy response to climate change. It puts a price on greenhouse gas emissions, which creates a financial incentive to reduce emissions.

Landfills emit greenhouse gases, and the emissions are calculated based on the volume of waste received. The NZ ETS requires landfill owners to purchase emission trading units (ETUs) to cover methane emissions generated from the landfill. A New Zealand ETU (also known as an NZU) represents one metric

tonne of carbon dioxide. The costs for emissions units are passed on to users in user charges for waste disposal services.

In terms of the current regulations, landfill owners must surrender 0.91 ETUs per tonne of waste disposed of at Class 1 landfills. This is known as the default emissions factor (DEF).

Under the regulations, landfill owners can apply for a reduction in the amount of ETUs to be surrendered per tonne of waste if they can demonstrate that they have a waste composition that results in less generation of greenhouse gases compared to the default waste composition, and/or if they have a landfill gas collection and destruction system in place for which it can be demonstrated that the net emissions are less than otherwise.

The following information relates to NTRLBU managed Landfill facilities:

- A Unique Emissions Factor (UEF) has been obtained since the 2019 calendar year.
- Improvements in the landfill gas collection system efficiency, and changes to the way in which the UEF is calculated, has reduced the UEF from 0.885 ETUs/tonne of waste in 2019, to 0.518 ETUs/tonne in 2021, with a further reduction to 0.091 ETUs/tonne presently.
- The current UEF of 0.091 ETUs/tonne is the lowest it can be under the present regulations.
- As a measure of conservatism, and to allow for increases in waste levy payments due to increases in the cost of ETUs and/or increasing waste quantities, a UEF of 0.21 ETUs/tonne has been allowed for budgeting purposes.
- The NTRLBU has approximately 140,000 ETUs and only uses some 7,000 ETUs annually. Consideration is being given to selling some of the ETUs when the price is right.

The following actions are to be undertaken with respect to the NZ ETS:

- Keep up to date on national and international emission trading trends and adjust the next AMP financial forecasts accordingly.
- The Nelson City Council financial team will monitor the market and pre-purchase trading units accordingly.

Other National Legislation and Regulation

Another consideration is the potential for a national cleanfill standard to be developed, as this could have a key impact on the types and quantity of waste disposed of at landfills.

Local / Regional Regulation

Along with national policy and regulation, local / regional regulation has an impact on demand for waste management and minimisation services.

Regional regulation can occur at a consenting level, for major waste facilities, such as sanitary landfills, monofills and for some cleanfills.

The success of consent applications or the consent conditions by Third Parties can play a part in impacting demand. For example, if the Nelson Regional Sewerage Business Unit (NRSBU) Resource Consent application to apply biosolids directly to forestry land on Rabbit Island was denied for some reason,

this could result in those materials having to be landfilled at a municipal landfill, thus having an impact on demand for disposal capacity.

Councils can also use regulation to impose bans on materials to landfill and other waste bylaw provisions to manage waste, particularly where alternative services exist to deal with the waste stream in question. Although potentially powerful tools, these have not been widely introduced in the Nelson Tasman region.

3.1.7. Impact of Waste Minimisation Programmes

Further to the existing waste education and minimisation programmes being run in the Nelson-Tasman region, additional waste minimisation programmes and services will be investigated by the Councils through the implementation of the Te rautaki para, NZWS and the Nelson – Tasman JWMMP which is currently under review.

Potential future services such as increased green waste diversion and composting or a kitchen food waste collection, would have a quantifiable reduction of waste to landfill which may reduce demand for landfill space in the future.

3.1.8. Community Expectations

Community expectations vary geographically and over time. Key trends in community expectations that the NTRLBU recognises include:

- Environmental awareness is leading to a demand for higher standards at disposal and treatment facilities;
- Increased pressure on the NTRLBU to provide services at lower cost.

Implications for the landfill activity are:

- Resource consents for future facilities may be more difficult to obtain and require an increased level of environmental protection;
- Reduced appetite for services at greater cost.

The JWMMP, adopted by the Councils after consultation with the community, may be considered an additional indicator of community feedback and expectations.

3.1.9. Climate Change

The RMA 1991 requires local authorities to account of the effects of climate change when developing and managing its resources. The MfE has prepared various reports to support councils in assessing expected effects of climate change and to help them prepare appropriate responses when necessary.

For landfills the key climate influences are likely to be changes in rainfall and temperature which could result in the following possible effects:

- Increased flooding and clean-up wastes;
- Biosecurity changes;
- Changes in ground water level and leachate flows;
- Increased methane emissions.

3.2. Demand Forecasts

3.2.1. Existing Demand

The total tonnage of residual waste disposed of at municipal landfills in the Nelson-Tasman area tended to trend downwards for the period from 2005/2006 through to 2011/2012. For the next five years it remained fairly constant aside from a small increase in 2013/2014. From 2017 waste quantities have generally increased with a slight reduction in 2018/19 and 2022/23. These trends are shown in **Error! Reference source not found.**3-2 with linear trendlines also s hown.

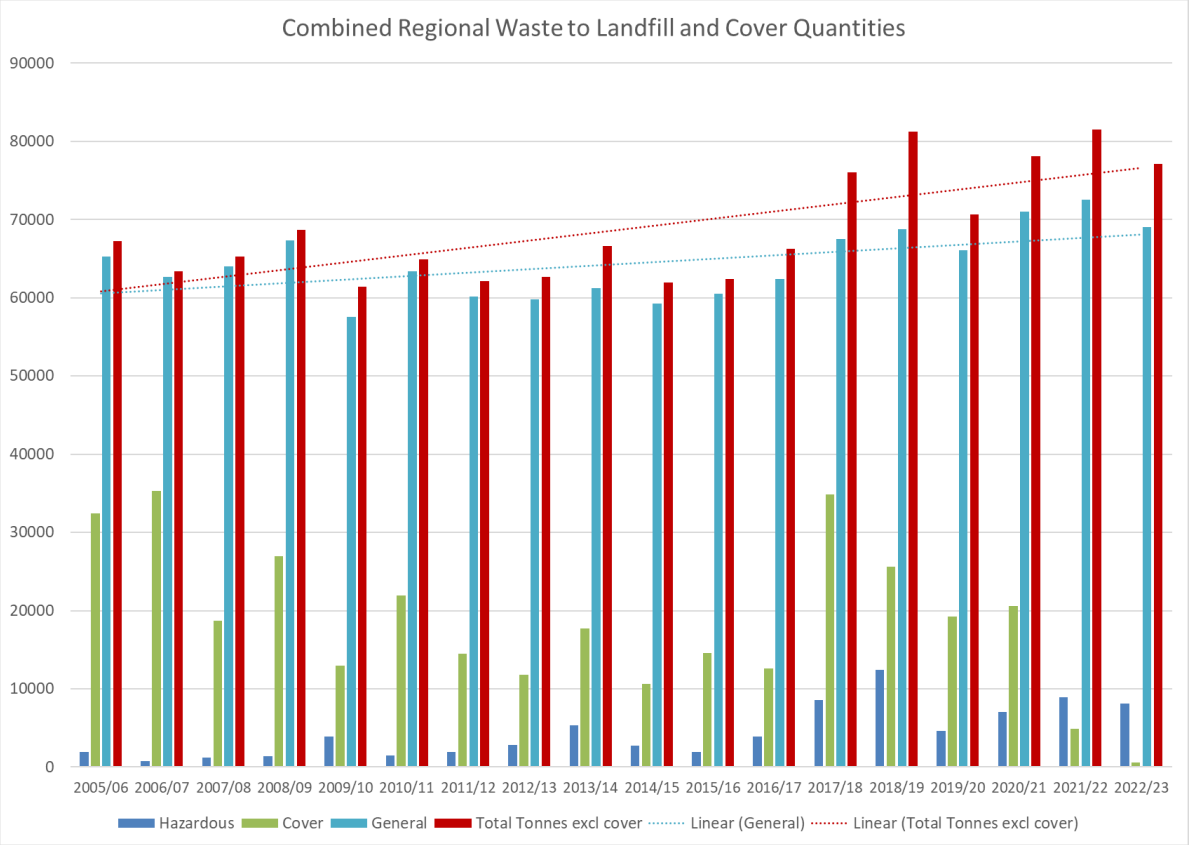

Figure 3-2: Regional Waste tonnages since 2005

From 2018 all waste in the region has been disposed of at York Valley Landfill. In that year there was also a significant increase in waste quantities with most of it being in the form of special waste (HAIL, Residential NESCS and Nelson WWTP sludge). Total waste quantities for 2022/23 financial year were approximately 78,000 tonnes.

A large proportion of total waste comes from a variety of sources — residential properties, commercial and industrial activities, construction and demolition, and landscaping activities. This waste is termed "municipal waste" and results from the day-to-day activities of residents and businesses in the region. Municipal waste trends change over time and reflect the activity of the community and it currently accounts for about 69,000 tonnes per year.

The balance of the waste is "special waste" which is waste that needs to be dealt with in a special manner because of its characteristics (e.g., sewage sludge,

bagged asbestos). For the past five-year special waste has averaged about 8,300 tonnes per year.

There is uncertainty how the management of HAIL classified properties and landfill gate fees will affect demand in future or how much will be remediated in situ.

These waste totals do not necessarily represent the total amount of waste generated in each of the Nelson and Tasman districts, as some waste moves across the Nelson–Tasman boundary or is disposed of at other landfill facilities authorised to take the material e.g. cleanfill facilities.

Some waste from Nelson–Tasman may also be disposed of at other landfills outside the region, but these quantities are likely to be small. This inter-region waste movement is likely to occur near the boundaries between districts (such as Rai Valley Transfer Station in Marlborough and Murchison Resource Recovery Centre in Tasman). The geographical location of York Valley Landfill makes it unlikely that significant quantities of waste originating from outside the region will become a problem for the area.

3.2.2. Projected Residual Waste

Analyses of Nelson-Tasman trends suggest solid waste quantities will continue to grow moderately. This trend is expected to continue unless action is taken to effect behavioural change in the community or new diversion techniques are introduced, either at a local or national level.

For landfill tonnages to start trending downwards again would most likely require continued intervention by the Councils, however, the effects of the economic recession are likely to continue to stifle economic growth in the short term, and it is possible that a reversal in tonnages may become evident this financial year.

Figure 3-3 indicates potential tonnes of waste disposed to landfill in Nelson–Tasman over time and presents four growth scenarios:

- waste growth at 1% per annum from a 2022/23 total waste baseline
- waste growth in line with long term population projections,
- waste growth at 1% of general waste only per annum excluding hazardous and imported cover material, and
- a decrease in waste per annum to 2030 in accordance with the JMMP targets. Both Councils have stated intentions to reduce the amount of solid waste being disposed of to landfill by 10% per capita by year 2030, which would require significant intervention, either at a local or national level.

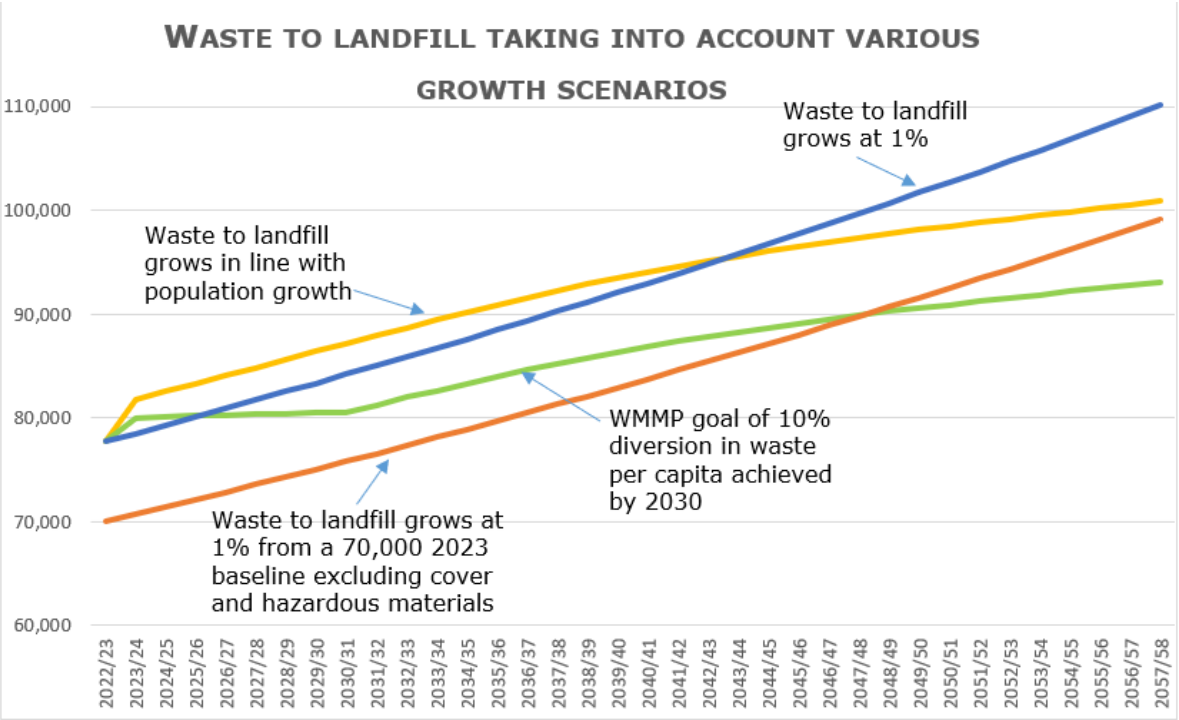

Figure 3-3: Waste growth forecasts for Nelson-Tasman residual waste.

As shown above, with an expected future population growth in the Nelson-Tasman region, waste quantities are also expected to increase. This increase will only be off-set if new initiatives are implemented to effect behavioural change in the community, or new diversion techniques are introduced either at a local or national level. Any new initiatives or infrastructure that is proposed as part of the review of the JWMMP (still awaited) may also affect the generation of residual waste and reduce the growth of waste to landfill.

From a capacity point of view, it is more conservative to base the replacement of future landfill capacity on higher growth projections. However, for estimating budget income it is considered prudent to base projected landfill tonnages using the current trend. As the bases of assessing future demand for the NTRLBU landfill assets a waste growth in line with current waste per capita tonnages and medium population growth projections (purple line) has been chosen.

3.2.3. Trends in Waste Types

Reviewing trends in waste source and types is important in understanding what the impact on demand for landfill capacity will be in the future as new legislation is introduced or waste minimisation initiatives are implemented.

Composition of Waste Studies (CWS) have been undertaken on behalf of NTRLBU over time using the MfE Solid Waste Analysis Protocol (SWAP). The objective of these studies is to find the composition, as a percentage by weight, of the waste entering York Valley Landfill using the designated 12 primary waste

classifications with some secondary classifications also used. Figure 3-4 shows the trends in waste types since 2020.

