Solid Waste Asset Management Plan 2018 - 2028

Nelson City Council
te kaunihera o whakatū

Solid Waste Asset Management Plan

2018-2028

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Quality Assurance Statement

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1	31/7/2017	Draft for assets team review	Johan Thiart	Peter Anderson	Alec Louverdis
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Cover Photo: Waste Minimisation

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Executive Summary

i. Overview

The decision to manage landfill disposal on a regional level (on behalf of Nelson and Tasman residents) is a positive step towards more effective and efficient solid waste services.

It is likely to result in increasing collaboration in all aspects of waste minimisation and management, which is signalled in the number of joint projects listed in our monitoring and improvement programme (see section 1.10 of this summary).

However, there are limits to both councils' ability to influence waste generation within our region. To achieve significant change, all residents and businesses will need to take responsibility for the waste we generate and the decisions we make regarding reuse, recycling and disposal

ii. The Purpose of the Plan

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

iii. Asset Description

Council manages $4.3M (excluding value of land) of solid waste assets on behalf of the community. These assets are associated with the Pascoe Street Transfer Station. The value of depreciation is directly related to the replacement cost and useful life of assets. Depreciation is used to renew assets (Renewal) and loan funding is used to create new assets.

The solid waste activity is basically debt free and activities are mainly funded from landfill charges, transfer station charges and Ministry for the Environment Waste Levy contributions.

iv. Key Issues

Nelson City Council and Tasman District Council have worked together to find the best way to address the issues identified in the 2009 Joint Waste Assessment. Following the adoption of the Joint Nelson Tasman Waste Management and Minimisation Plan (JWMMP) in 2012 the two councils have invested considerable effort in identifying and implementing the most appropriate landfill strategy for the region.

The responsibility for the management of both York Valley Landfill (in Nelson) and Eves Valley (in Tasman) has been transferred to the Nelson Tasman Regional Landfill Business Unit (RLBU). The Nelson Tasman area is well positioned in this regard with two designated landfill sites located in the region, and with more than 15 years of airspace available at York Valley. Further discussion in this plan will be limited to the impact of landfill management on solid waste management (A separate asset management plan will be developed by the RLBU for the two active landfills).

Over the next 10 years the solid waste activity faces a variety of issues and challenges, as outline below.

- Changing legislation and compliance requirements:
    - Extensive consultation is required by legislation controlling the solid waste activity;
    - The Waste Minimisation Act 2008 established a waste levy through which central government can influence waste minimisation initiatives;

- The Emissions Trading Scheme will continue to have a significant impact on solid waste management because the cost of carbon is linked to local commodity markets.

- Growing demand will lead to increased usage and expansion of waste services:
  - Increasing population, visitors and industry will increase demand for services;
  - The impacts of climate change will increase the demand for investigating and introducing alternative treatment processes;
  - Changes in level of service such as the implementation of a three bin system - separation of organic waste, recycling and residual waste into different bins - could place significant pressure on Nelson City.
- Increasing customer expectations:
  - Improved communication and consultation will be required;
  - More infrastructure and increased levels of service.
- Improved co-operation with Tasman District Council in terms of waste management and minimisation:
  - Alignment of levels of service;
  - Alignment of policies and procedures;
  - Joint planning and policy development.

It is suggested that a significant amount of recycled material that is managed on behalf of businesses, by waste operators, ends up in the landfill. Council can affect this behaviour through banning waste products from the landfill or providing incentives to waste operators or businesses to ensure that material collected is recycled responsibly.

The focus of the solid waste activity over the next few years will be to optimise the implementation of the Nelson Tasman Joint Waste Management and Minimisation Plan.

v. Levels of Service

Levels of service are driven by customer expectations, compliance with statutory requirements and Council policies.

Council carries out the following solid waste activities:

- ensuring that residual waste generated by residential properties is collected weekly on a user pays basis;
- receiving residual waste at York Valley;
- promoting waste minimisation;
- providing a recycling service to residential properties and schools free of charge;
- receiving domestic hazardous waste, refuse and separated green waste at the Pascoe Street Transfer Station.

When assessing new waste minimisation opportunities it is important to ensure that the full cost of services are considered.

Figure 1: Costing model

Costing Model				
Full Cost	=	Financial Cost	+	Environmental Cost

Economists and scientists have tried to quantify the environmental component of the Costing Model. A range of these estimated costs have been considered before accepting an indicative value to be used in this asset management plan.

Table 1: Estimates of costs

	Greenwaste	Recycling	Transfer station	Residual waste
Cost of treatment by Council	208,900	850,155	887,561	1,318,662
Tonnage	1,233	3,171	5,594	29,964
Unit cost	$169	$268	$159	$44
Indicative full cost per tonne	$44 to $600			

As shown above, estimates of full costs vary considerably, so there is no standard price to adopt to reflect the environmental costs of disposing of and treating waste. Even though the lowest cost option to deal with residual waste remains responsible landfilling, environmental and social responsibilities need to be considered when deciding on the most desirable treatment of residual waste.

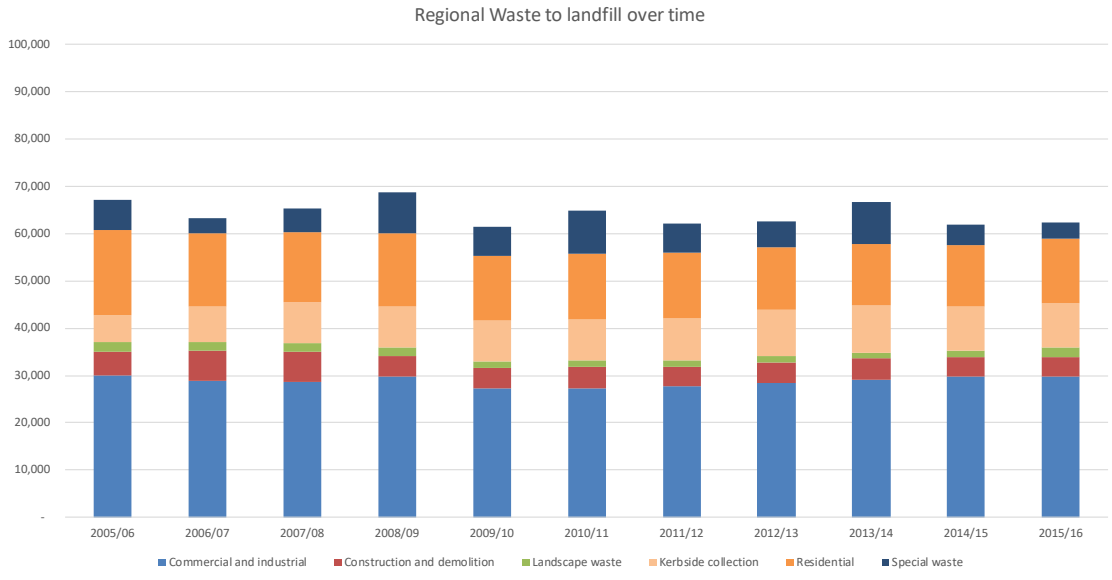
Decisions around the choices of services provided within the solid waste activity generally come down to a value judgment that cannot be made in isolation and needs to be considered within a regional, national and international context. The choices made will impact on the behaviour of people, impact on the resources available, impact the environment and the cost of services.

While our customer surveys indicate general satisfaction with services provided in the region, the comments received from the "not very satisfied" group and focus groups indicate that the public would like to see Council create an environment where businesses and households reduce consumption and prevent reusable and recyclable material from entering the landfill.

vi. Future Demand

The declining trend in tonnage of waste per person going to landfill in the Nelson region demonstrates that our waste management and minimisation initiatives are well aligned with the objectives of the Waste Minimisation Act 2008. This declining waste trend is significant give we have a steadily increasing population and the region's economic growth has been above the national average over the past decade.

Figure 2: Regional waste to landfill overtime



The tonnage of recycled material diverted away from landfilling in Nelson has increased as a percentage of the residual waste and in real value.

While the key debate related to solid waste management is the waste created by human activities, our ability to influence outcomes — as a manager of the waste generated within our community — is limited to:

- advocating for improvements in national and international direction on how best to deal with waste products
- ensuring that the solid waste that we manage on behalf of the public is diverted or disposed of in a way that limits harm to the public and the environment.

vii. Lifecycle Management Plan

The best way to improve solid waste management is to implement better waste management and minimisation strategies at a national level, rather than relying on councils to create new collection and treatment solutions at a local scale. For example, it doesn't make sense to collect separated waste products unless there is a viable alternative way to reuse or recycle these products.

This asset management plan does not anticipate any large capital projects over the next few years. Condition assessments of individual asset components indicate the current assets can be retained in good serviceable condition through proactive maintenance budgets.

viii. Financial Summary

The solid waste activity is managed as a self-funding account with the exception of the roll out of recycling bins to residents.

A local waste disposal levy is raised from landfill charges to fund waste management and minimisation initiatives that cannot be fully funded directly from user charges.

Subsidised initiatives include kerbside recycling, separated greenwaste and general waste received at the transfer station, waste education, collection of illegally dumped refuse and treatment of domestic hazardous waste.

The cost of levies (Local Waste Disposal Levy, National Waste Levy and ETS obligations) account for more than 75% of the landfill charges. The following table shows the value of subsidies applied to greenwaste and residual waste dropped off at the Pascoe Street Transfer Station.

Table 2: Values of subsidies

	Greenwaste	Kerbside recycling	Transfer station general waste
Equivalent cost per tonne	$118	$0	$114
Value of subsidy from Local Waste Disposal Levy	30%	100%	28%

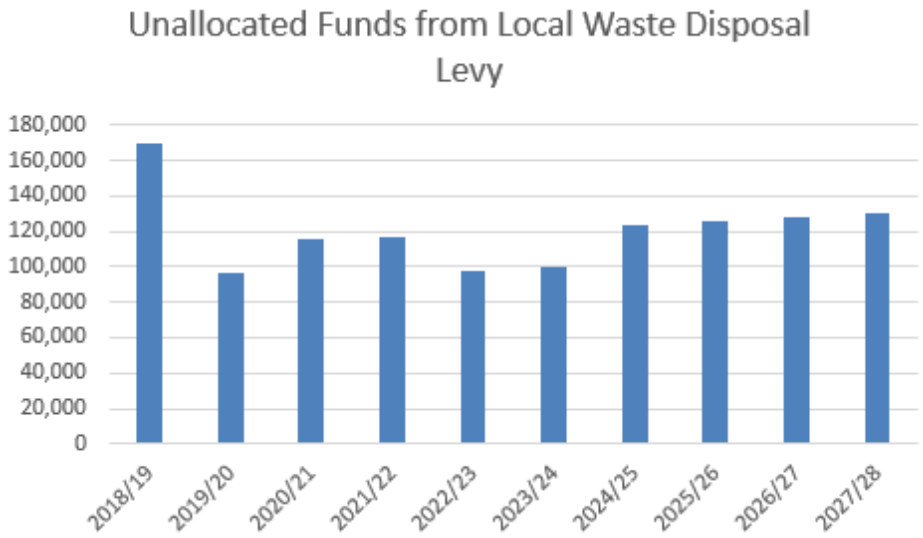
The subsidies encourage people to use the recycling and separated greenwaste services rather than disposing of their waste to landfill. The differential between the landfill charge ($137 per tonne inclusive of GST) and the charge for waste at the transfer station is not an issue because direct disposal to landfill is still a more efficient process for waste contractors.

At present the charge for separated greenwaste at the transfer station is higher than the cost for direct disposal of greenwaste at the two commercial establishments located in Saxton Road and Beach Road in Richmond. More publicity about these other options to dispose of greenwaste will enable the community to make cost-effective choices.

Commercial recycling is based on user pays principles. It is likely that a significant amount of the recycled material that is managed on behalf of businesses, by waste operators, currently ends up in the landfill. Council can help to improve this outcome through regulation and/or providing incentives to waste operators or businesses to ensure that material collected for recycling is managed responsibly.

A Local Waste Disposal Levy is funded through landfill charges. This levy was set by agreement between Nelson City Council and Tasman District Council at a value of $1,915,625 for the 2017/18 financial year for each council. The two councils use this money to fund solid waste management and minimisation initiatives. The value of the levy is reviewed annually as part of the annual planning processes of the two councils in liaison with the Joint Committee mandated to govern the Regional Landfill Business Unit. The following graph shows the projected value of the unallocated funds in Nelson.

Figure 3: Unallocated Funds from Local Waste Disposal Levy



These funds are retained in the solid waste reserve fund and can be released to support waste minimisation initiatives.