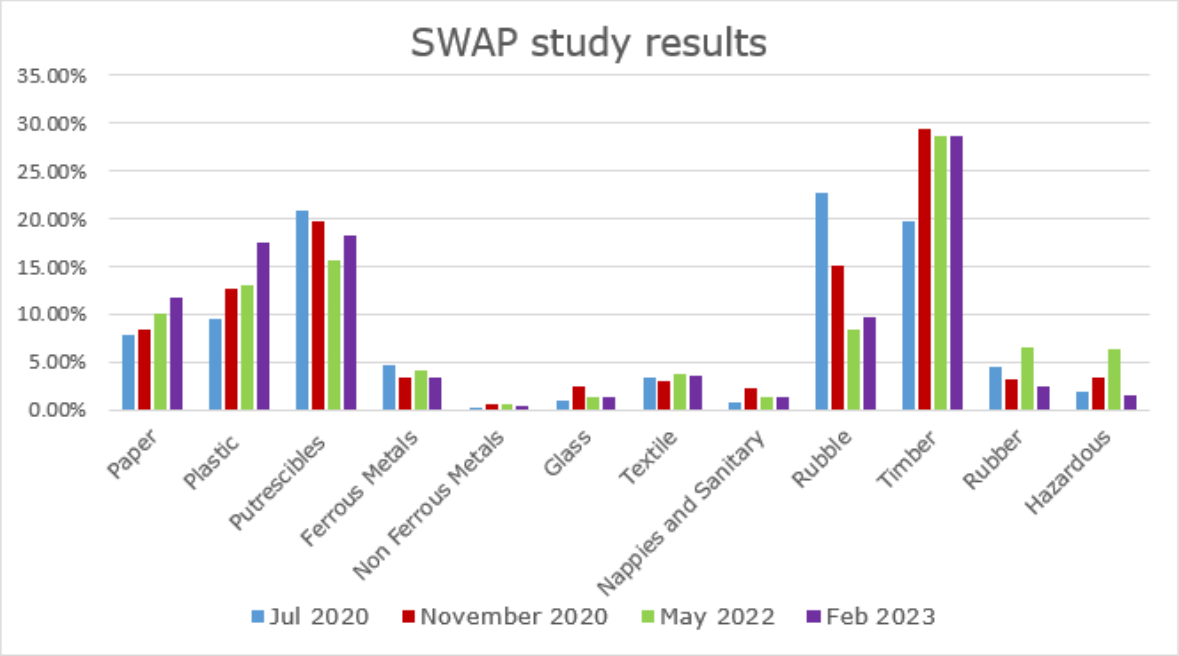

Figure 3-4: Percentage of waste types at YVL over time

The percentage of paper and plastic has continued to grow with the percentage of putrescibles declining. The overall composition of waste to York Valley based on the JBL SWAP study report, February 2023 is shown in Figure 3-5.

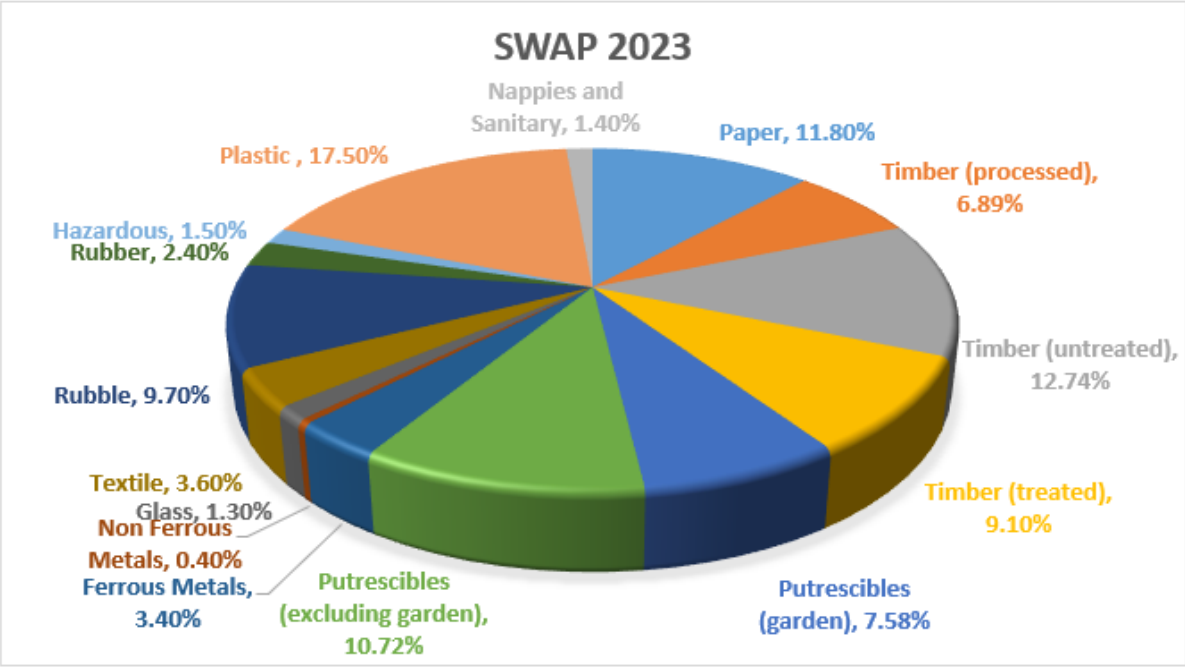

Figure 3-5: Waste Composition of material disposed of at YVL

Timber and putrescible materials, including food and garden wastes, contributes 47% of the waste disposed of the landfill each year, however most of this comes

mixed within general rubbish and other rubbish in compactors, skip and mini-bins as shown in Figure 3-6.

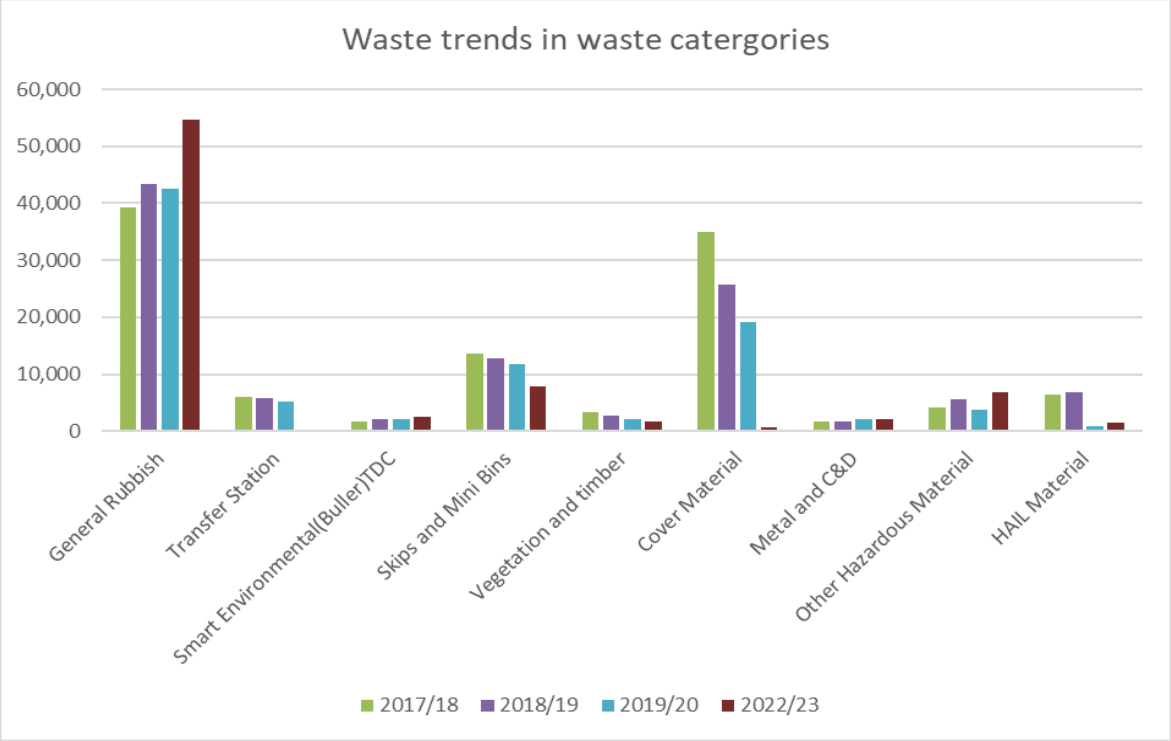

Figure 3-6: Waste quantities for the five most variable waste types.

Approximately 45% of all waste to the landfill has already been mixed at the transfer stations before being brought to the landfill. This makes it more difficult to divert individual materials at the landfill.

3.3. Demand Impacts on Assets

With the population in the region expected to increase over the medium to long term, it is expected that without further intervention (e.g., through waste minimisation measures) more landfill space will be required year on year.

Diversion of waste through resource recovery activities will increase the longevity of the available landfill airspace. In particular, potential future services such as increased green waste diversion and composting or a kerbside kitchen food waste collection being investigated as part of the current JWMMP, would have a quantifiable reduction of waste to landfill. A national ban on food waste to landfill by 2030 to reduce GHG emissions from the sector or diversion of other organic materials such as timber or green waste will also have an impact.

While these are presently matters for the Councils to consider as part of their JWMMP review and not the NTRLBU, the NTRLBU may play a role in establishing the facilities or diverting material at the landfill required to implement the JWMMP. They also have an impact on the demand for landfill capacity.

Figure 3-7 shows how the implementation of a new facility / landfill to accept HAIL material in the next two years will have on the projected tonnages of waste disposed of at YVL. The proposed introduction of domestic food collections and a potential ban of organic material for which an alternative exists by 2030 also reduces this further as shown by the red line. If the ban is extended to all organic materials and a regional facility(ies) for food and green waste processing (orange dotted line) is established or a new facility provided for the diversion of treated (dark blue dotted line) or untreated timber (light blue dotted line), each of these scenarios has a potential impact on the tonnes of residual waste disposed of to landfill annually and the life of the landfill asset.

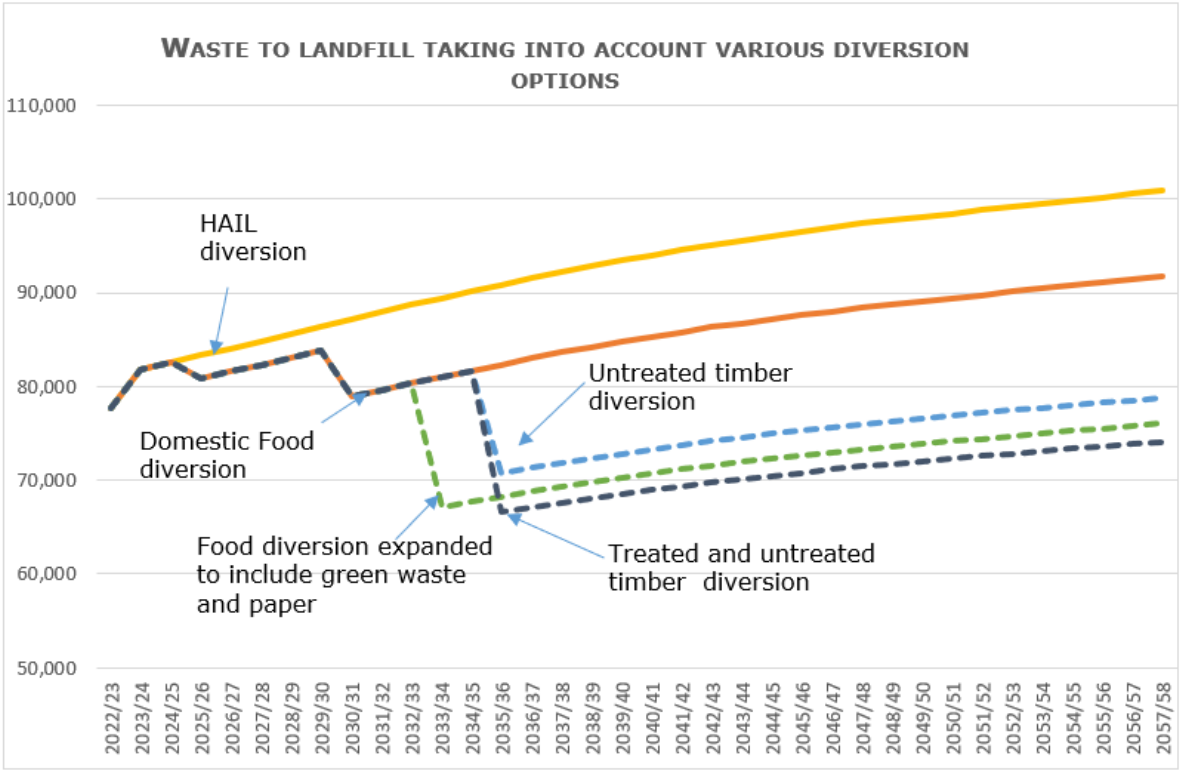

Figure 3-7: Impact or HAIL and putrescible waste diversion on landfill tonnages.

If all scenarios occur over time, then the potential reduction in the annual tonnage of waste to landfill is compounded as shown in figure 3-8.

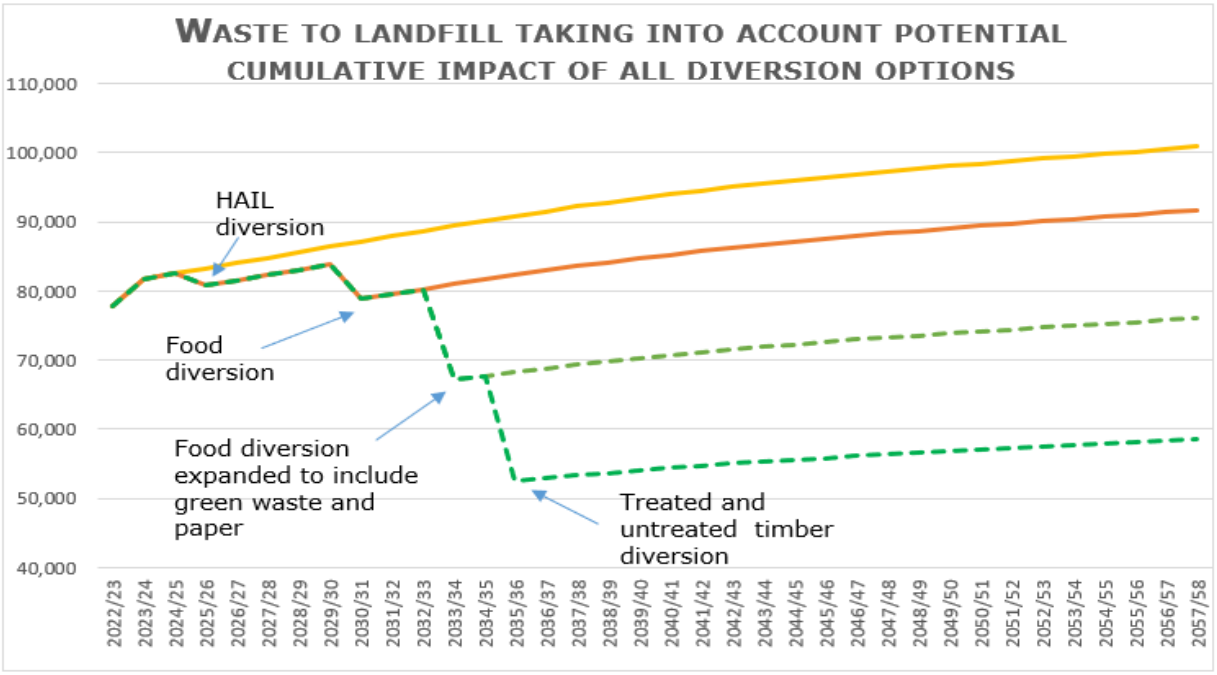

Figure 3-8: Impact of increased organic material diversion over time on landfill tonnages.

Projecting out what this would mean for life of the landfill assets and the timing of development of YVL Scenario 1 Landfill Capacity with HAIL and food diversion only (dark blue) and Scenario 2 Landfill Capacity with staggered HAIL, food and timber diversion (light blue) are shown in Figure 3-9.

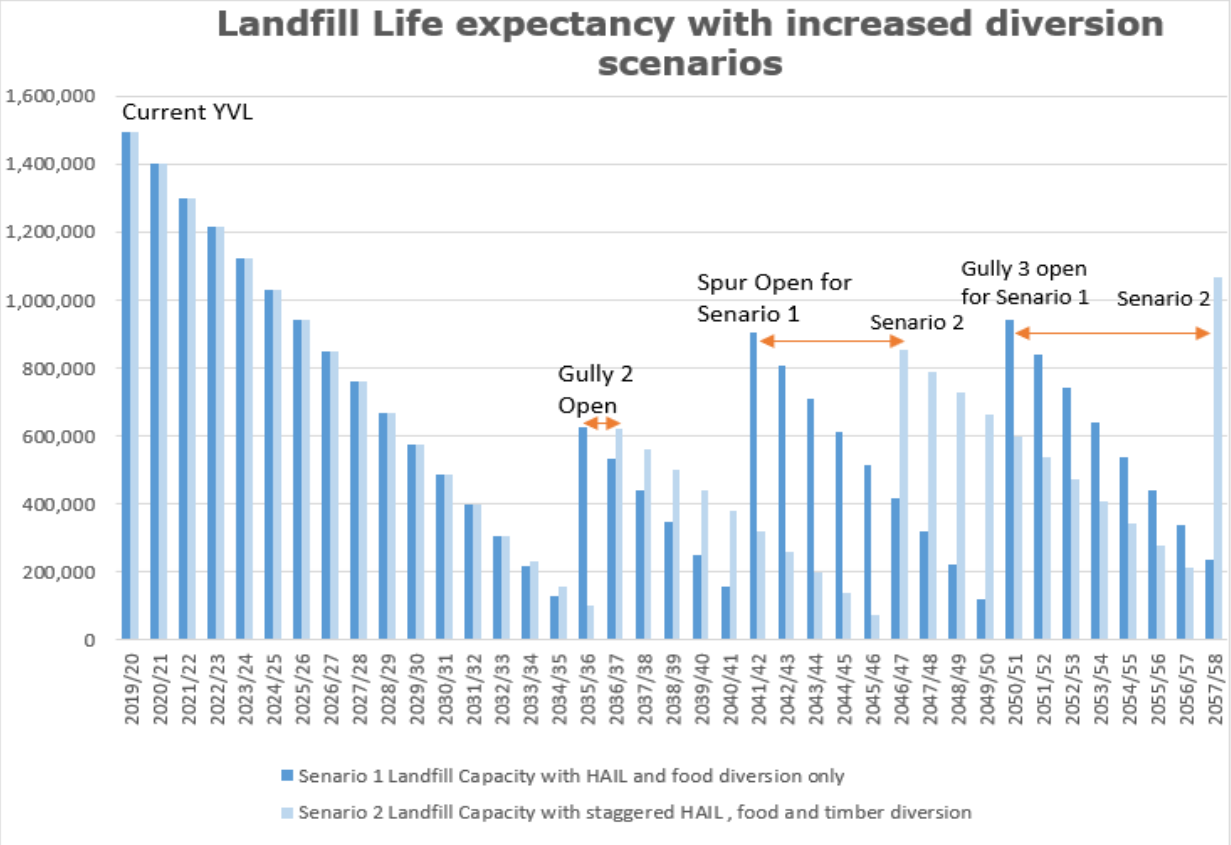

Figure 3-9: Landfill life expectancy

3.4. Demand Management Plan

The approach to demand management centres around three key areas:

- full cost disposal pricing;
- education and promotion;
- waste minimisation services.

The NTRLBU is responsible for setting gate charges, but the second and third key areas are the responsibility of each Council through their waste management activities.

Increasing gate charges is a disincentive for customers to dispose of waste, and it was one of the reasons why the national waste disposal levy was introduced through the WMA 2008.

However, simply increasing gate charges without the Councils providing other means for diverting waste from landfill (e.g., through recycling collections) can result in adverse behaviours such as increased fly-tipping.

Gate charges have been set to cover not only the full cost of the Landfill activity, but they also include a local waste disposal levy, which accounts for 33% of the gate charge in the 2023/2024 budget (see Figure 23), and which is used by the Councils to subsidise other waste management activities such as recycling.

3.5. Asset programmes to meet demand

In the short to medium term, Gully 1 of York Valley Landfill will provide the capacity to meet the demand for disposal of municipal solid waste in the region.

The following major programmes are proposed for further developing Gully 1:

- Leachate upgrade for stability.
- Landfill airspace increase.

These programmes are expected to provide sufficient airspace capacity at York Valley Landfill to last through to the end of 2034 when the Gully 1 resource consents expire.

In the previous AMP it had been proposed that the next landfill stages to be developed would be at Eves Valley. This is in line with the Deed of Agreement and Terms of Reference documents, as they currently stand.

More recently, a decision has been made to pursue the procurement of resource consents for adjacent gullies at York Valley. This will require changes to the DoA and ToR documents and will likely require approval from the Commerce Commission.

It is proposed that the resource consent procurement process for York Valley be initiated in the 2023/2024 financial year. This is to provide a reasonable timeframe so that if the process is unsuccessful, efforts can be switched to procuring consents at Eves Valley.

A summary of the asset programme required to meet the demand over the next ten years is given in the table below.

Table 3-1: Asset programme from 2024/2025 to 2033/2034 (next 10 years)

Capital Expenditure	Total ($)
Capital (Renewals)	**945,227**
Planting Eves Stage 3	300,000
Overhaul landfill gas generator motors	500,000
Sealing of landfill access road	145,277
Capital Growth (Upgrade)	**64,785,000**
Stormwater (YVLF)	1,100,000
Gas Reuse (YVLF)	13,100,000
Access, Planting, Fencing (YVLF)	1,010,000
Fire Fighting Activities (YVLF)	150,000
New Regional Landfill	43,600,000
Green House Abatement (YVLF)	
Transfer Facility (YVLF)	2,000,000
Hospital LFG System changes (YVLF)	1,000,000
Shredding (YVLF)	1,025,000
Alternative Cover (YVLF)	800,000
Green House Abatement (EVLF)	
Gas improvements (EVLF)	500,000
HAIL Facility (EVLF)	500,000
Unprogrammed Capital Expenditure	**650,000**
Contingency Board discretion (renewals and minor upgrades)	650,000
Total Capital Expenditure	**66,380,227**

4. Asset Lifecycle Management (How we provide the service)

In general terms, asset lifecycle management is a business approach that aims to maximize the efficiency and cost-effectiveness of the assets throughout their lifespan. This includes the conceptual design phase through regular usage to the eventual decommission and replacement.

Key stages of asset management lifecycle are usually stated as:

- Planning
- Acquisition
- Operation and Maintenance
- Disposal

Applying these stages to an asset, like a building for instance, there may be a period of 100 years covering planning through to the end of operation and maintenance. Thereafter, the building could be disposed of, that is demolished or removed for use elsewhere, and a new building planned and constructed, so repeating the lifecycle.

In considering each landfill as an asset, the key stages are somewhat different and generally consist of the stages described below. An approximate time scale is shown in years in brackets, though some activities could be concurrent.

- Planning (2 to 4 years)
- Land acquisition (2 to 4 years)
- Concept design (1 year)
- Site investigations (2 years)
- Resource consenting (2 to 3 years, possibly longer)
- Detailed design (1 to 2 years)
- Construction (1 to 3 years)
- Operation and Maintenance (15 to 50 years)
- Closure (1 to 2 years)
- Aftercare (30 to 40 years)
- End use (no limit)

Upon closure, the waste within the landfill will continue to decompose generating both landfill gas and leachate, both of which will need to be taken care of, which is why there is such a long aftercare period allowed for landfills. Even in the end use stage when the landfill may be used as a park or other recreational area, measures are needed to mitigate the risks of landfill gas and take care of leachate that will continue to be collected. Unless the landfill is very small, or the land so valuable, it will not be economic to move the landfill and re-use the land again. Any new landfill will have to be constructed elsewhere.

The landfill facility is made up of various asset components (e.g., road pavements, pipes, service buildings etc.). Each of these asset components have finite lives and so each have their own asset lifecycle.

So, for a landfill there are two "levels" of asset lifecycle management. At the higher level there is the landfill facility, and at the lower level there are the physical asset components that make up the landfill asset.

The asset lifecycle management at these two levels is different, as described further below.

4.1. Landfill Lifecycle Full Cost Accounting

In terms of the financial management of the landfill asset, it is important that a full cost accounting (FCA) exercise be carried out that encompasses the capital and operating costs that will be incurred over the whole life of the landfill, (i.e., from planning through to end use), which must be recovered and on which a return may be required. Typical categories of costs include:

- management, administration, and organisational overhead costs
- planning and resource consent costs
- land cost
- development costs
- operational costs
- closure and aftercare costs.

FCA is a dynamic process that needs to be able to respond to changes over the lifetime of a landfill project. This is often done with a computer model, such as the MfE's FCA model.

Once the FCA model has been set up for a landfill project, the model should be revised on a regular basis to reflect new and better information. For instance, waste quantities may have changed which will affect the rate at which the landfill is filled up which will affect the timing for the construction of new stages of the landfill.

For a landfill project it is recommended that full cost modelling be undertaken, or repeated, at the following stages:

- planning and project evaluation
- site selection and preliminary design
- detailed final design following resource consent processes
- at intervals throughout the landfill operating life, including reviews that take account of waste minimisation and recycling programmes, as their economic input on final disposal cost can be significant due to cashflow movements.

At each stage, refined information will be available to enable more accurate determination of actual disposal costs, or any charging or cost adjustments needed.

4.1.1. Eves Valley Landfill Cost Estimates

The MfE's FCA model was used in 2021 to estimate costs for developing Stage 3 of the Eves Valley Landfill. Stage 3 is essentially the large gully at Eves Valley and development of this gully would include development of landfill against and on top of existing Stages 1 and 2.

The FCA assessment included development of a concept landfill geometry and estimation of future available landfill volume.

The development of the large gully was split into three stages, called Stages 3, 4 and 5. Each of those stages was further split into sub-stages (i.e., Stages 3A to 3E, Stages 4A to 4C, and Stages 5A to 5D), as shown in the figures in Appendix 2.

It is assumed that when resource consents are applied for Stage 3, the development area will include the whole of the gully encompassing Stages 3, 4 and 5.

The concept design for the large gully yielded a landfill with sufficient volume to last for well over 50 years, assuming an annual tonnage of 75,000 tonnes and a volume usage of 1.11 m^3/tonne of waste (i.e., compaction density of 0.90 tonnes/m^3).

The FCA model cost output estimates have been used to inform this Landfills AMP.

4.1.2. York Valley Landfill Cost Estimates

A similar FCA assessment has been done for the York Valley Landfill, by considering the development of adjacent Gullies 2 and 3, and the intervening area between the two gullies, known as the "Spur Area".

Figure 4-1 shows the proposed concept footprint areas for developing landfills in adjacent gullies.

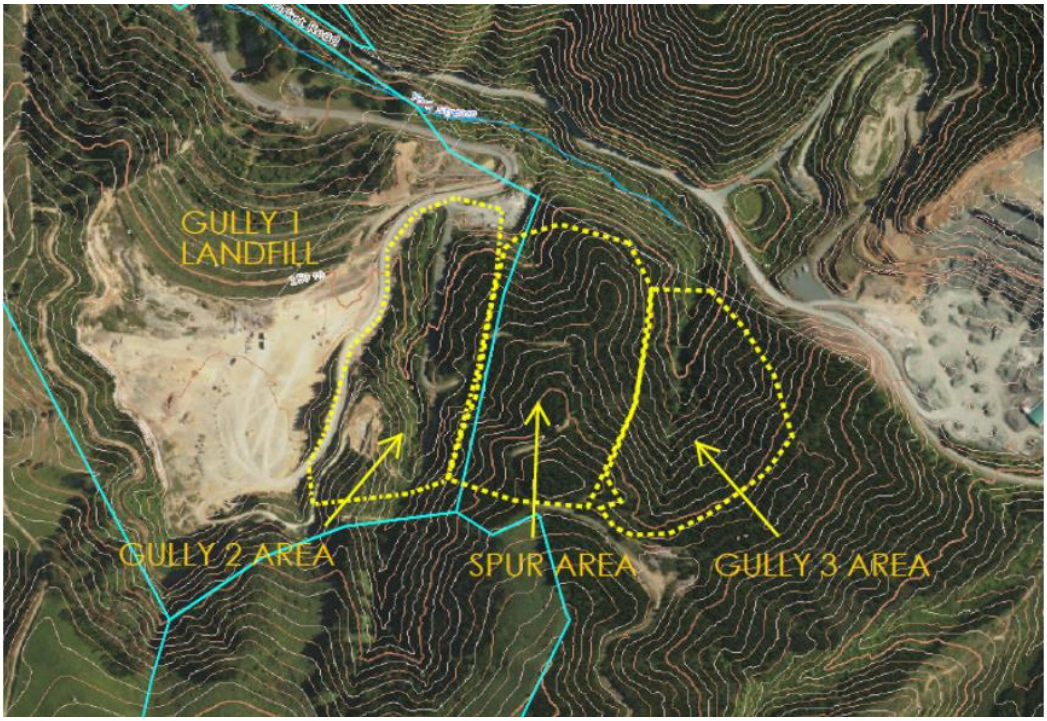

Figure 4-1: Proposed footprint areas of adjacent gully landfills

The available landfill volume is significantly less than at Eves Valley, but still represents some 28 years of landfill life, based on the same annual tonnage and volume usage parameters.

The remaining capacity of Gully 1 of York Valley Landfill is assessed to be approximately 1,300,000 m^3, based on the proposed stability improvements (i.e., buttressing of the front face), together with the excavation of minor spurs at the southern side of the landfill.

The FCA model cost output estimates have been used to inform this Landfills AMP.

4.2. Landfill Asset Capacity

For many landfills, the most valuable component is the available developed landfill capacity (e.g., volume, or airspace), which can be used for disposing of waste.

The rate at which the airspace is used up depends on two factors: firstly, the amount of waste (tonnage) which needs to be disposed of in the landfill and secondly, the efficiency at which the waste can be compacted into a given volume (its density).

Waste density is commonly defined in two different ways in New Zealand, as shown below.

1) *Waste Density = Waste Tonnage / Volume of Waste and Cover*
2) *Waste Density = Waste and Cover Tonnage / Volume of Waste and Cover*

The first way is used at York Valley and results in a lower waste density value since the numerator (i.e., top part of the equation) is a lower number.

Increasing the tonnage or decreasing the density will result in an increasing volume of landfill airspace being used up.

Additionally, reducing the volume of cover used, will increase the waste density.

For landfill assets, their future use as operational facilities is determined by the availability of developed landfill capacity as well as the potential for additional capacity to be developed in the future.

Table 4–1 provides a summary of the current and future capacities for each landfill.

Table 4-1: Current and Future Capacities of the York Valley and Eves Valley Landfills

Landfill Stage	Capacity (m^3)	Available Life (2) (Years)
Existing consented York Valley LF Gully 1	1,300,000 (1)	15.6
Existing consented Eves Valley LF Stage 2	78,200 (3)	0.9
Total Consented (4) Landfill Capacity	**1,378,200**	**16.5**
Future non-consented Eves Valley LF Stage 3	1,731,000	20.8
Future non-consented Eves Valley LF Stage 4	1,939,000	23.3
Future non-consented Eves Valley LF Stage 5	2,394,000	28.7
Total Non-Consented Landfill Capacity at Eves Valley	**6,064,000**	**72.8 years**
Future non- consented York Valley LF Gully 2	580,000	7.0
Future non-consented York Valley LF "Spur Area"	840,000	10.1
Future non-consented York Valley LF Gully 3	918,000	11.0
Total Non-Consented Landfill Capacity at York Valley (5)	**2,338,000**	**28.1 years**

Notes:

(1) Based on 3-Dimensional modelling and topographical survey at the end of June 2023.