Table 3: Financial Summary

Account	2018/19 Est	2019/20 Est	2020/21 AMP	2021/22 AMP	2022/23 AMP	2023/24 AMP	2024/25 AMP	2025/26 AMP	2026/27 AMP	2027/28 AMP
Grand Total	**4,967.9**	**4,517.9**	**4,509.9**	**4,509.9**	**4,569.9**	**4,602.4**	**4,582.4**	**4,517.5**	**4,517.5**	**4,517.5**
6005 Waste Minimisation	**190.8**	**190.8**	**190.8**	**190.8**	**210.8**	**210.8**	**190.8**	**190.8**	**190.8**	**190.8**
Expenses	**190.8**	**190.8**	**190.8**	**190.8**	**210.8**	**210.8**	**190.8**	**190.8**	**190.8**	**190.8**
Unprogrammed Expenses	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9
60053312. Subsidy on Compost Bins	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9
Programmed Expenses	181.9	181.9	181.9	181.9	201.9	201.9	181.9	181.9	181.9	181.9
60054310. Waste Minimisation Resources	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1
60054312. Zero Waste Grants/Product Stewardship	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
600543421641. Community engagement-schools	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
600543421643. Waste Minimisation at Council Facilities	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
600543421644. Waste min: composting & food growing prog	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4
600543421645. Waste min: community engagement contract	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0
600543421646. Waste minimisation at events	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
600543721583. Waste Mgmt and Minimisation Plan	35.0	35.0	35.0	35.0	55.0	55.0	35.0	35.0	35.0	35.0
600543722018. Feasibility Study SWAP	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8
6010 Transfer Station	**1,243.9**	**1,261.7**	**1,269.2**	**1,269.2**	**1,309.3**	**1,341.7**	**1,341.7**	**1,276.8**	**1,276.8**	**1,276.8**
Expenses	**1,243.9**	**1,261.7**	**1,269.2**	**1,269.2**	**1,276.8**	**1,276.8**	**1,276.8**	**1,276.8**	**1,276.8**	**1,276.8**
Base Expenditure	1,177.4	1,195.1	1,202.7	1,202.7	1,210.3	1,210.3	1,210.3	1,210.3	1,210.3	1,210.3
60102310. Provide: Operator Contract	155.6	155.6	155.6	155.6	155.6	155.6	155.6	155.6	155.6	155.6
601023100462. Provide: Cartage Contract	88.0	88.0	88.0	88.0	88.0	88.0	88.0	88.0	88.0	88.0
601023100463. Provide: Hazardous Waste	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.6
601023100464. Provide: Car Tyre Disposal	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
601023100800. Provide: Operator/Ticket Office	118.5	118.5	118.5	118.5	118.5	118.5	118.5	118.5	118.5	118.5
601023830130. Landfill Charges	734.4	752.2	759.8	759.8	767.4	767.4	767.4	767.4	767.4	767.4
60102617. Electricity	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1
60102621. Rates	28.4	28.4	28.4	28.4	28.4	28.4	28.4	28.4	28.4	28.4
60102625. Water By Meter	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
60102637. Insurance	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Unprogrammed Expenses	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7
60103011. Building Maintenance	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7
Programmed Expenses	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9
60104016. Grounds Maintenance	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
60104030. Plant & Equipment Maintenance	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
Capital Expenditure	**0**	**0**	**0**	**0**	**32.4**	**64.9**	**64.9**	**0**	**0**	**0**
Capital Increased LOS	0	0	0	0	32.4	64.9	64.9	0	0	0
601077202770. Container renewal	0	0	0	0	32.4	64.9	64.9	0	0	0
6015 Landfill	**1,947.1**	**1,947.1**	**1,931.6**	**1,931.6**	**1,931.6**	**1,931.6**	**1,931.6**	**1,931.6**	**1,931.6**	**1,931.6**
Expenses	**1,915.6**	**1,915.6**	**1,915.6**	**1,915.6**	**1,915.6**	**1,915.6**	**1,915.6**	**1,915.6**	**1,915.6**	**1,915.6**
Base Expenditure	1,915.6	1,915.6	1,915.6	1,915.6	1,915.6	1,915.6	1,915.6	1,915.6	1,915.6	1,915.6
601523830128. Waste Minimisation Local Disposal Levy	284.3	209.3	210.0	210.0	210.4	210.4	210.4	210.4	210.4	210.4
601523830129. Transfer Station Local Disposal Levy	408.5	525.8	525.1	525.1	524.7	524.7	524.7	524.7	524.7	524.7
601523830131. Greenwaste Local Disposal Levy	42.3	0	0	0	0	0	0	0	0	0
601523830132. Recycling Local Disposal Levy	1,180.5	1,180.5	1,180.5	1,180.5	1,180.5	1,180.5	1,180.5	1,180.5	1,180.5	1,180.5
Atawhai Closed Landfill gas monitoring	31.5	31.5	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
6030 Green Waste	**366.6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Expenses	**366.6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Base Expenditure	366.6	0	0	0	0	0	0	0	0	0
60302310. Provide: Green Waste Disposal	137.3	0	0	0	0	0	0	0	0	0
603023100462. Provide: Transport Green Waste	118.3	0	0	0	0	0	0	0	0	0
603023830129. Transfer Station Overhead	111.1	0	0	0	0	0	0	0	0	0
6035 Recycling	**1,219.5**	**1,118.3**	**1,118.3**	**1,118.3**	**1,118.3**	**1,118.3**	**1,118.3**	**1,118.3**	**1,118.3**	**1,118.3**
Expenses	**1,118.3**	**1,118.3**	**1,118.3**	**1,118.3**	**1,118.3**	**1,118.3**	**1,118.3**	**1,118.3**	**1,118.3**	**1,118.3**
Base Expenditure	1,118.3	1,118.3	1,118.3	1,118.3	1,118.3	1,118.3	1,118.3	1,118.3	1,118.3	1,118.3
60352310. Provide: Kerbside Contract	1,054.0	1,054.0	1,054.0	1,054.0	1,054.0	1,054.0	1,054.0	1,054.0	1,054.0	1,054.0
603523100471. Provide: Recycling Bins	46.1	46.1	46.1	46.1	46.1	46.1	46.1	46.1	46.1	46.1
603523100472. Provide CBD Recycling Bins	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
60352332. Provide: Schools recycling	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2
Capital Expenditure	**101.2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Capital Increased LOS	101.2	0	0	0	0	0	0	0	0	0
603577903085. Recycling Bins	101.2	0	0	0	0	0	0	0	0	0

ix. Asset Management Practices

The asset management approach adopted in this plan is considered to be fit for purpose for solid waste management in the Nelson Tasman region during this period of increasing collaboration with Tasman District Council.

x. Monitoring and Improvement Programme

Table 4: Monitoring and Improvement Programme

	Actions
AP-1	Develop the mechanism for developing and managing joint waste management and minimisation projects.
AP-2	Investigate construction and demolition waste recovery and diversion of clean fill material.
AP-3	Investigate the option of joint refuse collection.
AP-4	Investigate joint green waste composting initiatives.
AP-5	Investigate organic waste collection and treatment.
AP-6	Investigate ways to increase reuse of glass.
AP-7	Investigate commercial food waste collection and treatment.
AP-8	Develop a policy for allocation of funds from the Solid Waste Reserve Fund.
AP-9	Increase the effectiveness of commercial recycling activity through regulation and/or incentives.

1. Introduction

This solid waste asset management plan combines the management, financial, engineering and technical practices involved in solid waste management to ensure the required level of service is provided effectively. It also provides an overview of all the elements of assets.

1.1. Background

1.1.1. Purpose of plan

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.

The Solid Waste Asset Management Plan achieves this objective by:

- Demonstrating responsible, sustainable management and operation of solid waste assets which represent a significant, strategic and valuable asset belonging to Nelson City;
- Identifying funding requirements;
- Demonstrating compliance with Section 94(1) of the LGA 2002 which requires the Long Term Plan to be supported by an audit report on:
    - the quality of the information and assumptions underlying the forecast information;
    - the framework for forecast information and performance measures and whether they are appropriate to assess meaningful levels of service;
- Demonstrating clear linkages to agreed community outcomes with stated levels of service.

The contribution of the solid waste activity to the Community Outcomes and asset management objectives will be achieved by:

- Reflecting the outcomes of Long Term Plan consultation in standards;
- Implementing a programme of inspections and monitoring of the activity to assess asset condition and performance;
- Undertaking a risk based approach to identify operational, maintenance, renewal and capital development needs, and applying strategic prioritisation techniques to select the most cost effective and sustainable work programme;
- Ensuring services are delivered at the right price and quality;
- Achieving the appropriate level and quality of asset management practice.

Relationship with other planning documents

Asset management plans are a key component of the Council planning process, linking with the following plans and documents:

Infrastructure Strategy

In 2014 the Local Government Act 2002 was amended to include section 101B a requirement for local authorities to prepare an infrastructure strategy as part of the Long Term Plan. The strategy is expected to look at least thirty years into the future and detail the issues that the local authority can reasonably foresee and options to address them.

Much of the work required for the strategy comes from the development of this asset management plan and in order to avoid un-necessary duplication, this plan focusses on the first 10 years of the 30 year strategy timeframe.

Proposed Nelson Plan

The proposed Nelson Plan is currently being developed by Nelson City Council and will replace the Nelson Plan. While the impact of the plan on the management of solid waste will become clearer as the proposed plan rules are developed, it's expected likely to include an increased emphasis on environmental impacts.

The current Nelson Resource Management Plan

The Nelson Resource Management Plan has implications for this asset management plan in terms of discharges to water, land use policies and the control of environmental effects during land development.

Nelson 2060

The Local Government Act 2002 requires local authorities to take a sustainable development approach to everything they do. The publication, Nelson 2060 (June 2013), was developed by Council through an inclusive process called "Framing our Future" and sets out Nelson's sustainability strategy.

The framework and checklist outlined in this document will be used to guide the management of the city's infrastructure.

Community infrastructure is installed and maintained on the understanding that the assets are provided in perpetuity for the benefit of future generations. Longevity and resilience or future proofing of an asset is a prime consideration when design and planning is undertaken for new or replacement components in the network.

Long Term Plan 2018-28

This asset management plan supports Council in the development of the Long Term Plan 2018-28 by providing the justification for budget forecasts put forward in the Draft Long Term Plan for solid waste management. As the AMP presents the recommendations of Council officers for the future operations, maintenance and capital works necessary to meet the levels of service of the utility, and the Long Term Plan consultation is the means for the community and Council to provide direction on priorities and affordability for the next ten years.

Annual Plan

On an annual basis Council reviews the work programme and budgets for the following year. When changes to the Long Term Plan are proposed, Council consults on these through an Annual Plan. The Proposed Annual Plan is compared to the current asset management plan work programmes and priorities before being adopted.

Nelson - Richmond Intensification Study

In response to the National Policy Statement on Urban Development Capacity Nelson City Council (NCC) and Tasman District Council (TDC) are both developing strategies for accommodating the projected growth in population and households, as well as the related business activity and demands this growth will bring.

Land Development Manual

The Land Development Manual 2010 sets out Council's engineering requirements for developments under the Nelson Resource Management Plan and is the basis of Council's requirements as a network utility operator under the Building Act 2004. A review of the Land Development Manual 2010 is currently underway. The proposed new manual is being developed jointly with Tasman District Council and community stakeholders. As the Manual is referenced in the Proposed Nelson Plan, it will be subject to a public notification and submission process.

Joint Nelson Tasman Waste Management and Minimisation Plan

Under the Waste Minimisation Act 2008 councils are required to develop and review Waste Management and Minimisation Plans at intervals of no less than every six years.

Nelson City Council and Tasman District Council adopted the current Joint Plan in 2012. The Councils are in the process of completing a waste assessment (as required by the Waste Minimisation Act) in preparation for the review of the Nelson Tasman Joint Waste Management and Minimisation Plan. The Councils will consider the adoption of a new plan before March 2018.

Biodiversity Strategy

This strategy provides principles for biodiversity management action. These underpin Council-wide actions and are recognised as inputs into the solid waste activity.

1.1.2. Infrastructure assets included in the Plan

Nelson City Council is responsible for the management of solid waste assets with an approximate replacement value of $4.3M (land values are not included) and a projected operating budget in 2018/19 of $3.1M.

Landfill

Nelson City Council relies on the Regional Landfill Business Unit to provide landfill services to the Nelson community. The Business Unit is required to operate and maintain assets associated with the York Valley and Eves Valley landfills to the satisfaction of the owner councils, NCC and TDC. (A residual waste landfill asset management plan will be developed by the Business Unit.)

Waste Collection

Up to 1997 Nelson City Council provided a rubbish collection service through Nelmac which included supplying 52 rubbish bags per household per annum. This was funded by a refuse rate. From 1997 the Council stopped charging a refuse rate and households were responsible for purchasing their own bags, or finding an alternative service provider. This structure has meant that private waste companies compete for Nelson's waste collection. Four companies Nelmac Ltd, Can Plan, Envirowaste Ltd and Transpacific Waste Management regularly collect rubbish in Nelson.

Greenwaste Processing

A privately owned composting centre was set up beside the Pascoe Street Transfer Station in 1998 but was discontinued in 2003. Since then, green waste taken to the transfer station has continued to be collected in a separate hopper, compacted into containers and transported to Council contracted composting businesses where the green waste is composted.

The competitive nature of commercial composting operators in Nelson provides a wide range of choice to waste collectors and the public.