(2) Assumes 75,000 tpa compacted at a density of 0.9 tonnes/m^3, or a usage of 1.11 m^3/tonne.
(3) Available capacity within Stage 2.
(4) Resource consent for Gully 1 expires at the end of 2034.
(5) Gullies 2 and 3 at York Valley LF are designated for landfill use but are excluded from the NTRLBU Deed of Agreement.

4.3. Annual Utilisation and Compaction Density

York Valley Landfill is surveyed annually to determine what volume has been used up in the previous year. This provides a means to determine the remaining capacity and life of the landfill.

Knowing the volume of landfill used up in a year, and the tonnage of waste disposed in the landfill, one can calculate the density of the compacted waste. Table 4-2 provides the latest available information on the waste compaction density achieved at the York Valley Landfill over the past five years.

Table 4-2**:** Waste Compaction Data for York Valley Landfill for past 5 years

Year	Waste Tonnage (tonnes)	Landfill Volume Used (m^3)	Apparent Density(1) (tonnes/m^3)	Apparent Density(2) (tonnes/m^3)
July 2018 – June 2019	106,834	112,445	0.72	0.95
July 2019 – June 2020	89,844	91,978	0.77	0.98
July 2020 – June 2021	98,622	96,126	0.81	1.03
July 2021 – June 2022	86,373	99,900	0.82	0.86
July 2022 – June 2023	81,115	92,950	0.83	0.87

Notes:
(1) By Method 1 – see section 4.2.
(2) By Method 2 – see section 4.2.

4.3.1. Benchmark Compaction Densities

ISWA[1] reports relatively high waste densities to be more than 1.0 t/m^3 and comments that densities of greater than 0.85 t/m^3 should be readily achievable with modern equipment.

It is further noted that waste densities less than 0.6 – 0.7 t/m^3 significantly reduce landfill efficiency and will increase the risk of landfill fires.

ISWA measures waste density in the same way that it is done at York Valley Landfill (i.e., using Method 1).

[1] "*Landfill Operational Guidelines*"; Prepared by the International Solid Waste Association Working Group on Landfill; 3rd Edition; 2019.

By comparison to the ISWA information, the waste compaction density achieved at York Valley Landfill over the past five years has been at the lower end of compaction densities.

Levin Landfill had recorded waste densities between 0.65 and 1.01 t/m^3 between 2012/2013 and 2020/2021, with an average density of 0.90 t/m^3. Method 2 has been used at Levin Landfill for assessing waste compaction densities and by comparison, using Method 2 for York Valley Landfill compaction results, the results are generally higher, except for year 2021/22.

The current contractual requirement for compaction density at York Valley Landfill is 0.8 t/m^3, measured by Method 1, and this has been achieved over the past five years.

The NTRLBU has decided to purchase a new, heavier waste compactor that will then be purchased by the new waste contractor commencing operations in 2024. Included in the purchase agreement will be a training contract which will ensure that the contractor's staff receive regular and up to date training in the use of the compactor.

Use of the new compactor should increase the compaction densities being achieved, with associated savings in airspace usage.

4.3.2. Landfill Lives

Applying a range of apparent densities from 0.8 to 1.0 tonnes/m^3 and assuming a range of future annual waste tonnages between 65,000 and 85,000 tonnes, one can estimate a range for the remaining life of the York Valley Landfill, and for the future lives of unconsented stages of both landfills. The ranges of life estimates are shown in Table 4-3 below.

Table 4-3: Estimated Landfill Lives

		65,000 tpa		85,000 tpa	
Landfill	**Landfill Volume (m^3)**	**Remaining Life in Years - Density of 0.8 t/m^3**	**Remaining Life in Years - Density of 1.0 t/m^3**	**Remaining Life in Years - Density of 0.8 t/m^3**	**Remaining Life in Years - Density of 1.0 t/m^3**
York Valley Gully 1	1,300,000	16.0	20.0	12.2	15.3
Eves Valley Stage 2(1)	78,200	1.0	1.2	0.7	0.9
York Valley Gullies 2, 3 and Spur Area (2)	2,338,000	28.8	36.0	22.0	27.5
Eves Valley Stage 3 (3)	6,064,000	74.6	93.3	57.1	71.3

Notes:
(1) Renewal of resource consents for Stage 2 not yet finalised.
(2) Not consented and not part of the NTRLBU Deed of Agreement.
(3) Not yet consented.

Policy 7.6 of the JWMMP requires that "*The Councils will, through the Regional Landfill Business Unit, ensure jointly that there is landfill capacity in both Council areas for the safe disposal of waste*."

Method 7.6.2 states that "*The Councils, through the Regional Landfill Business Unit, will manage the landfill service such that consented landfill airspace is monitored and maintained to ensure that, at any time, there is at least five years consented airspace and the ground has been prepared so that waste can be placed without further construction for the next two years*."

From Table 4-3 there is between 12.2 and 20.0 years of available landfill capacity at York Valley Landfill Gully 1, as at the end of June 2023, depending on the compaction density and annual waste tonnage.

Options are being investigated to increase the compaction density, the diversion of wastes, and the capacity of the Gully 1. Note, that the resource consent for York Valley Landfill expires at the end of 2034 and so the maximum available time from June 2023 is 11.5 years, unless the resource consents for Gully 1 of York Valley Landfill are renewed.

To have confidence in the available airspace it is appropriate to conduct periodic independent landfill surveys. This is undertaken by UAV LIDAR data capture. The information gained from these surveys provide an assessment of available airspace and can also be used to improve the management of the landfill and to maximise its useful life.

4.4. Critical Assets

The York Valley and Eves Valley Landfills are assets that are presently considered important within the Councils' solid waste systems.

The level of risk from these assets if a failure should occur is unacceptable not only for the organization but for the wider community.

4.5. Landfill Asset Components

The assets of the landfill activity and those for which the NTRLBU is responsible are the York Valley Landfill and the Eves Valley Landfill.

A comprehensive description of the York Valley and Eves Valley Landfills is given in Section 1.1.7 and **Error! Reference source not found.** below provides a s ummary of the asset components.

Table 4-4**:** List of asset components at each of the landfills

Asset Components	**York Valley Landfill**	**Eves Valley Landfill**
Land	✓	✓
Resource Consents	✓	✓
Designation	✓	✓

Asset Components	York Valley Landfill	Eves Valley Landfill
Water supply	✓	✓
Hazardous waste store		✓
Leachate collection system	✓	✓
Stormwater collection system	✓	✓
Gas venting system	✓	✓
Gas flare	✓	✓
Road pavements	✓	✓
Weighbridge	✓	✓
Kiosk	✓	
Wheel wash	✓	
Signs, fencing, landscaping	✓	✓

The asset components vary in age and are recorded in an asset valuation spreadsheet that is maintained by NCC staff.

4.5.1. Asset Component Failure Modes

It is generally assumed that physical failure is the critical failure mode for most of the asset components. However, the asset management process recognises that other modes of failure exist. The range of failure modes includes:

Table 4-5**:** Asset Failure Modes

Failure Mode	Description
Structural	Where the physical condition of the asset is the measure of deterioration, service potential and remaining life
Capacity	Where the level of under or over capacity of the asset is measured against the required level of service to establish the remaining life
Level of Service Failure	Where reliability of the asset or performance targets are not achieved

Failure Mode	Description
Obsolescence	Where technical change or lack of replacement parts can render assets uneconomic to operate or maintain
Cost or Economic Impact	Where the cost to maintain or operate an asset is greater than the economic return
Operator Error	Where the available skill level to operate an asset could impact on asset performance and service delivery

4.5.2. Current Issues

It is noted that many of the operational issues listed in the previous AMP have been resolved.

For York Valley Landfill the following current issues exist:

- Safety at the tipping face, which is proposed to be dealt with by constructing a transfer facility on site;
- Fire management, with the causes of fires mostly being related to disposal of batteries in the landfill;
- Improvements are needed for dealing with clean stormwater through cut-off drains above the landfill operational areas;
- Maximise compaction of waste;
- The truck wash and need to replace the existing facility;
- Covering of waste that is proposed to be dealt with by using tarpaulins, which will reduce the need for cover material to be brought into the landfill and will help deal with seagulls;
- The presence of cats is an issue that could be dealt with through having a cull and pest management plan;
- Fences around stormwater ponds to improve water safety;
- Site access management to be improved.

For Eves Valley Landfill the following current issues exist:

- The leachate rising main, which has inadequate capacity and pressure rating, will need replacing in the future, but requires interim measures to cope with existing issues;
- The sump collecting flow from the under-liner subsoil drain shows levels of contamination, so requiring the collected groundwater to be treated as leachate, whilst its location has potential to affect the Landfill Stream;
- The cell phone coverage is poor on-site and is a risk for people working alone and remotely; it requires a booster;

- There is a need to improve the capture of data from the SCADA system to make it more accessible;
- Data from the flare and new weighbridge needs to be included into the same online platform being used by NTRLBU;
- Site access management is to be improved;
- H&S procedures need to include the risk of working alone;
- There are water safety issues around leachate pond;
- Some power supply cables are above ground, secured to internal fence lines and are not adequately protected.

4.5.3. Summary of Asset Valuations

The NTRLBU's solid waste assets have been recorded in a fixed asset register and a valuation completed as of 30th June 2022 for accounting purposes.

Assets have been variously grouped under the following asset groups, split between York Valley and Eves Valley Landfills:

- Stormwater;
- Gas;
- Wastewater;
- Leachate;
- Water supply;
- Internal roading;
- Monitoring;
- Other.

Since the 2022 asset valuation was undertaken, the following assets have been constructed or acquired by the NTRLBU, and which are not reflected in the valuation.

- Upgraded access road at York Valley;
- Bridge construction at Eves Valley;
- Weighbridge installation at Eves Valley;
- Acquire the landfill gas flare, gas transport pipe and hospital gas boiler at York Valley.

The above assets are to be included in future versions of the valuation report that feeds into the AMP and until then, a check to see that this has been done will be recorded in the Improvement Plan.

Assets have been valued for Optimum Replacement Costs (ORC), Optimum Depreciated Replacement Costs (ODRC) and Annual Depreciation (AD).

For York Valley Landfill, the Remaining Useful Lives (RUL) used in the ODRC and AD valuations have been assessed in two different ways; firstly by assuming that the life of the landfill will extend to the term of the existing resource consents (i.e., until end of 2034), and secondly, by assuming that the existing

airspace capacity is a limiting factor and will reduce the life of the landfill by 3 years (i.e., until end of 2031).

The value of landfill assets, as recorded in the asset register spreadsheet, is shown in the table below. Appendix 3 shows the value of each asset group.

Table 4-6: Landfills Valuation 30 June 2022

Asset Category	Replacement Value	Optimised Depreciated Replacement Cost	Annual Depreciation
York Valley Landfill – RC constrained	$12,018,760	$7,972,584	$423,381
Eves Valley Landfill – RC constrained	$1,248,102	$112,114	$57,606
Both Landfills – RC Constrained	**$13,266,862**	**$8,084,698**	**$480,987**
York Valley Landfill – Airspace constrained	$12,018,760	$7,769,719	$501,590
Eves Valley Landfill – Airspace constrained	$1,248,102	$112,114	$57,606
Both Landfills – Airspace Constrained	**$13,266,862**	**$7,881,832**	**$559,197**

Confidence in Asset Component Valuations

It is unknown to what extent the physical condition of the asset components has been taken account of in estimating their remaining useful lives. It is recommended that the valuation of asset components be reviewed, including undertaking physical inspections to determine the condition of various asset components so that their remaining useful lives can be re-assessed. This recommendation is included in the Improvement Plan.

4.5.4. Historical data

Table 4-7 provides a summarised statement[2] of the financial position of the NTRLBU for the past three financial years.

Table 4-7: Summarised Statement of Financial Position for the NTRLBU

Assets / Liabilities	Actual 30 June 2023	Actual 30 June 2022	Actual 30 June 2021
Current Assets			
Nelson City Council Current Account	-	-	657,350
Trade and other receivables from exchange transactions	781,246	756,094	749,963
Inter-entity receivables from exchange transactions	482,847	432,335	384,744
Inter-entity other financial assets	-	1,482,497	3,448,017
Total Current Assets (1)	**1,264,093**	**2,670,926**	**5,240,074**
Current Liabilities			

[2] From NTRLBU Annual Financial Statements – For the Year ended 30 June 2023.

Assets / Liabilities	Actual 30 June 2023	Actual 30 June 2022	Actual 30 June 2021
Nelson City Council Current Account	2,885,106	2,087,327	-
Sundry Creditors and other payables from exchange transactions	408,357	787,336	863,874
Inter-entity payables from exchange transactions	1,264,093	1,045,756	1,098,271
Current portion of Provisions	501,700	537,735	527,434
Total Current Liabilities (2)	**5,059,256**	**4,458,154**	**2,489,579**
Net Working Capital (3) = (1)-(2)	**(3,795,163)**	**(1,787,228)**	**2,750,495**
Non-Current Assets			
Property, plant and equipment	18,728,094(1)	10,682,735	5,931,870
Intangible Assets	6,669,061	5,967,342	4,007,362
Total Non-Current Assets (4)	**25,397,155**	**16,650,077**	**9,939,232**
Non-Current Liabilities			
Provisions	6,521,951	6,501,089	7,075,690
Borrowings	6,000,000		
Total Non-Current Liabilities (5)	**12,521,951**	**6,501,089**	**7,075,690**
Net Assets (7) = (3) + (4)-(5)	**9,080,041**	**8,361,760**	**5,614,037**

Note: (1) This figure is not complete.

4.6. Operations and Maintenance

Routine maintenance is the regular ongoing day-to-day work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again.

4.6.1. Operations and maintenance plan

The NTRLBU has responsibility to ensure the following activities are carried out in managing the landfill activity:

- Contract management, monitoring and design;
- Renewal and rehabilitation of asset;
- Emergency capability such as response to adverse external events.

Typical operation and maintenance activities costs include contractors' claims, consultants' fees, administrative costs, monitoring costs and Government levies.

Maintenance falls into two broad categories as follows:

- Planned maintenance: Proactive inspections and maintenance works done to ensure continued operation of the asset.
- Unplanned Maintenance: Reactive maintenance to correct failures.

Both the York Valley and Eves Valley landfills are operated and maintained in accordance with their respective Landfill Management Plans.

The operations of the landfills are contracted out and specialist consultants are contracted to carry out the consent monitoring.

Only the York Valley landfill is open for waste disposal purposes, and access to the landfill is restricted to approved contractors.

4.6.2. Operations and maintenance strategies

The NTRLBU contracts out the day-to-day operation and maintenance of landfill assets and waste disposal services with the aim of maintaining required levels of service in a cost-effective manner.

A single contract was let to Downer in December 2018 for the operation and maintenance of both the York Valley and Eves Valley landfills, and The Contract Date of Expiry is currently 30 June 2024.

The contract has been let on a combination of prescriptive and performance basis with a view to:

- Achieving maintenance efficiencies and cost effectiveness by allowing the contractors to be innovative in managing the operation and maintenance activities;
- Encouraging pro-active maintenance practices rather than reactive practices;
- Ensuring compliance with legislative, monitoring and resource consent requirements.

A new operations contract is being procured for commencement in 2024. It will be a 5+3+1+1 contract to provide flexibility around availability of airspace.