Recycling Operations

The Nelson Environment Centre has operated a reuse shop at the Pascoe Street Transfer Station since June 1992. It also provided a drop off recycling centre for aluminium, metals, glass, oil and cardboard until 2002.

In 1996 the Nelson Environment Centre and Council set up a kerbside recycling scheme, which collected plastics, paper, aluminium cans, cardboard and glass. This scheme stopped in 1998 when the local paper market ceased.

In 2001 the Council developed a comprehensive recycling service for Nelson and initially contracted Kahurangi Waste Minimisation Services to deliver a recycling service to Nelson residents. In October 2004 Council contracted with Nelmac to continue the kerbside recycling scheme and to manage the recycling drop off centre at Council's Pascoe Street premises. Up to 2016 Nelmac processed the recyclable material at Pascoe Street.

In 2016 Nelson City Council reviewed the recycling service provided in Nelson. The review resulted in a roll out of wheelie bins to complement the existing blue bin

container recycling service and was triggered by health and safety concerns, ease of recycling by residents and a desire to increase diversion of recyclable material from landfilling. Nelmac, with approval of Council, restructured their business and now generally takes kerbside collected recycling material to the Material Recycling Facility located in Richmond for processing. Overflow kerbside recycling continues to be processed at Pascoe Street.

1.1.3. Key stakeholders in the Plan

The plan recognises the following external and internal key stake holders:

Table 5: Key Stakeholders

Key Partners and Stakeholders	Main Interests
Key Partners	
Tangata Whenua comprising of regional iwi	Environment, cultural heritage
External Partners and Stakeholders	
Residents and ratepayers	Public health and safety, service reliability, environment, cost
Industrial and commercial users	Public health and safety, service reliability, environment, cost
Nelson Marlborough District Health Board	Public health and safety, environment
Nelson City Council (unitary authority)	Environment
Tasman District Council	Cross boundary watercourses.
Government agencies (MoH, MfE, Audit NZ)	Public health and safety, service reliability, environment, cost
Consultants, Contractors and suppliers	Procurement, technical, projects/programmes
Internal Stakeholders	
Councillors and Sub-committees	Public health and safety, service reliability, environment, cost
Staff	Public health and safety, service reliability, environment, cost

Current and future practices

Current solid waste management requires best use of existing facilities and the aftercare for closed landfills.

Through the continued implementation of the Joint Nelson/Tasman Waste Management and Minimisation Plan the two Councils have the opportunity to develop more sustainable and integrated solid waste strategies for the region.

Methods of waste management and minimisation will be considered in the following descending order of importance: reduction, reuse, recycling, recovery, treatment and disposal and will be based on the following six guiding principles.

Global Citizenship

Our responsibility to protect the environment extends beyond Nelson.

This principle recognises our responsibility to consider the consequences of our actions in generating and managing waste and diverted material. For example, well sorted and uncontaminated diverted material produces higher quality recycled materials. Processing high quality recyclables in New Zealand is preferable to sending materials off-shore. Also, methane gas from landfills is a greenhouse gas and greenhouse gases contribute to climate change globally.

Kaitiakitanga (Similar To Stewardship/Guardianship)

All members of society are responsible for looking after the environment, and for the impact of products they purchase and wastes they make, use and discard.

The Māori concept of kaitiakitanga expresses an integrated view of the environment and recognises the relationship between all things. Kaitiakitanga represents the obligation of current generations to maintain the life sustaining capacity of the environment for present and future generations. Stewardship is similar.

This principle overlaps with the general principles contained in the Nga Taonga Tuku Iho Ki Whakatu Management Plan (2004), which include:

- a sense of kinship with all things;
- a regard for natural resources as gifts from the atua (gods);
- a sense of responsibility for natural resources as kaitiaki (guardians);
- a sense of commitment to look after resources for future generations;
- an ethic of giving back what is taken from the environment.

Product Stewardship

Producers, consumers and the wider community have responsibilities for a product throughout the product's life-cycle.

This principle promotes the responsibility of designing products so that the material used in manufacture can be recovered and re-used or returned benignly to the environment, the amount of packaging is minimised and the energy used in production is minimised.

Choices that consumers make have the potential to influence producers in their responsibility towards more sustainable production and packaging. Moreover, consumers have a responsibility to purchase in line with this principle.

Full-Cost Pricing

The environmental effects of production, distribution, consumption and reuse, recycling or disposal of goods and of the associated services should be consistently priced and charged as closely as possible to the point they occur.

This principle encourages minimisation of environmental effects by ensuring full environmental costs are reflected in product and service prices, and paid as closely to their source as possible.

Life-Cycle Principle

Products and substances should be designed, produced and managed so all environmental effects are accounted for and minimised during generation, use, recovery and reuse as a manufacturing resource, or disposal.

This principle requires consideration of all activities and associated environmental effects leading to a product or service, during the life of the product or service, and following the life of the product or service. For example, a product's life starts with the gathering of raw materials from the earth and ends when the materials are returned to the earth. Before the materials are returned to the earth, they may be reused instead of using raw materials. Energy will be used throughout. How much energy is used and whether the energy is renewable or not are components of the life cycle. At the end of a product's life, the product may be disposed in a landfill. Environmental effects may continue. For example, a wood product may decompose and generate landfill gases, which are predominantly greenhouse gases.

Precautionary Principle

Where there is a threat of serious or irreversible damage, lack of full scientific certainty should not be a reason for postponing measures to prevent environmental degradation or potential adverse health effects.

Where decision-makers have limited information or understanding of the possible effects of an activity, and there are significant risks or uncertainties, a precautionary approach should be taken.

Organisation structure

Council has an activity based structure with operations, maintenance and asset management functions for solid waste assets provided by a separate operations and asset management team. Capital projects are managed by specialist project managers in a separate service delivery team.

The day to day operations and maintenance of the network are carried out by an external contractor managed by the operations team.

Figure 4: Pascoe Street Transfer Station

1.2. Goals and Objectives of Asset Ownership

1.2.1. Reasons and justification for asset ownership

Councils are required by the Local Government Act 2002 to have community outcomes, which are a statement of the goals Council is working towards meeting the current and future needs of our community.

In 2014, Nelson City Council and Tasman District Council were involved in a process to develop a set of shared regional outcomes. These are set out below. While the two councils share joint outcomes, the descriptions that accompany them are individual to each council to reflect their community's different needs and aspirations.

These regional outcomes fit with the purpose of local government to guide delivery of services in a way that is efficient, effective and appropriate to present and anticipated future circumstances. Adopting joint outcomes with Tasman District Council

demonstrates an understanding that we are one region and need to collaborate to provide the best and most efficient services to our communities.

The solid waste activity contributes to community outcomes are outlined below.

Table 6: Contribution to Community Outcomes

How the activity contributes
Provides services and strategies to minimise the negative effect of waste management on the environment.
High quality services and consistent strategic direction provides a stable environment for business development and growth
Provides services and direction for the management and minimisation of waste

Levels of service have been developed with the objective of assisting Council in achieving the community outcomes and the priorities, and are set out in section 2 of this plan.

1.2.2. Links to organisation vision, mission, goals and objectives

Local authorities must act in accordance with the principles set out in the Local Government Act 2002. The legislation requires local authorities to ensure prudent stewardship and the efficient and effective use of its resources in the interests of its district or region. They must also take a sustainable development approach, which means taking into account:

- The social, economic, and cultural interests of people and communities; and
- The need to maintain and enhance the quality of the environment; and
- The reasonably foreseeable needs of future generations.

Nelson 2060 was adopted by Council in 2013 following an inclusive process called "Framing our Future" and sets out Nelson's sustainability strategy. It identifies 10 goals that the Nelson community said were priorities for action and Council is now working to ensure that these goals and sustainability principles are integrated into all the decisions made about its activities.

Sustainable development actions and approaches are embedded throughout this asset management plan in the sections on: Levels of Service, Future Demand, Lifecycle Management Plans, and the Financial Summary. These include the following:

Goal Three - Our natural environment – air, land, rivers and sea – is protected and healthy:

- 100% compliance with resource consent conditions.

Goal Seven - Our economy thrives and contributes to a vibrant and sustainable Nelson:

- Optimal use of available landfill airspace;
- Provide a range of options that will allow users opportunities to economise.

Goal Nine - Everyone in our community has their essential needs met:

- Ensure that solid waste disposal services are available to all residents.

Goal 10 - We reduce consumption so that resources are shared more fairly:

- Waste awareness programmes;
- Waste education programmes;
- Subsidised charges for problematic waste products.

Actions and issues regarding sustainable development are well aligned with the waste management and minimisation principles embedded into the Joint Nelson Tasman Waste Management and Minimisation Plan.

Further action in promoting the sustainability will focus on:

- Integration of waste management and minimisation services;
- Operational and management improvements;
- Ongoing monitoring of streams and groundwater in the affected areas.

1.2.3. Plan framework and key elements

The framework of the Solid Waste Asset Management Plan 2018-28 follows the generic layout identified in section 4.2 of the International Infrastructure Management Manual 2015.

The plan has the following key elements:

- Why we need a plan (Introduction)
- What we provide (Levels of service)
- Planning for the future (Future demand)
- How we provide the service (Lifecycle management)
- Dealing with uncertainty (Risk management plan)
- What it will cost and how we pay for it (Financial summary)
- What we're doing to improve (Plan improvement and monitoring)

1.3. AM Maturity

Asset Management is recognised as a critical component of Infrastructure Management globally and this sector has benefited from initiatives to formalise the practice of asset management since November 1996. The Association of Local Government Engineering New Zealand (Inc) and the Institute of Public Works Engineering of Australia have lead the development of the International Infrastructure Management Manual (IIMM) that forms the basis of Infrastructure Asset Management Practices at Nelson City Council.

The IIMM provides an AM Maturity Index. The Nelson City Council Asset Management Policy sets the level of maturity per activity. Refer to the Plan Improvement and Monitoring – Status of AM Practices section of this plan for details about this activity's current maturity status and target levels of maturity.

2. Levels of Service

This section on levels of service is the vital part of the Asset Management Plan. The levels of service determine the amount of resources required to manage the solid waste activity in order to provide the community with the levels of service specified. The following was considered:

- Customer Expectations - Information gained from customers, what they value, their needs and what they expect;
- Affordability;
- Community Outcomes (Strategic and Council Goals) - These identify the overall direction of Council and provide a framework for the levels of service;
- Compliance Requirements - The statutory and other requirements set the minimum level of service that must be provided.

Customer expectations, community outcomes and compliance with statutory requirements and Council policies contribute to the development of levels of service from a customer perspective. Targets for levels of service help to set the appropriate expectations of customers and provide a basis for measuring the Council's performance.

2.1. Customer Research and Expectations

It is important to identify and define the customers and stakeholders in the solid waste business in order to understand their values, aspirations and expectations.

Solid waste stakeholders are no different from the customers of other Council services. With many stakeholders not being ratepayers, it is important to ensure that consultation is carried out in a way that ensures all stakeholders have an opportunity to be heard during consultation.

Solid waste assets have the following stakeholders:

2.1.1. External

- Residential, commercial and industrial waste generators;
- Ministry of Business, Innovation and Employment, Ministry for the Environment, Ministry of Health, Department of Conservation and Audit New Zealand;
- Waste Industry service providers;
- Community and voluntary service providers;
- Waste Management Institute of New Zealand, Recycling Operators of New Zealand, Packaging Accord and members;
- Cleanfill Operators;
- Owners of abandoned, unregistered landfills;
- Environmental and recreational interest groups;
- Tasman District Council.

2.1.2. Internal

- Councillors;
- Trade Waste Officer;
- Environmental officers;
- Asset, Operations and Maintenance officers.

2.1.3. How we communicate with our stakeholders

While the Long Term Plan consultation process incorporates the levels of service associated with the solid waste activity, Nelson City Council has also undertaken a range of consultation processes over the past few years specifically targeted at gathering information on preferred levels of service or the extent of infrastructure that Council has/will be required to install. The extent of the historical and additional proposed consultation is detailed in the table below.