To ensure that the landfill activity is efficient and effective the NTRLBU monitors and reviews the contractors' performance on a regular basis.

Site operations also include regular inspections to ensure assets are performing their intended objectives and general site maintenance.

Programmed maintenance includes regular cleaning of drains.

Reactive maintenance comprises those activities which are undertaken on site by approved contractors as and when required.

4.7. Renewals / Upgrades

Capital expenditure in the landfill activity includes renewals and upgrades.

Renewals include the renewal and rehabilitation of existing assets to maintain the asset to their original size and condition. Renewal expenditure includes the following examples:

- Replacing asset components and preventative maintenance;
- Rehabilitating leachate collection pipes and assets;
- Planting front face.

Upgrades are work that is intended to extend or upgrade the facilities or works and is required to allow for new development and growth or to achieve a higher level of service and may include:

- Creating a new asset;
- Improve the asset capacity beyond its original capacity.

4.7.1. Renewal identification and renewal strategies

Assets are considered for renewal as they near the end of their effective working life, or where the cost of maintenance becomes uneconomical and when the risk of failure of the assets is high.

Renewal decisions are supported by reports from the operations contractor's work based on their knowledge of the systems. In addition, theoretical life expectances of asset components have been used for the purpose of some financial projections.

The strategy for replacement of landfill assets is largely knowledge based and depends on professional judgement on the viability and integrity of the assets to be either maintained, replaced or relocated.

To improve the information base for the renewals strategy and replacement programme, the NTRLBU will focus on the following improvements:

- Determining critical assets for the activity, in the light of recent changes to operations;
- Updating the valuations of both landfills, and visually assessing remaining life of critical or high value assets;
- Better defining which assets will require renewal and which may be abandoned;
- Reviewing the life and renewal cycle for critical stormwater and leachate collection assets that are managed by the activity;
- Better defining the maintenance and renewal strategy for sealed pavements on sites.

Some of the particular areas where the NTRLBU needs to improve its knowledge include:

- Assessing condition and remaining life of paved road surfaces on landfill sites;
- Renew / replacement strategy for below ground infrastructure at Eves Valley landfill (leachate rising main);
- Renew / replacement strategy for stormwater infrastructure at York Valley landfill.

The renewal plan over the next ten years allows for approximately $945,000 of capital expenditure, with a third occurring in year 2024/25, and half of it occurring in 2029/30. Access road development at Eves Valley accounts for $300,000 with overhauling of the landfill gas generator motors accounting for a further $500,000.

Capital upgrades account for nearly $65-million over the next ten years, with two-thirds of this (i.e., $43.6-million) being allocated to the development of a new regional landfill.

Most of the new regional landfill development costs occur in a three-year period between 2030/31 and 2032/33, with $2.6-million earmarked for procuring resource consents in the years from 2024/25 to 2027/28.

Projects to reuse gas from York Valley Landfill accounts for $13 million of capital expenditure, spread between years 2025/26 and 2026/27.

4.8. Creation/Acquisition/Augmentation Plan

4.8.1. Summary of Future costs

It is projected that by 2023/24 work will need to commence on investigating, designing, and consenting the next stage of a regional landfill, presently assumed to be at York Valley, provided the Deed of Agreement can be amended and approved by the Commerce Commission.

The construction of the next stage of a regional landfill, be it either at York Valley or Eves Valley, needs to be completed at least two years before resource consents expire for Gully 1 of York Valley Landfill, which is at the end of December 2034.

A summary of the asset programme required to meet the demand over the next ten years is given in the Table 3-1: Asset programme from 2024/25 to 2033/34.

A financial projection of Capital Growth (upgrade) is provided within Table 6-2: Financial Projections from 2024/25 to 2033/34.

Any upgrades for the landfills are loan funded.

4.9. Disposal Plan

Assets may be disposed of due to under-utilization, obsolescence, provision exceeds required levels of service, uneconomical to upgrade or operate, or the service is provided effectively by other means.

The NTRLBU is yet to establish a Disposal Plan for any of the asset components. It is intended that a plan is completed by the end of the 2023/24 financial year.

5. Risk Management Plan (Dealing with uncertainty)

5.1. Critical Assets

5.1.1. How critical assets are identified and managed

The JWMMP identifies York Valley and Eves Valley Landfills as critical assets. They are considered strategic within the Councils' solid waste systems.

The maintenance philosophy employed by NTRLBU for critical assets is to ensure reliability of the asset by minimizing and/or eliminating unexpected failures. To achieve this, the balance between how we plan for and how we react to issues with the assets must be taken into consideration during the life cycle cost of the asset.

An improvement action is required to assess the criticality of assets within the landfills and determine if any further action is required to manage risks.

5.2. Risk Assessment

5.2.1. Approach for assessing risks

The Nelson City Council's approach for addressing risks is consistent with the AS ISO 31000: 2018 standard.

In that standard, risk is defined as the "*effect of uncertainty on objectives*". An effect is a deviation from the expected. It can be positive, negative or both, and can address, create, or result in opportunities and threats.

Risk is usually expressed in terms of risk sources, potential events, their consequences, and their likelihood.

A risk source is an "*element which alone or in combination has the potential to give rise to risk*".

An event is an "*occurrence or change of a particular set of circumstances*".

Consequence is an "*outcome of an event affecting objectives*". Table A.4.2 in Appendix 4 provides consequence ratings for different objectives, as applied by NCC.

Likelihood is the "*chance of something happening*". Table A.4.1 in Appendix 4 provides qualitative guidance, and indicative probability and frequency descriptors for different likelihood categories, as applied by NCC.

A control (or treatment) is a "*measure that maintains and/or modifies risk*".

Risk is quantitatively assessed by considering the combination of the likelihood and consequence of an event happening and obtaining a score from a risk matrix. Figure 5-1 shows the risk matrix used by NCC.

		CONSEQUENCES				
	Descriptor	Insignificant(1)	Minor (2)	Moderate (3)	Major (4)	Extreme (5)
LIKELIHOOD	Almost certain (5)	Medium (5)	Medium (10)	High (15)	Very High (20)	Very High (25)
	Likely (4)	Medium (4)	Medium (8)	High (12)	High (16)	Very High (20)
	Possible (3)	Low (3)	Medium (6)	Medium (9)	High (12)	High (15)
	Unlikely (2)	Very Low (2)	Low (4)	Medium (6)	Medium (8)	High (10)
	Rare (1)	Very Low (1)	Very Low (2)	Low (3)	Medium (4)	Medium (5)

Figure 5-1: Risk Matrix – Consequences x Likelihood

Figure 5-2 shows the residual risk tolerance levels adopted by NCC.

Risk Level	Description and Action	Authority for continued tolerance	Timing for implementing action	Obligation to promptly advise including advising treatments
Very High	Not normally tolerable, immediate intervention to reduce risk	Full Council on advice from CE	Immediate if possible but no more than one month	Full Council using best practicable means
High	Not normally tolerable, initiate action as soon as practicable to reduce risk below High	SLT or Group Manager (Council at CE discretion)	As soon as practicable but no more than 2 months	SLT or accountable Group Manager (Council at CE discretion)
Medium	Normally tolerable, frequently review to look for opportunities to further reduce risk where practicable	Business Unit Manager	At least within one quarter	Accountable Group Manager
Low	Acceptable risk, routine review for low cost actions to reduce risk further	No specific authority required	Routine review period (e.g. 3- 6 monthly)	None
Very Low	Acceptable risk, no specific actions to reduce further	No specific authority required	Only if incidental to another action	None

Figure 5-2: Residual Risk Tolerance

5.2.2. Top risks and how these will be managed.

The top-level risks that have been identified for the landfill activity are shown in the following table. Appendix 4 lists all risks identified for the Landfill Activity.

Table 5-1: Risk Priority Rating Matrix for the Landfill Activity (Semi-Quantitative)

Risk #	Risk Title	Control / Treatment	Treatment Description	Likelihood	Severity	Rating
R00524	Landfill: Increase in ETS charges	MC00790	Inform public of changes; offer alternative solutions for waste minimization.	Likely	Moderate	HIGH
R00525	Landfill: Increase in National Waste levy disposal charges	MC00791	Inform public of changes; offer alternative solutions from waste minimization.	Likely	Moderate	HIGH
R00529	Landfill: Fire in the landfill	MC00795	Follow LMP requirements; - Train operators to deal with fire emergencies; - Install thermal imaging cameras; - Reduce batteries sent to landfill through Recycling Depots / Bins.	Likely	Moderate	HIGH

5.3. Infrastructure Resilience Approach

The York Valley Landfill is the primary regional landfill facility until Gully 1 is at capacity, or until expiry of the resource consents for York Valley Landfill in December 2034, whichever occurs first.

Stage 2 of the Eves Valley Landfill is to have all necessary consents and approvals to accept up to one year's waste from the Nelson-Tasman region in case of unforeseen temporary closure of the York Valley Landfill.

The Deed of Agreement States whilst Stage 3 of the Eves Valley Landfill is to be retained for future use as a regional landfill, procurement of resource consents is to proceed initially for the adjacent gullies at York Valley Landfill, failing which resource consent applications will be made for Stage 3 of Eves Valley Landfill.

Aside from these provisions, both landfills are to be operated in accordance with their respective Landfill Management Plans, which will contain provisions for dealing with emergencies.

5.4. Emergency Fund

The NTRLBU Board resolved in September 2022 to hold a $250,000 Emergency Fund to aid in response and recovery following severe issues of emergency. This fund, once used, will be 'topped up' from operating income over the next 5 years.

6. Financial Summary (What it will cost and how we pay for it)

Appendix 5 provides the details of the financial projections from 2023/24 through to 2033/34. Tables 6-1 and 6-2 below provide summaries of future operating costs and future capital costs respectively.

6.1. Financial Statements and Projections

Operating costs includes for the following:

- Staffing and administration expenses: engineering supervision, asset management, corporate services, IT support, etc.;
- Interest on loans;
- York Valley expenses: landfill operations, emissions trading scheme payments, waste minimisation levies, rates, closure costs, resource consent compliance, reactive maintenance etc.;
- Eves Valley expenses: waste minimisation levies, rates, operations, resource consent compliance, reactive maintenance etc.;
- Local disposal levies to fund waste minimisation activities.

6.2. Summary of future operating costs

The landfill activity is funded from landfill charges. Table 6-1 summarises the projected operating expenses for the next ten years. 2023/24 budget is included for comparison.

Table 6-1: Landfill Operating Expenses

Costs (thousands)	2023/24 (this year)	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34
Staff & Admin Expenses	$616	$653	$653	$653	$653	$653	$653	$653	$653	$653	$653
Interest	$524	$1,016	$1,069	$1,459	$1,736	$1,644	$1,616	$1,919	$2,663	$3,339	$3,434
YVLF Expenses	$8,947	$11,023	$11,083	$11,408	$12,828	$12,892	$12,957	$13,017	$13,084	$13,150	$15,361
EVLF Expenses	$3	$420	$681	$691	$701	$701	$701	$701	$701	$701	$701
Local Disposal Levies	$6,000	$6,000	$6,600	$6,600	$6,600	$6,600	$6,600	$6,600	$6,600	$6,600	$6,600
Total	**$16,090**	**$19,112**	**$20,086**	**$20,811**	**$22,518**	**$22,490**	**$22,527**	**$22,890**	**$23,701**	**$24,443**	**$26,749**

6.3. Summary of future capital costs

Capital costs for renewals, upgrades of the landfills and un-programmed capital over the next ten years are shown in Table 6-2. 2023/24 budget is included for comparison.

Table 6-2: Capital Costs for Next Ten Years

Costs (thousands)	2023/24 (this year)	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34
Renewals	$1,100	$300	$-	$-	$-	$145	$500	$-	$-	$-	$-
Upgrades	$3,850	$4,725	$5,510	$12,925	$425	$-	$2,500	$11,350	$17,500	$8,750	$1,100
Un-programmed capital	$4,065	$65	$65	$65	$65	$65	$65	$65	$65	$65	$65
Total	**$9,015**	**$5,090**	**$5,575**	**$12,990**	**$490**	**$210**	**$3,065**	**$11,415**	**$17,565**	**$8,815**	**$1,165**

Figure 15 shows the projected capital expenditure for the landfills for the following ten years. The following comments are made:

- Almost half of the capital expenditure in year 2024/25 is for developing a transfer facility at York Valley Landfill.
- In 2025/26 capital expenditure is evenly spread with four areas (i.e., YVLF stormwater, YVLF gas reuse, YVLF hospital gas generation, and shredding at YVLF) each being allocated $1 million or slightly over.
- In 2026/27 the bulk of the capital expenditure ($12 million) is allocated to gas reuse at York Valley Landfill.
- Consenting of a new regional landfill accounts for $2.6 million between years 2024/25 and 2027/28. This is increased to $41 million between years 2029/30 and 2033/34 when development of the next landfill is expected to occur, accounting for almost all the capital expenditure between those years.

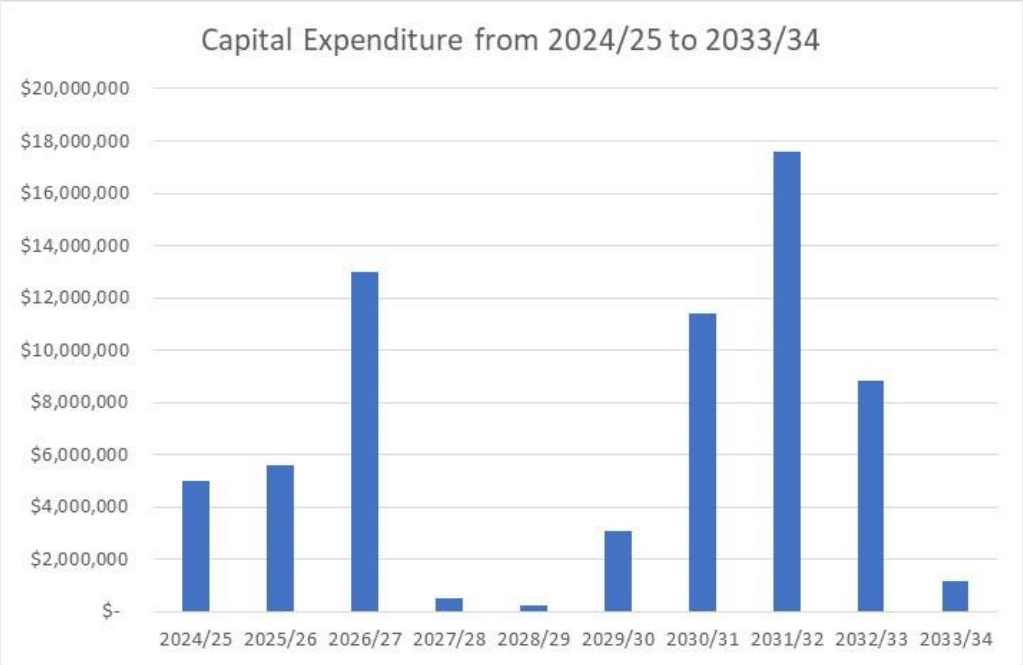

Figure 6-1: Capital Expenditure from 2024/25 to 2033/34.

6.4. Funding Strategy

6.4.1. Details of how expenditure will be financially treated (e.g. capitalisation policies) and funded

Funding

The landfill activity is a self-funded account. Income generated from fees, charges, levies and grants are used to fund all expenditure with any surpluses retained in the landfill special reserve fund. Up to $300,000 can be retained in the landfill special reserve fund. Further surpluses will be distributed to the Councils for use to fund solid waste activities.