Table 7: Solid Waste Consultation Processes

Consultation Process	Date	Reasons for Consultation	Extent of Consultation	Applicable to Which Customer Value
Historical				
Sustainability Forum	2011	Framing our Future	Community workshops	Sustainability
2012-2022 Long Term Plan process	2012	Legislative requirement of the Local Government Act 2002	Public, business and industry submissions requested. Advertising in local papers. Submissions heard and considered	Customer satisfaction Environmental quality Capacity Reliability Customer response
Sustainability Policy	2008	Instigation of the Council's sustainability policy	Special consultative process.	Sustainability
Community Survey	Three yearly basis since 1998	Rate satisfaction with services provided by Council	400 residents surveyed by telephone	N/A
Annual Plan	Annually	Legislative requirement of the Local Government Act 2002	Public, business and industry submissions requested. Advertising in local papers. Submissions heard and considered	Customer satisfaction Environmental Quality Capacity Reliability Customer response
Joint Waste Management and Minimisation Plan	2011-2012	Waste Minimisation Act 2008	Special consultative process	Sustainability Reliability Capacity
Joint Landfill	2014	Legislative requirement of the Local Government Act 2002	Special consultative process	Changes to the delivery of services
2015-2025 Long Term Plan process	2015	Legislative requirement of the Local Government Act 2002	Public, business and industry submissions requested Advertising in local papers	Environmental quality Sustainability Reliability Capacity Responsiveness
Proposed				

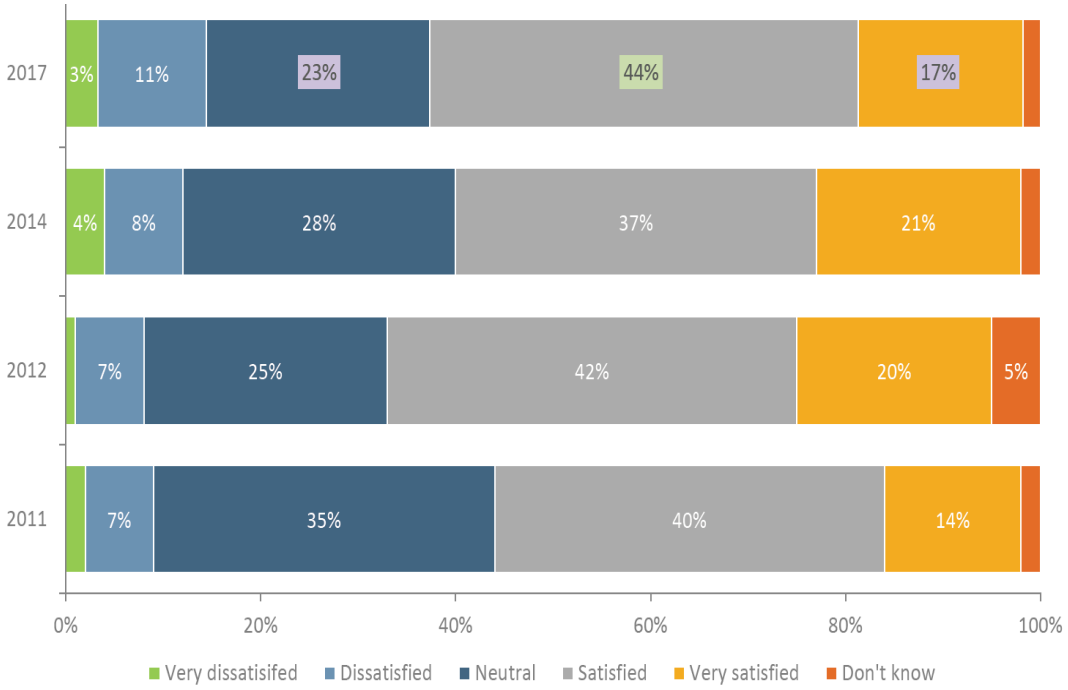
Consultation Process	Date	Reasons for Consultation	Extent of Consultation	Applicable to Which Customer Value
2018-2028 Long Term Plan process	2018	Legislative requirement criteria of Local Government Act 2002	Public, business and industry submissions requested Advertising in local papers	Environmental Quality Sustainability Reliability Capacity Responsiveness
Joint Waste Management and Minimisation Plan	2017-2018	Waste Minimisation Act 2008	Special consultative process	Sustainability Reliability Capacity

2.1.4. Residents' Survey

The purpose of the Residents' Survey is to get statistically representative resident feedback on Council performance which is used to report on performance measures and identify areas for improvement.

Nelson City Council has been conducting annual surveys of residents since the late 1990s, covering a range of topics. Where possible, questions are repeated to enable comparisons over time. Council's current approach to annual residents' surveys is to run a long (20-minute) survey every three years, timed for the year before the Long Term Plan (LTP), for example, 2017. This allows a wider range of topics to be covered to inform LTP decision-making. In the intervening years, such as in 2016, shorter surveys (up to 10 minutes) are undertaken. These focus on collecting data to report on LTP performance measures and to inform Asset and Activity Management Plans.

Figure 5: Customer Satisfaction with Waste Management

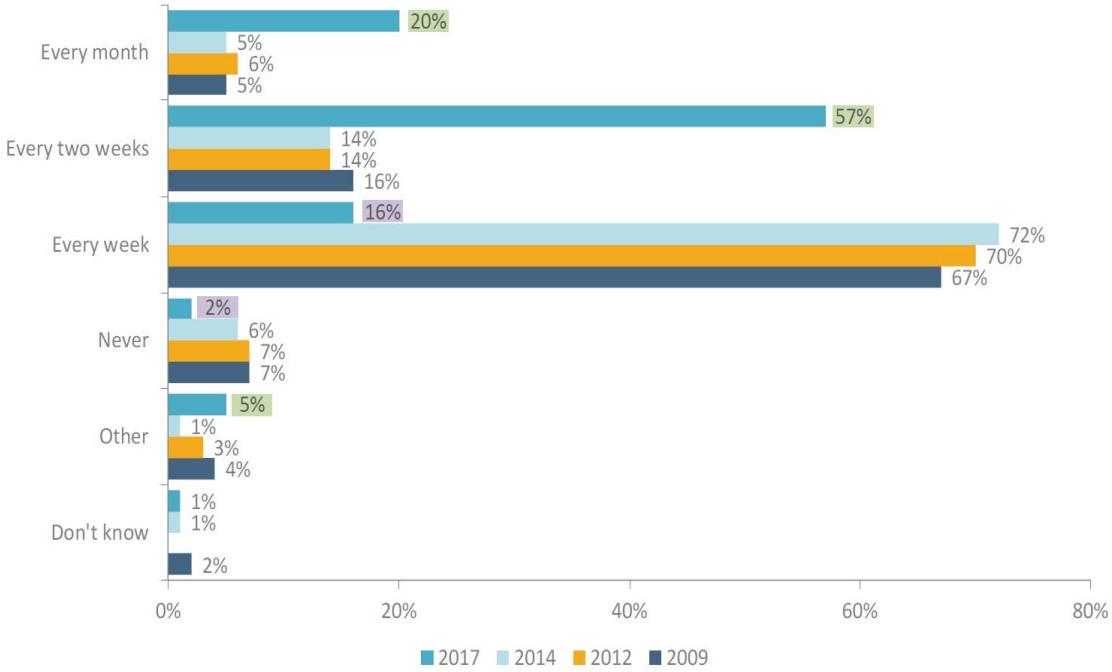


It is clear that residents questioned are generally satisfied with the solid waste management services provided within the city. Further analysis indicates that 62% of those who were dissatisfied with waste management services indicated that recycling

needs to be improved. Seven percent of residents surveyed considered waste rubbish/recycling activities as the most important environmental issue.

Only two percent of respondents indicated that they never use the recycling services provided by Council. It can therefore be argued that the public sees the value of the service as it affects their lives.

Figure 6: Residents Using Recycling Services



The survey indicates that fewer people are composting food and garden waste, and it is therefore considered that this area should be targeted for improvement. Increased uptake of home composting benefits the community by building resilience especially where these activities are aligned with food growing opportunities and extending the life of residual waste landfills.

2.1.5. Outcome of consultation

The community identified increased residual waste due to a growing population as the challenge for the future and described success in the solid waste activity as follows:

- Nelson businesses and households aim for zero waste;
- Reduced consumption by businesses and households;
- Integrated cradle to grave approach to waste with local producers leading the way;
- Recycling is actively promoted and practised and the community is educated about reducing and recycling;
- Waste minimisation partnerships.

2.1.6. Long Term Plan

Every three years Council sets out the proposed plans for the provision of services to the community for the next ten years. The Long Term Plan covers the operation of the solid waste activity including the reasons for undertaking the activity, levels of service, description of major projects, financial projections and any key risks that have been identified.

2.1.7. Annual Plan

When variations to the long term plan are proposed by Council the Local Government Act requires these to be set out in an annual plan for public consultation.

2.2. Strategic and Corporate Goals

Councils are required by the Local Government Act 2002 to have community outcomes- a statement of the measure of success that Council is working to achieve for the community. Council's community outcomes are set out in the Long Term Plan 2018 – 2028

- Our unique natural environment is healthy and protected
- Our urban and rural environments are people-friendly, well planned and sustainably managed
- Our infrastructure is efficient, cost effective and meets current and future needs
- Our communities are healthy, safe, inclusive and resilient
- Our communities have opportunities to celebrate and explore their heritage, identity and creativity
- Our communities have access to a range of social, educational and recreational facilities and activities
- Our Council provides leadership and fosters partnerships, a regional perspective, and community engagement
- Our region is supported by an innovative and sustainable economy

These inter-related goals guide Nelson City Council to align everything Council does with what the community wants Council to achieve.

2.3. Legislative Requirements

Legislation provides the minimum requirements for levels of service. The main legislation driving solid waste activities are the:

- Resource Management Act 1991;
- Local Government Act 2002;
- Waste Minimisation Act 2008;
- Climate Change Response Act 2008.

2.3.1. The Resource Management Act 1991

The Nelson Resource Management Plan (NRMP) is the operative plan established under the Resource Management Act 1991. Council seeks to operate the current network in compliance with this document. To that end Council holds a range of resource consents for both global and site specific activities.

2.3.2. The Local Government Act 2002

The Local Government Act sets out the requirements of Council to deliver services and the responsibility of the Council to assess the services provided. The development of this Solid Waste Asset Management Plan is the process by which this assessment is carried out by Council and reported to the public through the Long Term Plan.

The Local Government Act places an obligation on Council to strive towards the sustainable development of the City. The social, economic, environmental and cultural wellbeing of the community must be considered when objectives are developed for the solid waste activity.

2.3.3. Waste Minimisation Act (2008)

The Waste Minimisation Act encourages a reduction in the amount of waste generated and disposed of in New Zealand and aims to lessen the environmental harm from waste. It aims to benefit the New Zealand economy by encouraging improved use of materials throughout their life. The Waste Minimisation Act sets out to achieve this goal in the following ways:

- Placing a levy on waste disposal to landfills;
- Funding waste minimisation grants;
- Enabling regulations to be made to make it mandatory for territorial authorities and the waste sector to report on waste to improve waste minimisation;
- Managing producer responsibility programmes;
- Directing territorial authorities with respect to waste minimisation responsibilities;
- Setting up a Waste Advisory Board to provide independent advice to the Minister for the Environment with respect to waste minimisation.

The enactment of the Waste Minimisation Act in 2008 represented a change in the Government's approach to managing and minimising waste. The Waste Minimisation Act recognises the need to focus efforts higher up the waste hierarchy in terms of reducing and recovering waste earlier in its life cycle, shifting focus away from treatment and disposal. This change in focus is reflected in new tools enabled by the Waste Minimisation Act 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.

The purpose of the Waste Minimisation Act 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 Waste Minimisation Act contains a mechanism for the accreditation and monitoring of product stewardship schemes to minimise waste from products. Product stewardship schemes will be designed to promote reduction of waste at source, as well as make recycling, treatment and disposal safer and more efficient.

Part 4 of the Act outlines the responsibilities of territorial authorities and states they "must promote effective and efficient waste management and minimisation within their districts" (s42).

2.3.4. Waste Management and Minimisation Plan

Nelson City Council has a statutory responsibility to promote effective and efficient waste minimisation and, for this purpose, to adopt a waste management and minimisation plan.

Council carried out a Joint Waste Assessment with Tasman District Council and adopted the Joint Nelson Tasman Waste Management Minimisation Plan in 2012.

The Joint Waste Management and Minimisation Plan sets the direction for waste management and minimisation in Nelson City and Tasman District until a new plan is adopted. The plan needs to be reviewed at intervals not exceeding six years. (The statutory requirement is that a new waste management and minimisation plan will need to be adopted by April 2018)

2.3.5. Climate Change Amendment Act 2008

The Climate Change Amendment Act 2008 provides the basis for the New Zealand Greenhouse Gas Emission Trading Scheme. This Act requires landfill owners to purchase emission trading units to cover methane emissions generated from the landfill.

2.3.6. Other Legislation

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

- The Hazardous Substances and New Organisms Act 1996 controls the handling and disposal of hazardous substances;
- The Civil Defence Emergency Management Act 2002 requires lifeline services to function to the fullest extent during and after an emergency and to have business continuity plans;
- The Health Act 1956 aims to prevent nuisance and promote public health;
- The Local Government (Rating) Act 2002 allows Council to determine a rate or charge for any activity Council chooses to get involved in;
- The Health and Safety at Work Act 2015 outlines health and safety responsibilities for the elimination or minimisation of risks associated with work. The Act enables the Governor-General to make regulations related to hazardous substances;
- The Building Act 2004 requires building consents for building construction, operation and demolition;
- The Litter Act 1979 (and Amendment Act 2006) provides council with powers to establish litter enforcement officers or "Litter Control Officers" who have powers to issue infringement notices, with fines for those who have committed a littering offence.

2.4. Current Level of Service

- Landfill services are delivered through the Reginal Landfill Business Unit. The landfill provides access to registered contractors and does not provide access to the general public.
- Residual waste collection is commercialised in Nelson with ratepayers and households able to procure these services from waste collection/management companies. There are a number of companies active in the market providing a wide range of services.
- Separated greenwaste and limited organic collection services can be arranged with commercial waste contractors and there are greenwaste disposal facilities available at commercial composting companies as well as at the Council managed facility at the Pascoe Street Transfer Station subject to current fees and charges.
- Recycling opportunities are available to the public through the Council initiatives as well as commercial companies.
- Kerbside collection is provided free of charge to all residential properties in Nelson through a Council initiative. This is limited to a 240 litre wheelie bin for general recycling material and a 60 litre crate for glass collected every second week.
- A recycling drop off facility is available at the Pascoe Street Transfer station to occupiers of residential properties.

- Residents can procure additional recycling services through commercial operators.
- Residents recycle waste steel and card board through local steel and card board merchants.
- Domestic quantities of hazardous waste up to 2kg are accepted free of charge at the Pascoe Street Transfer Station and there is a charge for larger quantities of domestic hazardous waste.
- Residual waste and used tyres can be disposed of through the transfer station subject to the payment of current fees and charges.
- White-ware can be dropped off at the transfer station and will be made safe for disposal subject to fees and charges.
- E-waste can be disposed of through the Nelson Environmental Centre by arrangement, is subject to charges set by the Centre.

The full range of services is detailed on the Council's website.

2.4.1. Solid Waste Collection

A weekly kerbside refuse collection service is provided, combined with the residential recycling collection contracted by Council. A contract is established between this contractor and the resident once refuse is put out for collection on the correct day in a refuse bag that can be procured from most supermarkets or from Council.

The public can choose their rubbish collection contractor and are required to make their own arrangements with individual contractors who offer different collection services.

Information on collection services is available on the Council website or from waste contractors.

2.4.2. Recycling

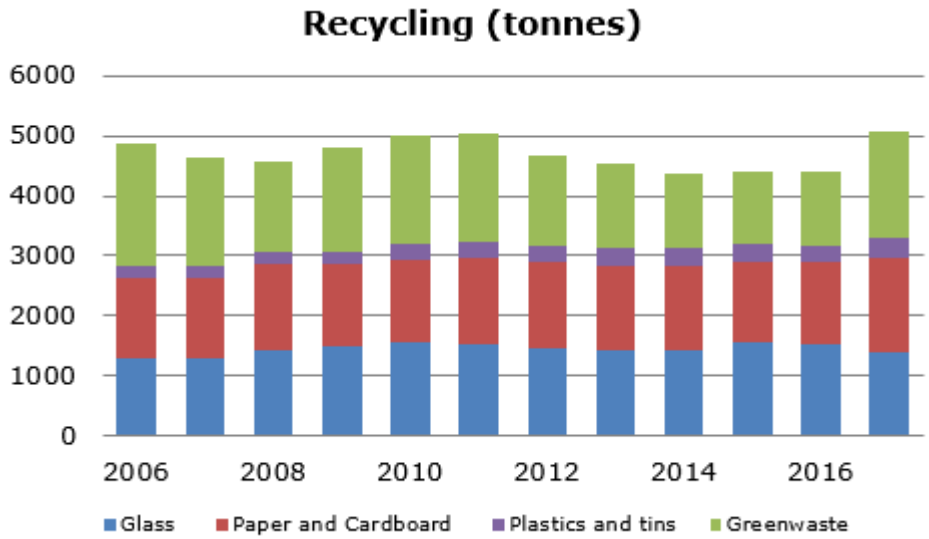
Council has a contract with Nelmac for the provision of kerbside recycling services to residential properties in Nelson. The cost of the service is paid from the Local Waste Disposal Levy included in the landfill disposal charges.

Recycling is collected by the Council's every fortnight. The following material is collected and processed:

- Glass bottles and jars;
- Plastics 1 – 7;
- Metal cans and tins;
- Paper and card board;

The Council contractor also collects recycled material from schools.

Figure 7: Tonnages Recycled



The kerbside recycling provided by Council diverts over 3,000 tonnes per annum from landfill. Recycling collections from the business and institutional sector are available from private waste management companies. The residential kerbside recycling contractor has a contractual obligation to ensure that collected recyclable material is diverted away from landfill.

There is not the same certainty about where commercial recycling ends up, as this is not controlled by Council. Nelson City Council, with Tasman District Council, continues to promote responsible recycling to businesses and institutions. However, the lifecycle of commercially recycled material is outside the control of Council.

Clothing and re-useable individual items are accepted at the Nelson Recycling Centre and a range of privately run organisations.

2.4.3. Transfer Station

The Council owns a transfer station in Vivian Place (off Pascoe Street in Tahunanui) for car, trailer and small truck-loads of waste drop off. The operation of the transfer station is contracted out.

Operations and Maintenance (Transfer Station)

The Pascoe Street Transfer Station has three distinct areas of operation:

- Collection, compaction and transport of general refuse and greenwaste
- Operation of a re-use shop
- Recycled materials processing centre

Waste disposed of at the transfer station is charged on an estimated volume basis. The total cost of running the transfer station is not recovered from gate charges and is topped up from the Local Waste Disposal Levy charged at the York Valley landfill.

The management of domestic hazardous waste and tyres are included in the transfer station operational cost.

The overhead to manage the transfer station is proportionally recovered from the greenwaste activity. (The greenwaste overhead covers costs such as the operation contract, telephone, rates, equipment and site maintenance, interest charges etc.)

General waste and separated greenwaste is received at the transfer station and charged on a volumetric basis. The waste is deposited into separate hoppers and compacted into 28m^3 containers, and then transported to the landfill or composting service provider.

Collection, Compaction and Transport of Waste

The hours that the Pascoe Street Transfer Station is permitted to open is controlled by designation DN2.7 (ii) of the Nelson Resource Management Plan. The opening hours are:

Monday – Friday	8.00am - 4.30pm
Saturday (Summer 1 Sept - 1 Apr)	8.00am - 4.30pm
Saturday (Winter)	9.00am - 4.30pm
Sunday and Public Holidays	10.00am - 4.30pm
Tuesday evening (during daylight saving)	4.30pm - 7.00pm

Greenwaste

Council encourages green-waste diversion through education and providing a facility to the public and contractors to drop separated green-waste off at the Pascoe Street Transfer Station. The charges for separated green-waste are consistently lower than the charges for mixed waste. The treatment of green-waste is contracted out.

2.5. Desired Level of Service

Levels of Service are "the defined quality for a particular activity or service against which performance may be measured" (Auditor General) and these relate to quality, quantity, reliability, responsiveness, environmental acceptability and cost. Customer Levels of Service reflect how the customer perceives the service. Technical Levels of Service on the other hand, support the Customer Levels of Service and are internal measures that are quantitative.

The objectives and key performance indicators developed are grouped into six strategic themes:

- Impact – Adverse environmental impacts from solid waste activities are minimised;
- Cost – Monitoring and managing the drivers of costs to ensure the provision of affordable services without compromising safety or quality;
- Demand – Development and growth needs in terms of solid waste services are met;
- Safety – Operation of solid waste services does not compromise the safety of the community and employees;
- Quality – Provision of quality infrastructure and services;
- Communication – Information made available to customers on levels of service and waste management and minimisation issues.

2.5.1. Impacts

The primary objective is to mitigate negative environmental effects that the solid waste activity may cause. The customer view can be paraphrased as: "I want council to minimise harm to the environment."

2.5.2. Increase in Tonnages Recycled

The recycling statistics includes residential and school recycling programmes plus the green waste diversion through the transfer station. The information around commercial recycling is not available as Council has no direct involvement with commercial recycling. Most residents use the Council provided recycling service.

Composition studies of York Valley Landfill demonstrate that a significant volume of potentially recyclable material is still being disposed of at the landfill. Council has no direct involvement in managing waste that is recycled by businesses. However,

businesses are encouraged to reduce waste to landfills through waste avoidance, recycling etc. through education programmes initiated by Council. In addition waste operators are encouraged through Council education programmes to promote and contract recycling services to businesses in Nelson.

Land-filling the recyclable material provides the lowest cost solution. This practice distorts the business recycling market and does not allow Council to achieve the desired outcomes.

Figure 8: Recyclables per resident

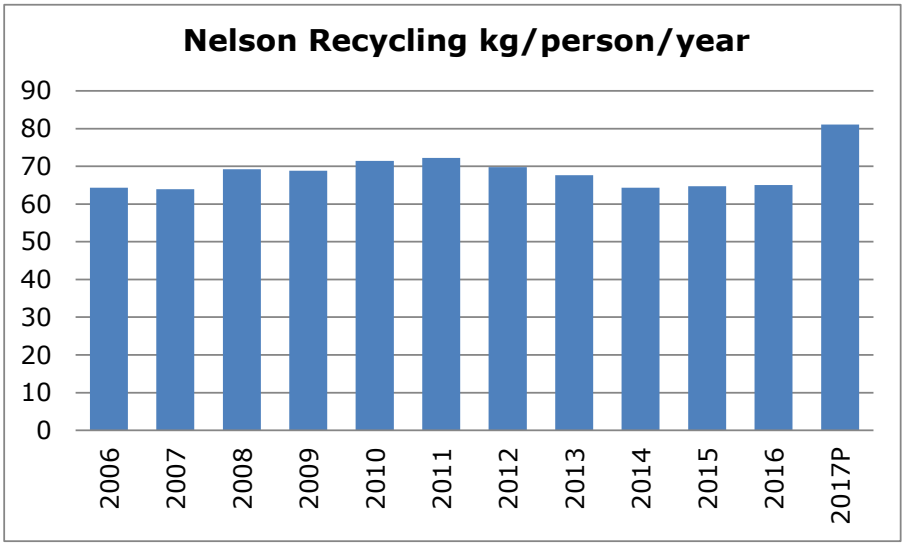


Figure 8 shows that Nelson residents embraced the new level of service rolled out in 2016.

Figure 9: Recyclables as a Percentage of Residual Waste

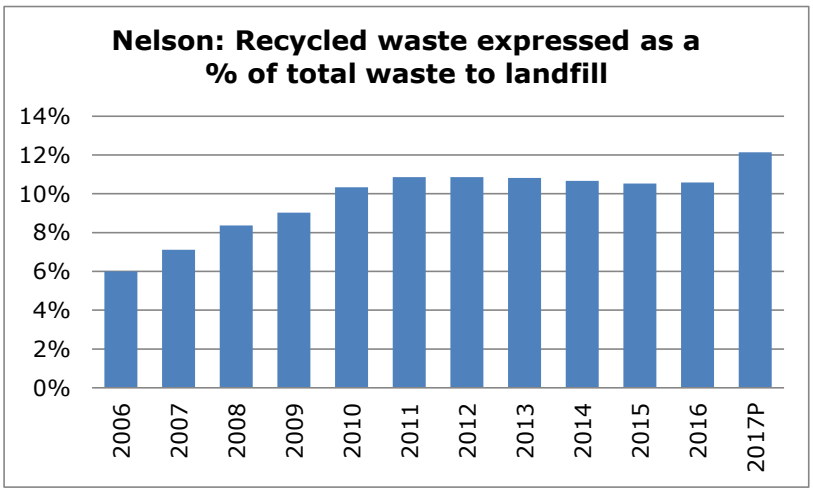


Figure 9 shows that the percentage of recyclables as a percentage of the residual waste disposed of at landfill has trended upward since 2006. This figure shows that the changes to the level of service in 2016 have resulted in an increase in material diverted from landfill.

- Council can affect behaviour change through initiatives to ban specific materials from the landfill or through providing incentives to businesses or waste operators who provide recycling services to businesses.
    - Regulation often increases cost of compliance beyond the added value that can be achieved through compliance. Financial incentives could assist Council in achieving the desired outcomes.

- The development of incentives requires implementation of innovative ideas to achieve desired policy outcomes. The implementation of well-developed incentives often cost less than regulatory initiatives such as banning specific materials from disposal at landfill.
- It is considered that significant gains in diversion from landfill can be made if material recycled by waste contractors on behalf of businesses is in fact diverted away from landfills. Options to do this are outline below.
    - Extending the free recycling service applicable to residential properties to business will gain diversion rates but will come at a cost of around $200 to $250 per tonne.
    - The service will provide limited capacity a 240 litre wheelie and 60 litre blue crate collected fortnightly and will need to be complemented by business owners if this volume is insufficient for their needs.
    - A project through which the current kerbside recycling will be rolled out customers who occupy non-residential properties is included in the 2018-28 Long Term Plan.
- Increasing greenwaste diversion is another area where significant gains can be made.
    - Landfill composition data shows the proportion of green waste disposed of at York Valley is higher than national best practice.
    - Pricing for services affects the behaviour of consumers and contractors. If the differential between the cost of disposing of separated greenwaste is lower than the cost of disposing mixed waste at landfill waste operators will use the lowest cost option if they can increase their profit margin and improve their market share.
    - Since the new 2017/2018 landfill charges were implemented on 1 July 2017 there has been a significant incentive for waste operators to divert greenwaste away from the landfill. Waste collection operators are likely to choose to divert greenwaste collected at the kerb side to the greenwaste composting businesses in Nelson/Tasman.
    - Commercial operators provide separated greenwaste collection and drop off opportunities at lower cost compared to the transfer station charges.