Fees and Charges

Fees and charges are set following the approval of the annual Business Plan and make up the largest part of the income stream for the landfill activity.

Landfill Aftercare Fund

With the eventual closure of the York Valley and Eves Valley Landfills there will continue to be aftercare costs for approximately the next 30 years after closure. With projected income after closure being limited to landfill gas harvesting a Landfill Aftercare Fund has been established to provide for the aftercare of the landfills.

Grants

Grants are only included within revenue figures when eligibility has been established by the granting agency.

Loans

Upgrade projects can be funded by internal loans, if needed.

Operational costs

Operation costs relate to all the costs associated with the operational function of the landfill activity and include the cost of capital and depreciation.

Renewal and Upgrade cost

Renewals and upgrades are depreciated over the shorter of their physical lives or economic lives (the assessed life of the landfill). The depreciation is funded by fees and charges.

Should upgrades require funding beyond funds available within the closed account, funds are borrowed from the two Councils as an internal loan.

6.5. Valuation Forecasts

6.5.1. Forecasts of depreciation

Typical useful lives from the NZ Infrastructure Asset Valuation and Depreciation Guidelines – Version 1.0 have been used as a guide in determining base lives. However, the manual generally provides average expected life detail for asset components and NTRLBU experience from the renewals of its assets has been used to vary these base lives, where appropriate.

6.6. Key assumptions made in Financial Forecasts

6.6.1. Key Assumptions for Operations and Maintenance

Operations and maintenance in running the landfill activity includes:

- Management;
- Engineering supervision;
- Electricity and telephones;
- Maintenance of the landfill activity includes:
    - Regular and ongoing annual expenditure necessary to keep the assets at their required service potential;
    - Work which provide for normal care and attention of the asset including repairs and minor replacements;
    - Unplanned maintenance. i.e., failures requiring immediate repair to reinstate the asset;
    - Planned maintenance.

It is assumed that operations and maintenance will be carried out at best practice level. Items such as the stability analysis of York Valley Landfill are

scheduled in the plan and programmed in accordance with forward projections. These activities are programmed based on professional judgement and will be reviewed as information becomes available.

The following assumptions are made with respect to the financial costs:

- Projections are in June 2023 dollars.
- Annual landfill tonnages are assumed to increase by 1% per year from 2025/26. Tonnages have been conservatively estimated so as not to over-estimate income from gate charges.
- The landfill activity is scheduled to operate with zero deficit/surplus from 2027/28 onwards. In the three years from 2024/25 to 2026/27, deficits of $100k, $500k and $1 million are scheduled to smooth operational cashflow. No interest is paid on the money owed to Councils as the loss is funded from aftercare provisions held by Councils to cover post-closure costs.

The York Valley and Eves Valley Landfills are operated and maintained in accordance with their respective Landfill Management Plans.

York Valley Landfill is the only operational landfill, whilst Eves Valley Landfill has been closed temporarily.

The landfill gas recovery system at York Valley Landfill and the operation of the landfill itself is contracted out to Downers and specialist consultants are contracted to carry out the consent monitoring. Access to the landfill is restricted to approved contractors.

The landfill activity is funded from landfill charges.

The national waste disposal levy is set by legislation (WMA 2008) and is presently $50 per tonne of residual waste disposed of in the landfill (2023/24). The national waste levy will be increased from July 2024 to $60 per tonne.

ETS charges fluctuate with market demand, but the government is proposing to introduce price controls through having a floor price of $25 per NZU and a ceiling price of $50 per NZU. In the financial forecast an ETS charge of $43.50 per NZU has been assumed since the NTRLBU has a surplus of NZUs, but from 2033/34 it is assumed that NZUs will need to be purchased at an increased cost.

An application for a unique emissions factor was granted to York Valley Landfill on account of it having a landfill gas collection and destruction system. Presently the UEF is 0.091 NZUs per tonne of waste disposed (note that the default emissions factor is 0.91 NZUs per tonne), but a UEF of 0.21 has been used for budgeting purposes through to the end of year 2033/34 (i.e., closure of York Valley Gully 1) to provide a measure of conservatism. Thereafter, the UEF has been assumed to be 0.91 since the efficiency of the landfill gas collection system will initially reduce if either Gully 2 at York Valley is developed, or if Stage 3 of Eves Valley Landfill is developed.

One of the most significant operating expenses is the local waste disposal levy. This has been set at $6 million from 2024/25, increasing to $6.6 million from year 2025/26, with a 50:50 split to each Council.

The local waste disposal levy is determined by the NTRLBU with input from Councils. It is recovered from gate charges. The local waste disposal levy funds other waste management and minimisation activities (e.g., recycling) that provide a public good but cannot be fully funded through a user pays model. The local waste disposal levy is also used by each Council to balance the transfer station and green-waste activities.

6.6.2. Key Assumptions for Capital Expenditure

The York Valley Landfill infrastructure consists of mostly long-life assets.

Projections for further regional landfill development work are based on concept design estimates done in 2021 for the NTRLBU.

The estimates were based on the MfE Full Cost Accounting Model and assumed modern standards of landfill design (composite liner), together with a landfill gas collection and destruction system (gas flare).

It is noted that whilst development costs would ordinarily be spread over the life of a landfill stage, a conservative approach has been taken to allocate development costs at the start of the new regional landfill life. Additionally, costs for procuring consents have been brought forward to occur between years 2024/25 and 2027/28.

6.6.3. Key Assumptions for Income

The source of income and distribution of income plays a significant role in how the landfill activity is managed.

The subsidisation of waste management and minimisation activities through the local waste disposal levy that is funded from landfill charges is a significant component of the cost of the landfill activity, as is shown in Figure 6-2 below. It makes up 33% of the total cost per tonne.

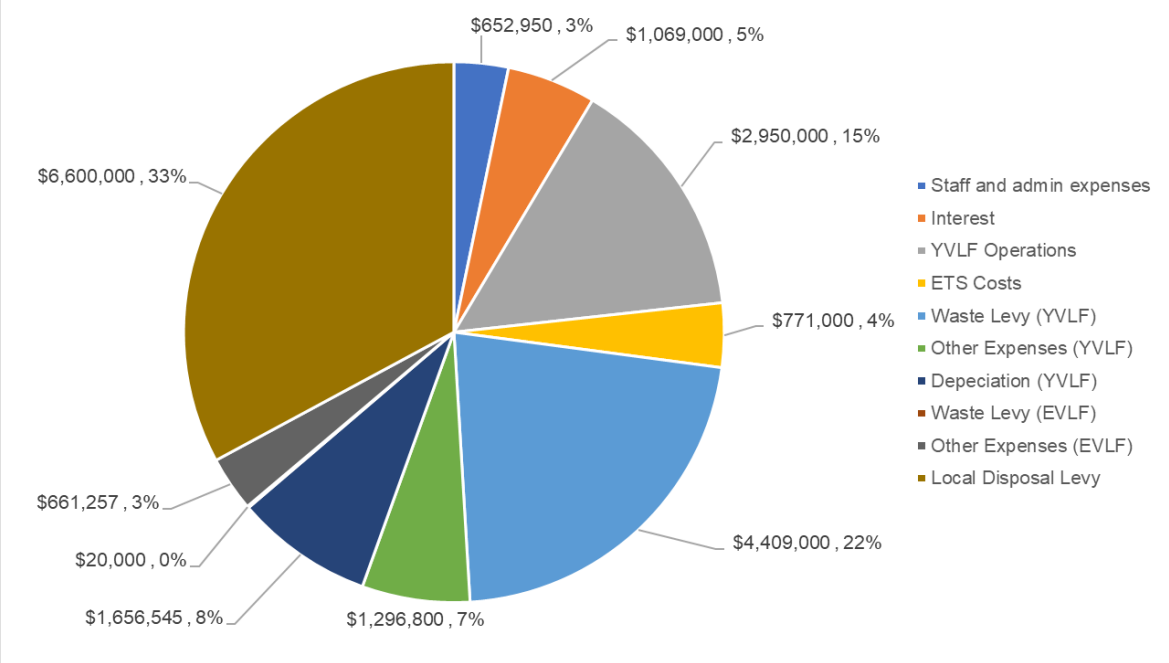

Figure 6-2: Projected Cost of Landfill Activity per Tonne in 2024/2025, excluding GST

Table 6-3 below shows the sources of income for the landfill activity for the next ten years. The charging of a local waste disposal levy and possible increases in the national waste levy and ETS charges will have a significant impact on any joint waste disposal model that might be considered in the future.

Income is derived from the sale of landfill gas to the hospital and from year 2028/29, to the Hot Pools project.

Additionally, the development of a HAIL facility at Eves Valley Landfill is assumed to generate additional income from 2024/25.

Table 6-3: Income Sources for the Landfill Activity from 2023/24 to 2033/34

Costs (thousands)	2023/24 (this year)	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34
YVLF Gates Charge $/T	$212	$250	$255	$256	$247	$244	$242	$244	$252	$259	$285
TOTAL INCOME	$15,998	$19,012	$19,587	$19,811	$22,518	$22,490	$22,527	$22,890	$23,701	$24,444	$26,749
Gate Fees	$15,698	$18,184	$18,759	$18,979	$18,486	$18,458	$18,495	$18,858	$19,669	$20,405	$22,710
EVLF HAIL	$0	$328	$328	$332	$332	$332	$332	$332	$332	$332	$332
Other Income	$300	$500	$500	$500	$3,700	$3,700	$3,700	$3,700	$3,700	$3,707	$3,707

6.7. Forecast Reliability and Confidence

Income and operational and maintenance expenses are based on existing budgets. These are usually considered to be accurate for the short term (first three years), but all are directly related to the tonnage of waste disposed of at the landfill, which could vary.

The tonnages assumed are considered conservative in that they are based on existing tonnages, which are more likely to increase than decrease, and so the projected income is assumed to be conservative. The NTRLBU deliberately uses a slightly lower than expected waste mass for the financial forecast. This insulates the NTRLBU against a significant loss should waste mass reduce during the year. For this reason, the financial forecast is based on receiving approximately 72,700 tonnes in year 2024/25, rather than the projected tonnes shown in section 3.3. However, projected tonnes are used for determining when the next landfill stage is likely to be required, because this, quite obviously, has an impact on the timing of capital expenditure for developing the next landfill stage.

It is noted that the government has a focus on diverting organic waste from landfill and plans to ban the disposal of food waste to landfills from 2030. This will reduce the overall quantities of waste.

There are three other cost inputs which can influence the operating expenses:

- Local waste disposal levy
- National waste disposal levy
- Cost of ETUs

The local waste disposal levy is covered by gate charges and is intended to subsidise the costs of other solid waste activities (e.g., recycling), which do not generate sufficient income to cover their own costs.

Future changes to the other solid waste activities may cause the cost of those activities to increase, in which case Councils may seek to off-set those costs through an increase in the local waste disposal levy.

The national waste disposal levy is currently $50 per tonne for municipal landfills (i.e., Class 1 landfills), and will increase to $60 per tonne from July 2024. Whilst there have been no discussions of increasing this further, it is possible that this will happen in the future.

The cost of ETUs is determined on the open market by the price of carbon credits. It has been increasing steadily for the past several years. There has been speculation that the sale of ETUs will be linked to the international carbon market in the future which makes it difficult to predict how it may change over time, but it is likely to increase.

Forward buying of the ETUs can assist in providing more certainty in the short term, and the application of the local waste disposal levy can help buffer any increased costs in ETUs. The purchase of ETUs is currently done under Nelson City Council's treasury policy.

Presently, NTRLBU has a surplus of ETUs and is contemplating selling some of the off, should an appropriate sale price be achieved.

Note that the possible increases to the ETS Levy have been allowed for in the financial forecast done for this Landfills AMP by assuming a UEF of 0.21, as opposed to the existing UEF of 0.091. In other words, the budget assumes ETS

charges are 230% of what they presently are to account for the uncertainty associated with annual gas collection and destruction performance.

7. Asset Management Practices

7.1. AM Leadership and Structure

The AM practices adopted by the NTRLBU are aligned with those, which are used by Nelson City Council.

The original AM plan was compiled by a consultant with specific input from the Councils' asset managers and organisational staff who are engaged within the NTRLBU. It was originally compiled from information previously included in the two Councils' Solid Waste AMPs.

7.2. Management Systems

The NTRLBU has broadly followed Nelson City Council's AMP template.

Accounting and Financial Systems

Accounting is carried out to International Financial Reporting Standards to comply with the Local Government Amendment Act Number 3 (the No. 3 Act). The Nelson City Council uses integrated computer software supplied by Napier Computer Systems.

The General Ledger is linked to packages that run Debtors, Creditors, Banking, Rates, Fixed Assets, Invoicing, Billing, Job Costing and Payroll.

Internal monthly financial reports are generated by activity and sub-activity.

External financial reports by significant activity are published in the annual report. Quarterly summaries are presented to the Joint Committee of the NTRLBU.

Definition of Expenditure Categories

Expenditure can be divided into two broad categories:

- Ongoing day to day operations and maintenance works;
- Programmed works that upgrade or renew the asset to provide the required level of service.

All expenditure on infrastructure assets will therefore fall into one of three categories:

- Maintenance Expenditure;
- Capital Expenditure – renewals/replacements;
- Capital Expenditure – creation/enhancement.

7.3. Information Systems and Tools

The NTRLBU has developed its own data storage facilities including operational data (SCADA), and waste acceptance data, weighbridge and a separate document storage system (Sharepoint).

Geographical Information Systems

All York Valley Landfill asset information is stored on NTRLBU's computer based Geographical Information System and spreadsheets. The accounting system used is integrated computer software supplied by Napier Computer Systems. The various systems are linked.

Tasman District Council uses the Confirm GIS to store asset information for Eves Valley Landfill and Eves Valley data has been brought into the NTRLBU GIS

system. A comprehensive description of the asset management systems and data used by Tasman District Council is provided in its Waste Management and Minimisation Activity Management Plan 2018.

New data is updated into the GIS systems on a monthly basis.

7.4. Service Delivery

Professional Support

At a technical and operational level, the NTRLBU only has three staff: General Manager, Operational Manager and Contracts and Sustainability Engineer. There is also a need to access specialist skills for design, planning and policy to support the in-house management of the operations and maintenance contracts.

The NTRLBU has, and will from time to time, request proposals from professional services providers who have been appointed to a professional services panel that was appointed through an open market tender. For some specialist related activities, the NTRLBU may also seek proposals from consultants outside of the panel.

Procurement Strategy

The Nelson City Council has a formal Procurement Strategy that it follows to engage contractors and consultants to assist the Engineering Services department. The NTRLBU will generally follow this strategy in procuring contractors and consultants for undertaking work at the landfills.

The NTRLBU procured a new 5-year operations contract (Contract No. 3912) in December 2018 with Downer that covers operational and maintenance activities at both the York Valley and Eves Valley Landfills. The NTRLBU has decided to procure a new landfill operations contract, to commence in 2024. It is proposed that the new contract be a 5+3+1+1 contract to enable flexibility with granting extensions to the contract to tie in with the closure of Gully 1 at York Valley.

Service Delivery Reviews

In 2014, Section 17A was inserted into the Local Government Act which requires Councils to review the cost effectiveness of their current arrangements for providing local infrastructure, services, and regulatory functions at regular intervals. Reviews must be undertaken when service levels are significantly changed, before current contracts expire, and in any case not more than six years after the last review. Within the last two years Nelson City Council has undertaken a review of the delivery of landfill services, the outcome being the procurement of a new contract for operations and maintenance of the York Valley Landfill.