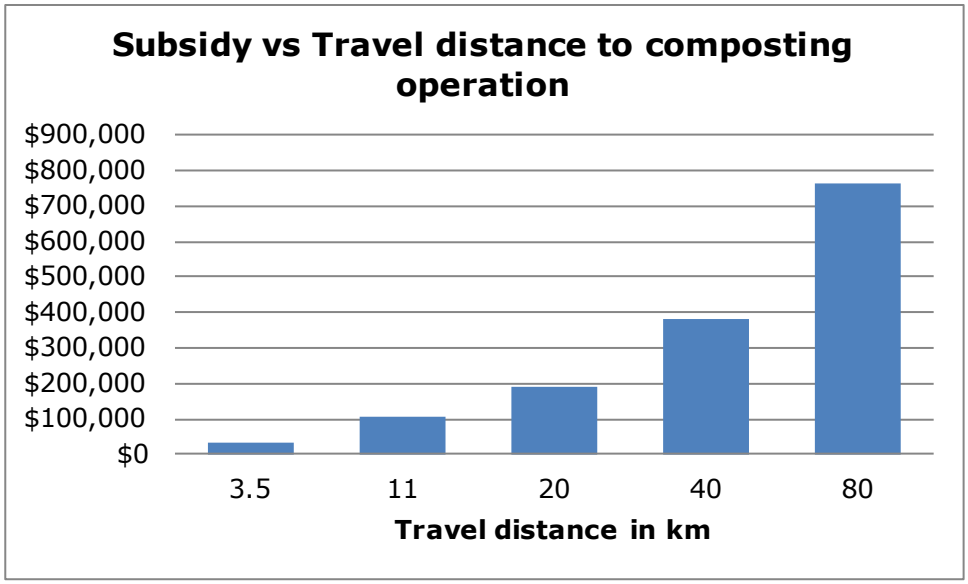
This change in pricing will incentivise competition within this market sector and ultimately result in further voluntary diversion of greenwaste away from landfilling.

Any decision around diversion is complex and figure 3.5(a) demonstrates the impact of not having a composting service available close to the transfer station. A number of other factors can also influence greenwaste diversion. The key points are:

- Nelsonians have shown that they are prepared to contribute to waste disposal initiatives where net environmental gains can be achieved;
- Significant airspace can be saved if more greenwaste is diverted away from landfill;
- Studies have shown that there is a net benefit for greenwaste composting compared to disposal to landfill;
- Economic disposal/diversion options are available to Nelson residents and this is likely to generate further diversion of greenwaste from landfilling;
- With the increase in landfilling cost and cost of managing greenwaste at Pascoe Street a significant increase in subsidy will be required to further increase greenwaste diversion through the Pascoe Street Transfer Station service;

- The best option is to work with waste collection contractors to create more flexible greenwaste diversion opportunities for residents;
- Directing greenwaste diversion incentives through waste collection service providers is more likely to achieve the desired outcomes at a lower cost than the Council service.

Figure 10: Greenwaste Subsidy



Once it is apparent that viable green waste alternatives are well established in the region, the reception of separated green waste at the transfer station can be phased out.

The Joint Waste Management and Minimisation Plan allows adequate leeway to both Councils to investigate, develop and implement incentives or regulatory programmes separately or jointly. However, within the spirit of a joint waste strategy it is considered appropriate that Council creates the environment in which these initiatives have the best opportunity to be successfully implemented. It is therefore of significant importance that the vehicle to investigate, develop and implement policies that affect solid waste management and minimisation initiatives in the Nelson Tasman area be agreed on between the two councils.

There are opportunities to decrease the cost of recycling. These are generally associated with changes in the level of service. One example is the diversion of glass bottles away from the landfill only to end up as a gravel substitute at great cost and inconvenience. The environmental benefits of glass recycling are associated with the decreased need to use more natural resources. The effect of glass bottles in a landfill is very minimal considering its volume weight to ratio.

However, it is pleasing to observe that the Council contracted recycling contractor is trialling an alternative way of managing kerbside collected glass containers. Through this process glass collected at the kerbside stays within the glass cycle rather than ending up in trenches. The efficiency of this service is under continual review within the industry but there are strong signals that the diversion of recycled glass containers for use in remanufacturing of glass containers is now a sustainable business.

2.5.3. Cost

Solid waste services must be affordable in the long term. Customers want the cost of services to be sustainable over the long term. The customer view can be paraphrased as: "I want Council to provide affordable services."

Opportunities to economise must form an integral part of the activity.

2.5.4. Council Provides a Cost Effective and Sustainable Service

Council does not provide kerbside rubbish collection. Consumers have access to a wide choice of service providers who provide a range of options. This gives customers flexibility to manage their waste and economise. The cost of Council waste activities are reflected in the fees charged by private service providers, and through transfer station and landfill fees charged for the disposal of waste.

Figure 11: Costing Model

Costing Model				
Full Cost	=	Financial Cost	+	Environmental Cost

Determining the full cost of solid waste services is complex. Economists (using data methodologies accepted by the United States Environmental Protection Agency which include the cost of global warming, acidification, eutrophication, human health effects from particulates and toxins, and ecological toxicity) arrived at an economic benefit of US$517 per tonne of recycled material compared to the cost of the environmental and human health impacts of raw materials extraction and manufacturing distribution.

Economic studies include the following external costs to varying degrees:

- Avoided costs of collection for landfills;
- Avoided financial costs of landfills;
- Disamenity effects (Noise, location, odour etc);
- Emissions to the atmosphere;
- Leachate levels;
- Direct consumer benefit (willingness to pay);
- Value of material recycled.

While it is debatable whether a one size fits all approach provides the best possible outcome in all situations we need to consider externalities such as the impact on New Zealand's "clean green image" and Nelson's image if the Council changes to a lowest cost approach. Irrespective of the externalities described above, it is prudent to at least divert material away from landfill to the level that Nelsonians as a community are prepared to pay for, and to continue to investigate alternatives with an open mind.

2.5.5. Contaminated Soil and Sewage Sludge (Biosolids)

NCC manage acceptance of contaminated soil in a way that minimises the tonnage accepted and mitigates adverse environmental effects. It does this by applying acceptance criteria.

Contaminated soil (or biosolids at 20% dry solid concentration) mixed into municipal waste improves the characteristics of a landfill in terms of the retention of leachate and landfill gas because mixing these materials into the landfill material increases the density of the landfill. A tonne of contaminated soil consumes less landfill airspace than a tonne of municipal waste.

2.5.6. Demand

Demand relates to the development and growth of the district. The customer view can be paraphrased as: "I want a reliable and regular refuse and recycling collection system."

2.5.7. Residential Properties have access to Kerbside Refuse and Recycling Collection Services

All households within the urban area of Nelson have access to refuse collection on a weekly basis. Refuse collection is provided on a user pays basis.

2.5.8. A Growing Proportion of Households are making use of Recycling Services Provided

Recycling is provided free of charge to households based on the collection of glass and other recyclables on alternative weeks with no restriction on the volume of recycling processed.

2.5.9. Safety

The operation of solid waste services and waste minimisation and management strategies promoted by Council must be safe for staff and the customers of the service. The customer view is: "I want a solid waste service that is safe to use."

2.5.10. Meet the Civil Defence Emergency Management Act Requirements

An annual exercise is conducted with staff and contractors to meet Council's obligations as a key infrastructure lifeline under the Civil Defence Emergency Act 2002.

2.5.11. Lost Time Injuries in the Council's Contracted Solid Waste Activities

Providing a lowest cost service does not necessarily achieve best outcomes for the community. Injuries and health implications to users and contractors are important components of the delivery of solid waste services.

2.5.12. Health Related Service Requests received through the Council's Service Request System Responded to within 24 Hours

Solid waste activities contribute to community well-being. They ensure the effective management of solid waste by minimising pollution and educating the public about waste issues. Council promoted solid waste management and minimisation initiatives are well researched and advice provided to the public is relevant and accurate.

2.5.13. Quality

The way in which the Council achieve the objectives of the solid waste activities must be of high quality. The privatisation of kerb side rubbish collection does not remove the obligation from Council to monitor and ensure that the services provided are of a high quality. The customer view can be paraphrased as: "I want a quality service."

2.5.14. Number of Requests Regarding Refuse Collection

Monitoring the requests for service and the complaints provides valuable information around the customer perception of the service provided. Increased numbers of complaints around a specific issue could inform changes to the level of service provided.

2.5.15. Residents Satisfaction with the Solid Waste Activities Provided in the City

It is important to distinguish between needs and wants. Communicating the costs and benefits associated with changes in the level of service is complicated. Matching the community expectations in terms of choice, opportunity to economise, cost of service, comfort etc to levels of service is best achieved through a forum where the community is well represented.

2.5.16. Communication

The objective of communication is to educate our customers on solid waste services provided, so that they can gain a sound understanding of the levels of service provided. The customer view can be paraphrased as: "I need Council to respond to my requests in a timely manner, provide information in a clear and timely fashion, and consult with me on my needs and aspirations."

2.5.17. Compliance with Target Response Times

Effective responses lead to customer satisfaction.

2.5.18. Consultation Process carried out and Service Levels determined

The needs and levels of service will be determined through the Long Term Plan process.

2.5.19. Information Regarding Solid Waste Activities Readily Available To The Public

Information regarding services provided and available in Nelson is recorded on the Council website.

Table 8: Performance Indicators

Community Outcomes	Level of service	Performance Measure	Previous and current performance	2018/19 Year 1	2019/20 Year 2	2020/21 Year 3	2021/22 to 2027/28
Our natural environment is protected and healthy.	All Council solid waste activities, facilities and services comply with resource consent conditions, site management plans and appropriate legislative requirements.	100% compliance with resource consent conditions. Number of consent breaches.	No contraventions were identified.	Maintain	Maintain	Maintain	Maintain
Our natural environment is protected and healthy.	Diversion options are available for all types of solid waste identified by Nelson City Council for disposal and diversion.	Participation rates exceed 90%. Decrease the number of residents who are dissatisfied with the solid waste services.	Resident survey 2016/18: Two percent reported that they never use recycling services. 11 % indicated they were dissatisfies.	Maintain	Maintain	Maintain	Maintain
Everyone in our community has their essential needs met.	Adequate landfill airspace available to ensure future sustainability of solid waste disposal.	Landfill airspace available for at least 6 years into the future.	York Valley landfill has remaining useful life of 15 years at current tonnages of residual waste disposed of at the landfills.	Maintain	Maintain	Maintain	Maintain
Our economy thrives and contributes to a vibrant and sustainable Nelson.	Cost effective and sustainable solid waste services available to all the community.	No rates are required to support solid waste activities.	Not achieved in 2016/17. The wheelie bin roll out was funded from rates.	Maintain	Maintain	Maintain	Maintain
We reduce consumption so that resources are shared more fairly.	Council provides consumer education and support which leads to behaviour which minimises quantity of waste to landfill.	Decrease in per capita tonnage of waste disposed of at landfill. (Excluding contaminated soil.)	Not achieved in 2016/17 Separated green waste directed to landfill following contractor going out of business.	Maintain	Maintain	Maintain	Maintain

3. Future Demand

This section outlines the existing demand, demand forecasts, growth and expectations and the demand management strategies that Council utilises. Increasing demand place additional wear on assets and services which may reduce the remaining life of assets and require the development of new capacity.

3.1. Demand Drivers

The future demand in the region for waste management and minimisation services will be driven by a number of primary drivers including:

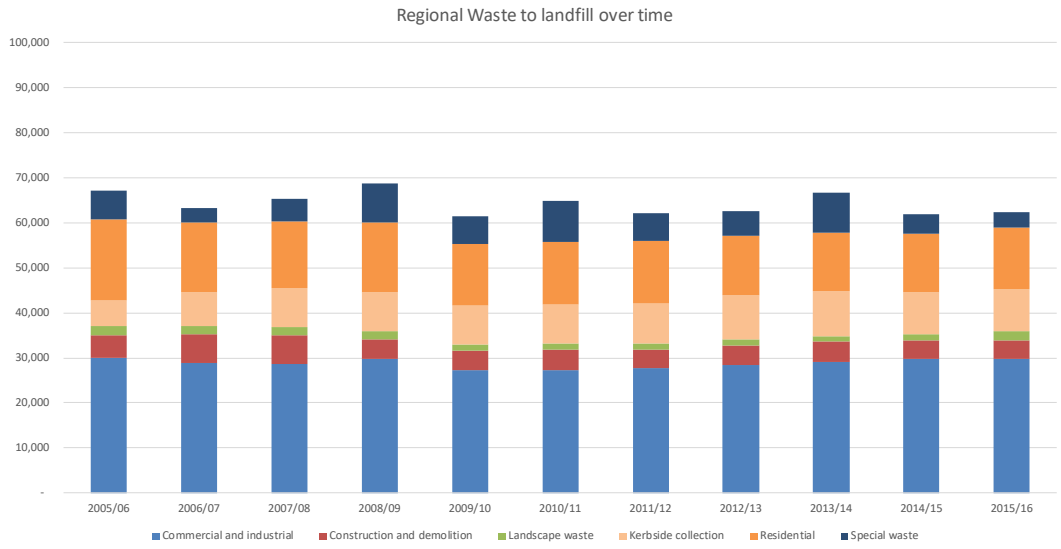
- Demographic change (e.g. population and/or household changes);
- Change in commercial and industrial activity and economic conditions;
- Impact of waste flows from other areas;
- Consumption patterns / product quality;
- National policy, legislation and regulation;
- Impact of waste minimisation programmes,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

With the population in the area expected to increase, it is expected that without further intervention this trend will continue over the medium to long term, with more landfill space being required year on year.