8. Plan Improvement and Monitoring (What we're doing to improve)

8.1. Status of AM Practices

Improving Accuracy and Confidence in Asset Management Plan PL

Asset management improvements and associated objectives are noted throughout this Landfill AMP.

These improvements will improve the accuracy of and confidence in the Landfill AMP.

A risk assessment is an important element of any AMP. This involves identification of critical assets, risk analysis and development of risk reduction and contingency planning to suit the business situation. An update should be undertaken by the end of 2024.

8.2. Improvement Programme

Throughout the AMP, objectives, targets, capital works, maintenance and improvements to general business processes are referred to:

- Ongoing management actions;
- Record landfill tonnages monthly;
- Continue landfill monitoring.

Table 8-1: Actions to be undertaken

	Actions	Resource Requirements	Progress
AP-1	Include Eves Valley Landfill assets in Infor (NCC's Asset Management System) and valuation model, and check that the valuation model includes all assets (e.g., upgraded access road at YVLF; new stream crossing and weighbridge at EVLF; acquired LFG assets at YVLF).	Internal and consultant	Complete by FY 2025/26
AP-2	Review and audit all landfill assets in the assets register, including in-field inspections to assess conditions.	Internal and consultant	Complete by FY 2025/26
AP-3	Check to ensure that the nominal working lives assigned to different classes of assets are the same for each landfill, where appropriate. There may be valid reasons for varying nominal working lives.	Internal and consultant	Complete by FY 2025/26
AP-4	Review of clean stormwater management at York Valley Landfill and develop long term strategy.	Internal and consultant	Funding allowed for in capital budget for 2024/25 through to 2025/26.
AP-5	Develop an Asset Disposal Plan.	Internal and consultant	Complete by FY 2025/26
AP-6	Investigate the feasibility of developing special wastes landfill and/or a cleanfill.	Internal and consultant	Complete by FY 2023/24

	Actions	Resource Requirements	Progress
AP-7	Obtain resource consents for Gullies 2 and 3 of York Valley Landfill.	Internal and consultant	Complete by end of FY 2025/26
AP-8	Amend the Deed of Agreement and get Commerce Commission approval to do so.	Internal and consultant	Complete by end of FY 2023/24
AP-9	Trial the use of alternative waste cover systems, e.g., tarpaulins.	Internal and contractor	Complete by end of FY 2023/2024
AP-10	Undertake monitoring of cats and other vermin at York valley Landfill.	Internal and contractor	Complete by end of FY 2023/24
AP-11	Improve the collection of groundwater from the subsoil beneath the EVLF base.	Internal and consultant	Complete by end of FY 2023/24
AP-12	Investigate requirements for a standby power generator at YVLF.	Internal and consultant	Complete by end of FY 2023/24
AP-13	Investigate methods of measuring and calculating the carbon footprint of the landfills, that reflect actual emissions discharge.	Internal and consultant	Complete by end of FY 2024/25

8.3. Monitoring and Review Procedures

Monitoring and Review Procedures

This plan will be reviewed annually and revised every three years to incorporate, amongst other things, improved decision-making techniques, updated asset information, and NTRLBU policy changes which impact on targeted levels of service.

Statutory Audit

The Local Government Act requires that an annual, financial audit of the operations of the Council be carried out. Audits may include all significant activities such as AM planning.

Review and Updates

The Landfill Activity AMP programmes and costs will be reviewed and updated annually for incorporation into the annual NTRLBU Business Plan.

9. Appendices

APPENDIX 1 – LEGISLATIVE AND STRATEGIC CONTEXT

Both legislation and a national strategy provide the basic framework for waste management and minimisation in New Zealand. This chapter contains a brief summary of the national policy context and key legislation that the Councils must consider in Waste Management and Minimisation Planning.

Key legislation

A number of Acts of Parliament provide the legal framework for waste management and minimisation in New Zealand. These are:

- New Zealand Waste Strategy (NZWS)
- Waste Minimisation Act (WMA) 2008
- Local Government Act (LGA) 2002
- Resource Management Act 1991 (RMA)
- Emissions Trading Amendment Act 2008.

The following section provides a brief summary of these Acts and identifies their relevance or implications for Councils.

New Zealand Waste Strategy

Waste management and minimisation in New Zealand is underpinned by the New Zealand Waste Strategy — Reducing Harm and Improving Efficiency (NZWS). The NZWS outlines the Government's high-level strategic direction for waste management and minimisation and it sets the framework, strategic vision, objectives and targets for achieving waste minimisation. It also sets goals for managing and minimising waste.

Waste Minimisation Act (WMA) 2008

The enactment of the WMA in 2008 represented a change in the Government's approach to managing and minimising waste. The WMA recognises the need to focus efforts higher up the waste hierarchy in terms of reducing and recovering waste earlier in its life cycle, and shifting the focus away from treatment and disposal. This change in focus is reflected in new tools enabled by the WMA such as a framework for developing accredited product stewardship schemes and the creation of a national waste disposal levy — half of which is distributed back to councils on a population basis.

Emphasising and promoting waste minimisation in the WMA reflects a modernisation of previous waste legislation. The purpose of the Act (section 3) is to "encourage waste minimisation and a decrease in waste disposal in order to protect the environment from harm; and to provide environmental, social, economic and cultural benefits".

The Act contains a mechanism for the accreditation and monitoring of product stewardship schemes to minimise waste from products. Product stewardship relates to a process through which those involved in the life cycle of a product or service are involved in identifying and managing the health, safety and environmental impacts from the development and manufacture of a product through to its use and final disposal. Ideally, product stewardship schemes will be designed to promote reduction of waste at the source, as well as make recycling, treatment and disposal safer and more efficient.

Councils can benefit from some of these schemes because they may simplify the recovery and diversion of waste products that councils currently deal with. In some cases, TAs may be directly or indirectly involved in a product stewardship scheme, either on a voluntary or a statutory basis.

Another key provision of the WMA is the imposition of a national waste disposal levy on each tonne of waste to landfill, to be paid by landfill operators. The levy is currently set at $10 per tonne for waste disposed to municipal landfills. The government is proposing to increase the waste levy in stages to between $50 and $60 per tonne and to apply the levy to other types of landfills, at a lower rate. It is proposed that the changes will be fully implemented by July 2023. The national waste disposal levy is used to fund waste minimisation projects. Some of it is distributed directly to councils, and the remainder goes into a contestable Waste Minimisation Fund. Internationally, levies have tended to increase steadily over time once they are introduced.

The WMA provides benefits but also several responsibilities. Part 4 of this Act is fully dedicated to the responsibilities of TAs which "must promote effective and efficient waste management and minimisation within their districts" (section 42).

The WMA does not prescribe specific waste management and minimisation targets. This enables significant local flexibility in the approach taken. However, there is the scope within the WMA for the Minister for the Environment to set performance standards for the implementation of WMMPs and for councils who are not making satisfactory progress on their plans to receive Ministerial direction to alter their WMMPs.

Climate Change (Emissions Trading) Amendment Act 2008

The Act requires landfill owners to purchase emission trading units to cover methane emissions generated from the landfill. Should any future solid waste incineration plants be constructed, the Act would also require emission trading units to be purchased to cover carbon dioxide, methane and nitrous oxide emissions from the incineration of household wastes.

Ultimately these costs for emissions units will need to be paid by the landfill owner and will be passed on to users in gate rates and user charges for waste collection and disposal services.

The implications for the Councils are that the ETS will increase the cost of operating the landfill. It's likely that these costs will be met by increasing the base cost of each tonne of waste to landfill.

Another key implication from the ETS is that organic waste diversion is incentivised somewhat, as reducing organics to landfill should assist in lowering emission liabilities. It's worth noting that the relatively minor emissions arising from organics composting are exempt from the ETS, further incentivising this option.

For these reasons the ETS will be an important driver of waste diversion from landfill, as it creates another economic incentive to divert materials, particularly methane-generating organic waste.

Local Government Act 2002 (LGA 2002)

The LGA 2002 contains various provisions that may apply to TAs when they are preparing their WMMPs, including consultation and bylaw provisions. Sections 145–146 provide TAs with broad bylaw powers, including the power to make solid waste and waste management bylaws. Section 158 outlines provisions for

the review of these bylaws. The procedure for making a bylaw and the requirement for completing a special consultative procedure when making a bylaw are outlined in sections 155 and 156.

Section 77 of the LGA 2002 refers to legislative requirements for council decision-making, including consideration of the benefits and costs of different options in terms of the present and future social, economic, environmental, and cultural well-being of the district. The Act also includes requirements for information to be included in a long-term plan (LTP), including summary information about their WMMPs.

Section 17A of the Act requires councils to periodically review the delivery of waste management and minimisation services within their area of jurisdiction.

Resource Management Act 1991 (RMA)

The RMA provides guidelines and regulations for the sustainable management of natural and physical resources. Although it does not specifically define 'waste', the Act addresses waste management and minimisation activity through controls on the environmental effects of waste management and minimisation activities and facilities. It does this through national, regional, and local policies, standards, plans and consent procedures. In this way, the RMA exercises considerable influence over facilities for waste disposal, recycling, recovery, treatment, and other solid waste activities in terms of managing the potential impacts of these facilities on the environment.

Under section 30 of the RMA, regional councils are responsible for controlling the discharge of contaminants into or onto land, air or water. These responsibilities are addressed through regional planning and discharge consent requirements.

In addition, the RMA provides for the development of national policy statements and for the setting of national environmental standards (NES). The Resource Management (National Environmental Standards Relating to Certain Air Pollutants, Dioxins, and Other Toxics) Regulations 2004 (the NES for Air Quality) requires certain landfills (e .g., those with a capacity of more than 1 million tonnes of waste) to collect landfill gases and either flare them or use them as fuel for generating electricity. The result is increased infrastructure and operational costs for qualifying landfills. However, these costs are potentially offset by the harnessing of captured emissions for energy generation.

Unless exemption criteria are met, the NES for Air Quality also prohibits the lighting of fires and burning of wastes at landfills, the burning of tyres, bitumen burning for road maintenance, burning coated wire or oil, and the operation of high-temperature hazardous waste incinerators. These prohibitions limit the range of waste treatment/disposal options available within New Zealand with the aim of protecting air quality.

The National Environmental Standards for Assessing and Managing Contaminants in Soil to Protect Human Health came into force in January 2012 and requires the identification of HAIL sites throughout New Zealand. NCC carried out this work in 2013 and has identified and included 3,265 properties on the NCC HAIL site database. The standards affect the way in which soil disturbance is managed and require that spoil originating from these sites is disposed of at a suitable landfill facility.

Other legislation

The following is a summary of other legislation that is to be considered with respect to waste management and minimisation planning.

The Hazardous Substances and New Organisms Act 1996 (HSNO Act)

The HSNO Act addresses the management of substances that pose a significant risk to the environment and/or human health, from manufacture to disposal. The Act relates to waste management primarily through controls on the import or manufacture of new hazardous materials and the handling and disposal of hazardous substances.

Hazardous substances may be explosive, flammable, have the capacity to oxidise, toxic to humans and/or the environment, corrosive, or can develop any of these properties when in contact with air or water. Depending on the amount of a hazardous substance on site, the HSNO Act sets out requirements for material storage, staff training and certification. These requirements need to be addressed within operational and health and safety plans for waste facilities. Hazardous substances commonly managed by TAs include used oil, asbestos, agrichemicals, LPG and batteries.

The HSNO Act provides minimum national standards for the disposal of a hazardous substance. However, under the RMA a regional council or TA may set more stringent controls relating to the use of land for storing, using, disposing, or transporting hazardous substances.

The Health Act 1956

The Health Act 1956 places obligations on TAs (if required by the Minister of Health) to provide sanitary works for the collection and disposal of refuse, for the purpose of public health protection (Part 2 – Powers and duties of local authorities, s 25). It specifically identifies certain waste management practices as nuisances (s 29) and offensive trades (Third Schedule). The Health Act enables TAs to raise loans for certain sanitary works and/or to receive government grants and subsidies, where available.

The Act no longer requires removal of refuse by a TA itself.

The Litter Act 1979 (and Amendment Act 2006)

The Litter Act enables councils to create roles as litter enforcement officers or "Litter Control Officers" who have powers to issue infringement notices, with fines for those who have committed a littering offence.

The Litter Act was amended on 27 June 2006. The principal amendment was to strengthen the powers of TAs to issue infringement notices (and fees). Territorial Authorities may adopt the amended infringement notice provisions provided they pass a new resolution, with a 14-day public notification period. TAs can use the Litter Act to regulate litter and illegal dumping, but the enforcement process is difficult and often unsuccessful.

The Health and Safety at Work Act 2015

The Health and Safety at Work Act 2015 specifies health and safety responsibilities in relation to employees at work. The Act requires employers to identify and manage hazards present in the workplace, provide adequate training and supervision, and supply appropriate protective equipment.

Employers must take all practicable steps to ensure the safety of employees while at work, and in particular, must take all practicable steps to ensure

employees are not exposed to hazards arising out of the arrangement, disposal, organisation, processing, storage, transport or use of things in their place of work.

The Act places duties on any person in control of a place of work, (e.g., a principal), to ensure that people are not harmed by any hazard resulting from work activities. Those who employ contractors therefore "have the same occupational health and safety obligations to contractors or contracted labour as they do their own employees". Employers therefore need to establish health and safety systems to manage the health and safety of any contractors or contracted labour.

National Guidelines and Standards

- Centre for Advanced Engineering (CAE), Management of Hazardous Waste, 2000
- A Guide to the Management of Cleanfills
- A Guide to the Management of Closing and Closed Landfills in New Zealand
- Calculation and Payment of the National Waste Disposal Levy: Guidance for Waste Disposal Facility Operators
- Guidance Principles: Best Practice for Recycling and Waste Management Contracts: Working Draft
- Guide to Landfill Consent Conditions
- Guidelines for the Management and Handling of Used Oil
- Hazards of Burning at Landfills
- Health and Safety Guidelines: for the Solid Waste and Resource Recovery Sector – parts one, two, three, four and five, WasteMINZ, 2017
- Landfill Full Cost Accounting Guide for New Zealand
- Module 1 - Hazardous Waste Guidelines: Identification and Record-keeping
- Module 2 - Hazardous Waste Guidelines: Landfill Waste Acceptance Criteria and Landfill Classification
- Online Waste Levy System: User Guide for Waste Disposal Facility Operators
- Solid Waste Analysis Protocol and Summary Procedures
- Supplementary Guidance to Disposal Facility Operators: Diverted Tonnage and Cover Material
- Technical Guidelines for Disposal to Land, WasteMINZ, 2018
- Updated Users Guide to Resource Management (National Environmental Standards Relating to Certain Air Pollutants, Dioxins and Other Toxics) Regulations 2004 (including Amendments 2005) (second draft)
- Waste Assessment Checklist: for territorial authorities completing a waste assessment before reviewing their waste management and minimisation plans

- Waste Management and Minimisation – a good practice guide for territorial authorities
- Waste Management and Minimisation Planning: Guidance for Territorial Authorities
- What's in your Waste? – A resource for trade businesses.
- SNZ HB 4360:2000 Risk Management for Local Government
- AS/NZS ISO 31000:2009 Risk Management Principles and Guidelines
- AS/NZS ISO 9001:2008 Quality Management Systems
- AS/NZS 4801:2001 Occupational Health and Safety Management Systems.

APPENDIX 2 – LANDFILL STAGED DEVELOPMENT FIGURES

APPENDIX 3 – LANDFILL ASSET VALUATIONS

NTRLBU - Asset valuation as at 30th June 2022 for accounting purposes

Solid waste asset valuation

	June 2021		
	ORC	ODRC	AD
Stormwater System	$1,202,341	$349,384	$38,820
Gas Collection System	$771,846	$209,766	$23,277
Wastewater Collection System	$416,076	$78,609	$8,734
Leachate Collection System	$1,827,159	$899,086	$35,776
Water Supply	$49,450	$10,533	$1,170
Internal Road	$1,874,398	$1,642,737	$16,654
Monitoring	$1,006,915	$424,272	$54,267
Other	$1,069,541	$348,763	$29,007
	$8,217,726	**$3,963,150**	**$207,705**

	June 2022 - RC constrained			% movement between 2021 and 2022		
	ORC	ODRC	AD	ORC	ODRC	AD
Stormwater System	$3,170,286	$2,513,605	$115,998	163.7%	619.4%	198.8%
Gas Collection System	$1,701,261	$1,051,489	$35,524	120.4%	401.3%	52.6%
Wastewater Collection System	$469,827	$118,340	$9,862	12.9%	50.5%	12.9%
Leachate Collection System	$2,116,846	$386,645	$82,618	15.9%	-57.0%	130.9%
Water Supply	$54,509	$13,667	$1,139	10.2%	29.8%	-2.7%
Internal Road	$2,991,105	$2,366,210	$106,932	59.6%	44.0%	542.1%
Monitoring	$1,035,624	$572,326	$61,960	2.9%	34.9%	14.2%
Other	$1,727,404	$1,062,417	$66,955	61.5%	204.6%	130.8%
	$13,266,862	**$8,084,698**	**$480,987**	61.4%	104.0%	131.6%

	June 2022 - RC constrained		
	ORC	ODRC	AD
York Valley	$12,018,760	$7,972,584	$423,381
Eves Valley	$1,248,102	$112,114	$57,606

	June 2022 - airspace constrained			% movement between 2021 and 2022		
	ORC	ODRC	AD	ORC	ODRC	AD
Stormwater System	$3,170,286	$2,439,303	$146,274	163.7%	598.2%	276.8%
Gas Collection System	$1,701,261	$1,051,489	$35,524	120.4%	401.3%	52.6%
Wastewater Collection System	$469,827	$118,340	$19,576	12.9%	50.5%	124.1%
Leachate Collection System	$2,116,846	$362,269	$83,873	15.9%	-59.7%	134.4%
Water Supply	$54,509	$10,936	$1,215	10.2%	3.8%	3.9%
Internal Road	$2,991,105	$2,344,104	$129,038	59.6%	42.7%	674.8%
Monitoring	$1,035,624	$559,953	$63,005	2.9%	32.0%	16.1%
Other	$1,727,404	$995,438	$80,692	61.5%	185.4%	178.2%
	$13,266,862	**$7,881,832**	**$559,197**	61.4%	98.9%	169.2%

	June 2022 - airspace constrained		
	ORC	ODRC	AD
York Valley	$12,018,760	$7,769,719	$501,590
Eves Valley	$1,248,102	$112,114	$57,606

APPENDIX 4 – RISK ANALYSIS

Table A.4.1: Nelson City Council Likelihood of the given consequence occurring

Descriptor	Qualitative guidance statement	Indicative Probability range	Indicative frequency range (years)
Almost certain (5)	The consequence can be expected in most circumstances OR *A very low level of confidence/information*	>90%	>1 occurrence per year
Likely (4)	The consequence will quite commonly occur OR *A low level of confidence/information*	20% - 90%	Once per 1-5 years
Possible (3)	The consequence may occur occasionally OR *A moderate level of confidence/information*	10% - 20%	Once per 5-10 years
Unlikely (2)	The consequence may occur only infrequently OR *A high level of confidence/information*	2% - 10%	Once per 10 - 50 years
Rare (1)	The consequence may occur only in exceptional circumstances OR *A very high level of confidence/information*	<2%	Less than once per 50 years

Consequence is the effect or impact of an event if it occurs and may be a loss, injury, disadvantage or gain. Consequence ratings are provided in the table below.

Table A.4.2: Nelson City Council Consequence Rating (Impact)

Rating	Political / Community/ Reputational	Asset Performance/ Service Delivery	Relationship with Iwi	Environmental/ Historical/cultural	Safety	Information/ decision support	Financial	Legal compliance	Health
Extreme (5)	Major loss of public confidence in Council (>2000 opponents via social media or other mediums) Negative international mainstream media coverage; shareholder or key stakeholder outrage; or loss of a key customer	At least 2 of the 3 outcomes apply: (i) cannot be delivered by alternative means, (ii) 20+ vulnerable persons significantly impacted, (iii) neighbouring businesses annual revenue falls > 20%	Major breakdown of relationship affecting multiple areas. Refusal to resolve without one or more major concessions from council	Permanent environmental damage on a nationally significant scale and/or permanent loss of nationally significant building, artwork, or other valued entity	Multiple fatalities of workers or public (MF)	Multiple errors in information and analysis and presentation misleading (intentionally or not) or not understandable by non-specialists	Overspend, loss (i.e. spend without result) or income loss of > $5m OR >100% of business unit budget	Litigation/ prosecution or civil action successful resulting in major (>50% of maximum available) fine/costs awarded and/or imprisonment of council officer.	Significant loss of life expectancy for multiple persons or incapacity for more than 1000 person days
Major (4)	Significant negative public reaction likely (200-2000 opponents via social media or other mediums) Negative national mainstream media coverage; significant negative perception by shareholder or key stakeholder; or a customer disruption	Only 1 of the 3 outcomes apply: (i) cannot be delivered by alternative means, (ii) 20+ vulnerable persons significantly impacted, (iii) neighbouring businesses annual revenue falls > 20%	Significant breakdown of relationship largely in in one area. Some concessions from council sought before substantive issue considered by iwi	Major environmental damage with long-term recovery requiring significant investment and/or loss or permanent damage to a registered historical, cultural or archaeological site or object(s)	Single fatality of workers or public (SF)	One major error in information, analysis incomplete and presentation ambiguous	Overspend, loss (i.e. spend without result) or income loss of > $1m and <$5m OR between 70% and 100% of business unit budget	Litigation/ prosecution or civil action successful resulting in minor fine(<50% of max available)/ costs awarded.	Single loss of life expectancy or incapacity for between 100 and 1000 person days
Moderate (3)	Some negative public reaction likely (30-200 opponents via social media or other mediums) Repeated complaints; Regulatory notification; or negative stakeholder, local media attention	At least 2 of the 3 outcomes apply: (i) partial delivery by alternative means possible, (ii) <20 vulnerable persons significantly impacted, (iii) neighbouring businesses annual revenue falls 10% to 20%	Major relationship damaged in a single area but amenable to negotiation	Measurable environmental harm on a nationally significant scale. Some costs in terms of money and/or loss of public access or conservation value of the site and/or restorable damage to historical, cultural or archaeological site or object(s)	Notifiable injury of workers or public.	Information correct but presentation/ analysis insufficient to support decision on the day	Overspend, loss (i.e. spend without result) or income loss of > $0.5m and <$1m OR between 30% and 70% of business unit budget	Documented Breach of legislation, no legal action or prosecution or civil action not successful.	Incapacity for between 20 and 100 person days
Minor (2)	Minor public reaction likely (<30 active opponents via social media or other mediums) Workforce attention; limited external attention;	At least 2 of the 3 outcomes apply: (i) full delivery by alternative means possible, (i) <20 vulnerable persons moderately impacted, (i) neighbouring businesses annual revenue falls < 10%	Relationship damage resolvable through normal communication/ consultation mechanisms	Medium term environmental impact at a local level and/or development compromise to the integrity of a registered historical, cultural or archaeological site	Serious injury on one person requiring medical treatment (MA)	Information correct, analysis complete but presented in a way which could be misinterpreted	Overspend, loss (i.e. spend without result) or income loss of > $100k and <$500k OR between 10% and 30% of business unit budget	Formal warning of breach from legislative authority.	Incapacity for between 1 and 20 person days
Insignificant (1)	Very limited negative reaction (1 or 2 active opponents via social media or other mediums) Internal attention only from staff directly working on the matter.	All of the following outcomes apply: (i) full delivery by alternative means possible, (ii) <20 vulnerable persons moderately impacted, (iii) neighbouring businesses annual revenue falls < 10%	Iwi/ tribe/ hapu public dissatisfaction resolvable through routine communication	Short term and temporary impact requiring no remedial action and/or restorable loss damage to historical/ cultural record	Minor injury requiring only first aid or less (FA)	Small errors in information or presentation - no effect on decision	Overspend, loss (i.e. spend without result) or income loss of > $10k and <$100k OR between 5% and 10% of business unit budget	Breach of minor legislation/ no legal action	Incapacity for less than 1 person day

APPENDIX 5 – FINANCIAL DETAILS

Table A.5.1: Financial Projections from 2024/25 to 2033/34

Account	2023/24 est	2024/25 AMP	2025/26 AMP	2026/27 AMP	2027/28 AMP	2028/29 AMP	2029/30 AMP	2030/31 AMP	2031/32 AMP	2032/33 AMP	2033/34 AMP
YVLF Gate Charge $/T	-$ 212	-$ 250	-$ 255	-$ 256	-$ 247	-$ 244	-$ 242	-$ 244	-$ 252	-$ 259	-$ 285
TOTAL INCOME	**-$ 15,998,400**	**-$ 19,012,260**	**-$ 19,586,553**	**-$ 19,811,325**	**-$ 22,517,734**	**-$ 22,489,780**	**-$ 22,526,825**	**-$ 22,890,325**	**-$ 23,701,371**	**-$ 24,443,416**	**-$ 26,748,916**
Gate Fees	-$ 15,698,400	-$ 18,184,260	-$ 18,758,553	-$ 18,979,325	-$ 18,485,734	-$ 18,457,780	-$ 18,494,825	-$ 18,858,325	-$ 19,669,371	-$ 20,404,716	-$ 22,710,216
EVLF Hail	$ -	-$ 328,000	-$ 328,000	-$ 332,000	-$ 332,000	-$ 332,000	-$ 332,000	-$ 332,000	-$ 332,000	-$ 332,000	-$ 332,000
Other Income	-$ 300,000	-$ 500,000	-$ 500,000	-$ 500,000	-$ 3,700,000	-$ 3,700,000	-$ 3,700,000	-$ 3,700,000	-$ 3,700,000	-$ 3,706,700	-$ 3,706,700
TOTAL EXPENSES	**$ 16,089,400**	**$ 19,112,260**	**$ 20,086,553**	**$ 20,811,325**	**$ 22,517,734**	**$ 22,489,780**	**$ 22,526,825**	**$ 22,890,325**	**$ 23,701,371**	**$ 24,443,416**	**$ 26,748,916**
Staff and admin expenses	$ 615,700	$ 652,950	$ 652,950	$ 652,950	$ 652,950	$ 652,950	$ 652,950	$ 652,950	$ 652,950	$ 652,950	$ 652,950
Interest	$ 524,000	$ 1,016,000	$ 1,069,000	$ 1,459,000	$ 1,736,000	$ 1,644,000	$ 1,616,000	$ 1,919,000	$ 2,663,000	$ 3,339,000	$ 3,434,000
Total York Valley Expenses	$ 8,947,200	$ 11,023,482	$ 11,083,345	$ 11,408,118	$ 12,827,527	$ 12,891,573	$ 12,956,618	$ 13,017,118	$ 13,084,164	$ 13,150,209	$ 15,360,709
York Valley Landfill Operation	$ 1,655,700	$ 2,950,000	$ 2,950,000	$ 2,950,000	$ 4,150,000	$ 4,150,000	$ 4,150,000	$ 4,150,000	$ 4,150,000	$ 4,150,000	$ 4,150,000
ETS Costs	$ 776,000	$ 764,000	$ 771,000	$ 778,000	$ 785,000	$ 792,000	$ 799,000	$ 806,000	$ 814,000	$ 821,000	$ 2,976,000
Waste Min for the Env	$ 3,700,000	$ 4,364,000	$ 4,409,000	$ 4,455,000	$ 4,500,000	$ 4,546,000	$ 4,593,000	$ 4,640,000	$ 4,688,000	$ 4,736,000	$ 4,785,000
Other Expenses	$ 1,011,700	$ 1,300,300	$ 1,296,800	$ 1,396,300	$ 1,402,800	$ 1,409,300	$ 1,415,800	$ 1,422,300	$ 1,428,800	$ 1,435,300	$ 1,441,800
Depeciation	$ 1,803,800	$ 1,645,182	$ 1,656,545	$ 1,828,818	$ 1,989,727	$ 1,994,273	$ 1,998,818	$ 1,998,818	$ 2,003,364	$ 2,007,909	$ 2,007,909
Eves Valley Expenses not covered by post clo	$ 2,500	$ 419,829	$ 681,257	$ 691,257	$ 701,257	$ 701,257	$ 701,257	$ 701,257	$ 701,257	$ 701,257	$ 701,257
Waste Min for the Env	$ -	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000
Other Expenses	$ 2,500	$ 399,829	$ 661,257	$ 671,257	$ 681,257	$ 681,257	$ 681,257	$ 681,257	$ 681,257	$ 681,257	$ 681,257
Local disposal levies	$ 6,000,000	$ 6,000,000	$ 6,600,000	$ 6,600,000	$ 6,600,000	$ 6,600,000	$ 6,600,000	$ 6,600,000	$ 6,600,000	$ 6,600,000	$ 6,600,000
Net Deficit (Surplus)	$ 91,000	$ 100,000	$ 500,000	$ 1,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Capital Expenditure	**$ 9,015,000**	**$ 5,090,000**	**$ 5,575,000**	**$ 12,990,000**	**$ 490,000**	**$ 210,227**	**$ 3,065,000**	**$ 11,415,000**	**$ 17,565,000**	**$ 8,815,000**	**$ 1,165,000**
Renewals	$ 1,100,000	$ 300,000	$ -	$ -	$ -	$ 145,227	$ 500,000	$ -	$ -	$ -	$ -
Total Capital Upgrades	$ 3,850,000	$ 4,725,000	$ 5,510,000	$ 12,925,000	$ 425,000	$ -	$ 2,500,000	$ 11,350,000	$ 17,500,000	$ 8,750,000	$ 1,100,000
Stormwater (YVLF)	$ -	$ 100,000	$ 1,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Gas reuse (YVLF)	$ -	$ 100,000	$ 1,000,000	$ 12,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Access, Planting, Fencing (YVLF)	$ -	$ 625,000	$ 235,000	$ 75,000	$ 75,000	$ -	$ -	$ -	$ -	$ -	$ -
Fire Fighting Activites (YVLF)	$ 100,000	$ 150,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New Regional Landfill	$ 250,000	$ 750,000	$ 750,000	$ 850,000	$ 250,000	$ -	$ 2,500,000	$ 11,250,000	$ 17,500,000	$ 8,750,000	$ 1,000,000
Green House Abatement YVLF	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Transfer Facility YVLF	$ -	$ 2,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hospital System changes YVLF	$ -	$ -	$ 1,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Shredding (YVLF)	$ -	$ -	$ 1,025,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Alternative Cover (YVLF)	$ -	$ 500,000	$ -	$ -	$ 100,000	$ -	$ -	$ 100,000	$ -	$ -	$ 100,000
Green House Abatement EVLF	$ 2,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Gas improvements EVLF	$ -	$ -	$ 500,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
HAIL Facility EVLF	$ 1,500,000	$ 500,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Un-programmed Capital Expenditure (YVLF)	$ 4,065,000	$ 65,000	$ 65,000	$ 65,000	$ 65,000	$ 65,000	$ 65,000	$ 65,000	$ 65,000	$ 65,000	$ 65,000