3.1.1. Existing demand

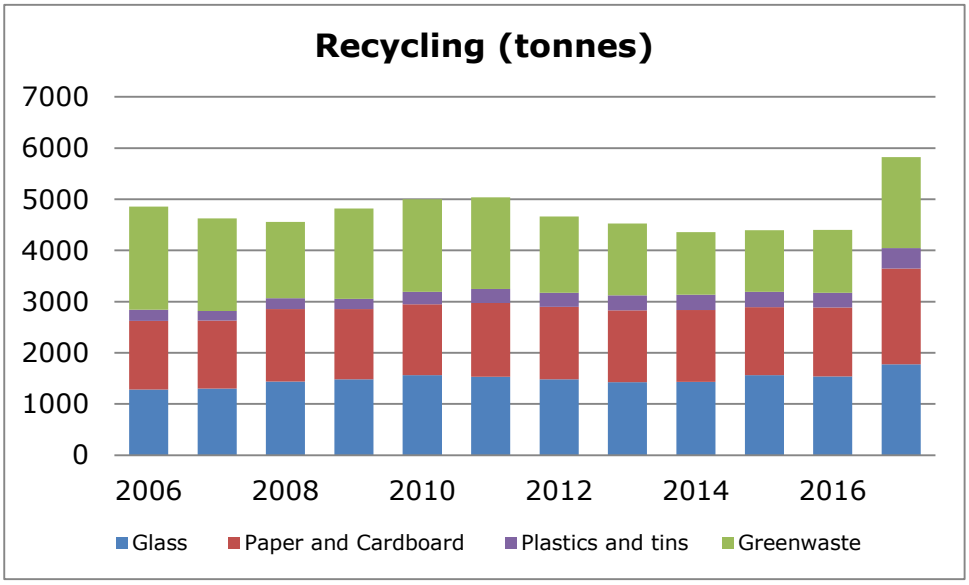
The total tonnage of residual waste disposed of at municipal landfills in the Nelson Tasman area has generally trended downward over the last decade. Increased tonnages during 2013-14 are associated with the acceptance of contaminated soils at both York and Eves Valley. There is uncertainty about how the management of HAIL classified properties will affect demand in future.

Figure 12: Tonnes of residual waste disposed of in Nelson Tasman



Since the establishment of recycling services in the Nelson Tasman region the combined tonnage of residual waste going to landfill has decreased. Greenwaste and recycling has increased over the same period.

Figure 13: Tonnes of Material Diverted away from Landfill



Commercial recycling is not reflected in these statistics. There are a number of waste collectors active in marketing recycling to businesses in the Nelson Tasman area. The two Councils are promoting recycling opportunities to the commercial sector through their joint education projects. Considering the low value of some recycled material it is likely that a significant percentage of lower value commercial recycling will end up in landfills.

3.1.2. Demographics

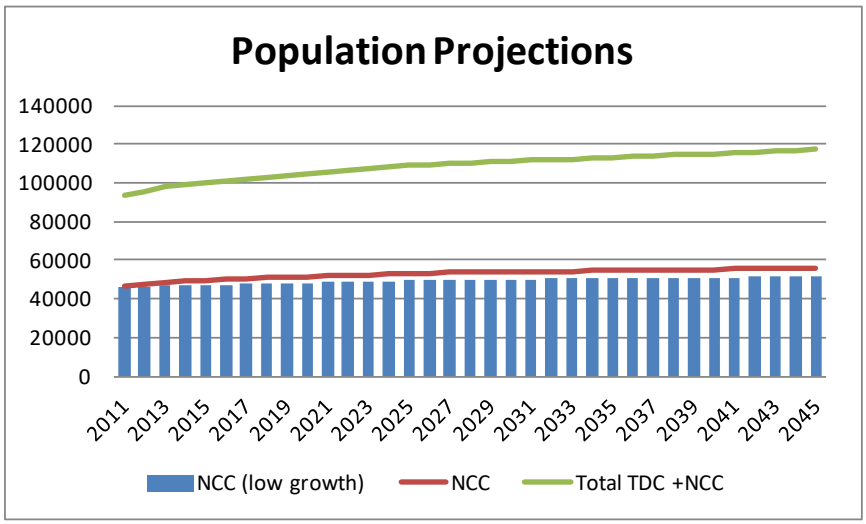
This information is based on population projections by Statistics New Zealand published on 14 December 2016. Statistics New Zealand considers the medium projection is suitable for assessing future population change. Household projections have been derived from the 2016 population projections using ratios from Statistics New Zealand's 2015 population and household projections.

Projections are not predictions and should be used as an indication of the overall trend, rather than as exact forecasts.

The population of Nelson City in 2016 was just under 50,000 and is projected to increase to approximately 58,600 by 2048.

Within the context of the Joint Waste Management and Minimisation Plan it is considered appropriate to look at the Nelson Tasman region as a whole. The Nelson Tasman area has experienced higher population growth than the average across New Zealand over the last decade.

Figure 14: Population Projection for the Nelson Tasman Area

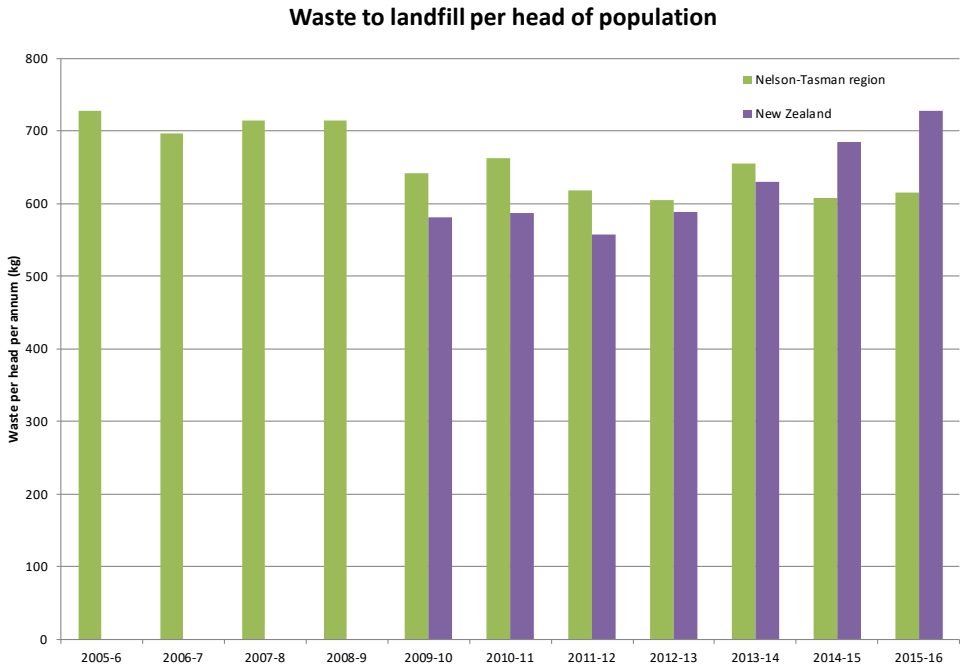


Population growth is expected to continue in both areas at a similar rate into the future.

Waste disposed of at landfill per head of population 2016 – 598kg

Collection and disposal services to these areas are expected to be able to cope with the local change in population, with new development areas being added to the existing collection routes. Current weight of municipal waste to landfill is approximately 598kg per capita. This has trended downwards for the last 14 years. With more stringent rules around the management of contaminated soil it is expected that the tonnage of waste per capita will increase moderately over time.

Figure 15: Waste to Landfill per Head of Population (Nelson/Tasman)



Total tonnage shows a similar change, with total tonnage increasing with the population. With the population in the area likely to increase, it is expected that without further intervention this trend will continue over the medium to long term, with more landfill space being required year on year.

Diversion of waste through resource recovery activities will increase the longevity of the available landfill airspace. The expected growth in disposal of contaminated soils will not

dramatically affect airspace. This material will be mixed into the waste profile and increase the density of the land-filled material rather than consume airspace.

3.2. Demand Forecasts

3.2.1. Commercial and Industrial / Economic Activity

A key indicator of commercial and industrial activity is Gross National Product. Across New Zealand, Gross National Product has fluctuated over the last decade, dropping into a recessionary period in 2008-2009 but returning to positive growth towards the end of 2009. The global financial situation and response to natural events, such as the earthquake recovery after the Canterbury earthquakes, will continue to influence local economic activity. Over the long term, growth is expected to return to rates of around 3% per annum.

Traditionally waste generation has been coupled to economic activity indicators, such as Gross National Product. However, growth in residual waste in the Nelson Tasman area has not followed this anticipated trend. If the effects of one-off large scale infrastructure and development projects are discounted, residual waste has been decreasing over the last 10 years in Nelson.

3.2.2. Consumer Behaviour

Consumer behaviour is a key driver, particularly for household waste generation. The Organisation for Economic Co-operation and Development research indicates there are a number of factors that influence household waste generation including:

- Family composition e.g. household numbers and children;
- Household income and size;
- Attitude toward the environment and recycling;
- Presence of volume based charging systems for waste;
- Frequency of waste collection;
- Technological shifts / product supply changes;
- Increased product packaging;
- Presence of infrastructure and services to enable resource recovery;
- Cost of services.

These issues are the target of many New Zealand policies and programmes, both at a local and national level. Factors such as family size and household income will be difficult to influence. However, there are positive correlations between attitudes toward the environment and waste generation that can be influenced. Other important factors are the presence of volume based charging systems, such as user pays schemes and / or other economic disincentives such as waste levies. Another example of how these factors can be influenced is through the establishment of product stewardship schemes for priority products. There are a number of local "community based social marketing" programmes that have arisen over the last decade, including several of them being implemented in the Nelson Tasman region as part of waste minimisation education programmes. These policies and programmes have the common aim of reducing waste generation at a household level by targeting these particular influencing factors.

The Councils will continue with existing initiatives to influence consumer behaviour and demand for waste services and improve on these initiatives over time.

3.2.3. National Policy, Legislation and Regulation

Legislation, such as the Waste Minimisation Act contains several mechanisms aimed at reducing waste to landfill, such as the waste levy and product stewardship provisions. There are also a variety of local regulatory measures that can affect demand for services.

3.2.4. Product Stewardship

Product stewardship as 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.

For example, there are many products that are difficult or hazardous to dispose of, yet the industry takes no responsibility for ensuring final disposal of the product. Schemes are often required to allow for disposal costs to be added to a product, such as in 'take back' or 'deposit refund' schemes, which work well in some countries for products such as tyres or containers.

Other issues stem from the rapid nature of technological change and thus obsolescence of some products, even before the end of their useful life. For example, traditional cathode ray tube televisions are quickly being replaced by LCD and LED versions. While the cathode ray tubes are often reusable and / or recyclable, there is little market for these products, and no mandatory scheme in place to ensure their proper recycling or disposal. Thus many such electronic goods and their hazardous components end up in landfill and producers are not required to consider the impacts of disposal during the design of products.

Product stewardship schemes accredited under the Waste Minimisation Act are likely to focus on minimising waste, but they may also reduce other environmental impacts during the product's lifecycle. Some schemes may work to ensure a product is disposed of properly or recycled, while other schemes may work to make changes in the design of a product to reduce the use of toxic material. This would likely reduce both the environmental impact of manufacturing and make recycling easier.

The Waste Minimisation Act provides for regulations to be developed in relation to the priority products that are identified by the Government.

The form of any accredited scheme will be based on the product itself, and will be developed with the input of the key stakeholders and the industry. Council should continue to lobby to see schemes developed, and can play an important part in facilitating the development of some schemes.

Council has the opportunity to benefit from some schemes and can improve the recovery and diversion of products currently managed. For example, a number of TAs and regional councils have helped start and/or currently participate and fund several voluntary product stewardship "take back" schemes such as for hazardous waste products (e.g. agricultural chemicals) although these are generally focused at the end of the product life cycle. Depending on the design of the product stewardship scheme, these programmes have the potential to reduce the demand (and cost) for current services offered by Council if the management of the products becomes the responsibility of the producer.

3.2.5. Waste Levy

The National Waste Levy on residual waste disposed of at sanitary landfills has the potential to act as a disincentive to wasteful behaviour. The Government continues to monitor the effectiveness of this programme. With increased economic activity it is expected that the Government will in future further develop the Waste Levy system and that this development will be reflected in increased levies and that the distribution of levies back to Territorial Authorities will be linked to improved performance in achieving the objectives of the Waste Minimisation Act.

Figure 16: Waste Levy Compared To Waste Minimisation Cost

The current practice of the Ministry for the Environment is to distribute 50% of the Waste Levy to local authorities to help them fund waste minimisation initiatives. The Waste Minimisation Act requires that funds received from the Ministry be used for waste minimisation initiatives.

It is clear from budget projections that Council's waste minimisation funding is driven by policy and a desire to meet community expectations rather than the waste levy distribution received from the Ministry.

3.2.6. Other National Legislation and Regulation

Another consideration is the potential for additional legislation and its impact, such as the Emissions Trading Scheme (ETS) and the potential for a national cleanfill standard to be developed, as these could have a key impact on the types and quantity of waste disposed of at landfills.

3.2.7. 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 can play a part in impacting on demand. For example, if the application to apply biosolids directly to forestry land on Rabbit Island was denied for some reason, this could result in these materials having to be landfilled at a sanitary landfill, thus having a significant 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.

3.2.8. Waste Minimisation Programmes, Services and Future Initiatives

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 through the implementation of the Joint Waste Management and Minimisation Plan. The following programmes are under consideration by Council:

- Waste avoidance education as a behaviour change programme in schools, combined with community activities around planting and other partner activities (e.g, Department of Conservation-led "Big Spring Clean" and community partnership area clean-ups);
- Ongoing programmes supporting waste minimisation in schools that continues to move the focus from 'recycle' to 'reduce';
- Increased focus on eliminating waste at Council events through development of environmentally, socially and financially sustainable operations and procedures;
- Extension of Council facilities' recycling/waste reduction initiatives to all Council facilities;
- Other programmes as required to support appropriate waste management behaviour relating to the Joint Waste Management and Minimisation Plan.

While these may create a reduction in the demand for landfill, there will be a corresponding increase in demand for resource recovery and waste minimisation services and infrastructure, which are required to implement these strategies.

Depending on the type of programme and how its performance is measured, it may be difficult to attribute reduction of waste to landfill to some programmes. However, other potential future services such as increased green waste diversion and composting or a kitchen food waste collection, would lead to a quantifiable reduction of waste to landfill. Development of new facilities and services may be required and reduce demand for landfill space into the future.

3.2.9. Community Expectation / Customer Surveys and Feedback

The Joint Waste Management and Minimisation Plan of the Councils, adopted after consultation with the community, can be considered an additional indicator of community feedback and expectations.

The Joint Waste Management and Minimisation Plan notes the Councils' desire to move 'towards zero waste'. Evidence suggests that the per capita waste generation has decreased. Quantifying the contribution of specific waste minimisation processes and projects towards waste reduction is at best subjective.

3.2.10. Projected Diverted Materials / Commodities Markets

Economic fluctuations have an impact on the supply of and demand for diverted materials.

Resource recovery activities such as the recycling industry are reliant on both a source of discarded materials (e.g. kerbside recycling schemes) and a market demand for these materials.

Kerbside recycling operations provide a relatively steady supply of materials, although this supply is likely to be impacted by the economic conditions that affect consumption levels. Demand for these materials will be reflected in commodity prices.

If demand for these materials drops and the commodity prices drop below the cost of collection, landfilling and subsidies, it is likely that materials that were once diverted to beneficial reuse, or recycled, may require additional subsidies to prevent them from going to landfill or being dumped into markets where this material will do harm to the environment or to the people who work with the material.

It is generally expected that diverted materials will show a similar trend to waste projections and increase in accordance with the multitude of factors that influence waste generation such as population, economic growth and consumption patterns.

Various factors will impact specifically on the market for diverted materials which will act to divert more or less material from landfill. Demand for and supply of substitute resources, product quality, overseas markets and transport costs, centralised processing centres as well as other community and waste minimisation programmes will all have an effect on the amount of waste that becomes diverted material.

With demand and supply determining the competitive market price, it is expected that as the price for diverted materials increases, supply will also increase and more material will be diverted from landfill.

Figure 17: Commodity market for diverted materials

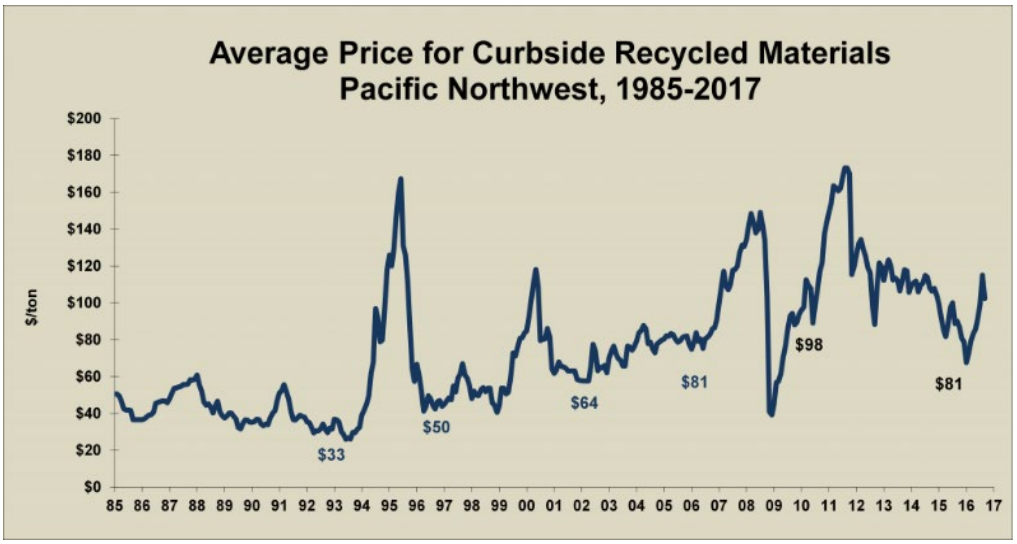


Figure 17 indicates that the market for diverted materials is extremely variable but clearly shows a long turn upward trend that is indicative of a sustainable business.

Combining this with existing waste projections, it can be expected that diverted material volumes will be in line with existing waste generation trends, and will become a higher ratio of this material during periods of higher prices.

To ensure that material collected through the Nelson City Council kerbside contract is recycled in a responsible manner the contractor must ensure that the material finds its way to responsible recyclers and the contract incentivise the contractor to find the best markets for the recycled material. The kerbside recycling product is owned by the contractor.

Considering the financial incentives for the owners of recycled material to find the lowest cost disposal options and the fact that the kerbside recycled material is vested in the contractor, it is important that Council track the movement of recycled material into the primary sector where the material is transformed into new products.

3.3. Asset programmes to Meet Demand

With continued population growth, there will be an increasing demand on the Council's kerbside collection services, which can generally be met over time, for example through expansion of fleet and collection routes.

If waste minimisation objectives continue to be important, this will be particularly true for kerbside collection of recyclables and/or other potentially recoverable materials as well as the associated processing infrastructure. There may be increasing pressure on existing resource recovery centres to expand their capacity, and make changes to their operations to facilitate recovery of further material.

Community demand for changes to existing services seems to be relatively minor, with general satisfaction expressed, though some desire for operational changes regarding recycling services in particular has been indicated following community feedback.

4. Lifecycle Management

Lifecycle asset management focuses on management options, strategies considering all relevant economic and physical consequences, from initial planning through to disposal.

This section applies strategies and the specific work programmes required to achieve the Council's objectives. It presents the lifecycle management plan and includes:

- A description of the trends and issues;
- Detailed management, operations, maintenance, renewal and development strategies;
- Work programmes and associated financial forecasts.

WASTE MANAGEMENT AND MINIMISATION PLAN

The Joint Waste Management and Minimisation Plan provides direction by proposing methods and policies to achieve the Council's objectives and aligns the solid waste activities with the New Zealand Waste Strategy.

The Waste Management and Minimisation Plan is built around three primary goals:

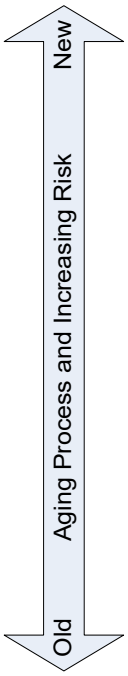
- Goal 1: Avoiding the creation of waste;
- Goal 2: Improving the efficiency of resource use;
- Goal 3: Reducing the harmful effects of waste.

4.1. Background Data

Lifecycle management has a direct impact on the provision of solid waste services. The section on levels of service shows what the Council will commit to delivering this service. This section identifies the measures that need to be implemented to achieve these levels of service. Lifecycle management allows Council to clearly identify both the short and long term requirements of the solid waste activity ensuring that a cost effective service is delivered.

Assets have a lifecycle as they move through from the initial concept to final disposal. Depending on the type of asset, its lifecycle may vary from 10 years to more than 100 years.

Figure 18: Key stages in the asset lifecycle are:

	Asset planning	When the new asset is designed - decisions made at this time influence the cost of operating the asset and the lifespan of the asset. Alternatives and non-asset solutions must also be considered.
	Asset creation or acquisition	When the asset is procured capital cost, design and construction standards, commissioning the asset, and guarantees by suppliers influence the cost of operating the asset and its lifespan.
	Asset operations and maintenance	When the asset is operated and maintained - operation relates to a number of elements including efficiency, power costs and throughput. Maintenance relates to preventative maintenance where minor work is carried out to prevent more expensive work in the future and reactive maintenance where a failure is fixed.
	Asset condition and performance monitoring	When the asset is examined and checked to ascertain the remaining life of the asset - what corrective action is required including maintenance, rehabilitation or renewal and within what time scale.
	Asset rehabilitation and renewal	When the asset is restored or replaced to ensure that the required level of service can continue to be delivered.
	Asset disposal and rationalisation	Where a failed or redundant asset is sold off, put to another use, or abandoned.

The solid waste team uses asset condition and performance information, together with the Demand, Levels of Service and Risk information presented in this document as a basis for the development of strategies and specific work required to achieve the objectives set out in the introduction to this document.

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

Table 9: Asset Failure Modes

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
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

4.1.1. Physical Parameters

The value of solid waste assets is shown in the table below:

Table 10: Solid Waste Valuations 30 June 2016

Asset Category	Replacement Value	Optimised Depreciated Replacement Cost	Annual Depreciation
Transfer Station	$4,318,955	$2,497,225	$240,792

Asset Groups

For the purposes of combining discrete service areas, levels of service, budgeting and management the following key activity groups have been created and lifecycle plans prepared:

- Waste minimisation;
- Transfer station;
- Greenwaste;
- Recycling.

Capital Expenditure

Capital expenditure in solid waste 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;

Upgrade

This work 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 levels of service and may include:

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

Asset Disposal

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

4.1.2. Asset capacity/performance

All asset information is stored on Arcinfo, a computer based Geographical Information System, and Asset Spreadsheets. The accounting system used is integrated computer software supplied by Napier Computer Systems. The various systems are linked.

4.1.3. Accounting/Financial Systems

Financial results are reported under Public Benefit Entity International Public Sector Accounting Standards (PBE IPSAS). The Nelson City Council uses integrated computer software supplied by MagiQ.

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. Monthly summaries are presented to the Audit, Risk and Finance subcommittee of Council.

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.

Maintenance Expenditure

Maintenance may be planned or unplanned, and is the regular ongoing day to day work necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again. This includes:

- Regular and ongoing annual expenditure necessary to operate and keep the assets at their required service potential;
- Day to day and/or general upkeep works designed to keep the assets operating at required levels of service;
- Works which provide for the normal care and attention of the asset including programmed repairs and minor replacements;
- Unplanned (reactive) maintenance i.e. isolated failures requiring immediate repair to make the asset operational again.

Capital Renewal/Replacement Expenditure

Renewal expenditure is major work which does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing asset to its original capacity. This includes:

- Works which do not increase the capacity of the asset, but restores them to their original size, condition capacity, etc;
- The replacement component of augmentation works which restores the assets to their original size, condition, capacity, etc;
- Reconstruction or rehabilitation works involving improvements, realignment and regrading;
- Renewal and/or renovation of existing assets, restoring the assets to a new or fresh condition consistent with the original asset.

Capital Creation/Enhancement Expenditure

Capital works create a new asset that did not previously exist, or upgrade or improve an existing capacity. They may result from growth, social or environmental needs. This includes:

- Construction works which create a new asset that did not previously exist in any shape or form;

- Expenditure which purchases or creates a new asset (not a replacement) or in any way improves an asset beyond its original design capacity;
- Upgrading works which increase the capacity of the asset;
- Construction works designed to produce an improvement in the standard and operation of the asset beyond its present capacity.

Depreciation and Loss of Service Potential

The value of the assets is depreciated on a straight-line basis over their nominal working life. The construction year for individual assets has been researched from field books, plans and other records. This information has been entered into the database to allow the age of assets to be calculated.

Assets may have a Residual Value at the end of its economic life, instead of being totally removed or replaced, all (or part) of it continues to be used. It has been assumed that the items have zero residual value.

Depreciation and Loss of Service Potential are calculated in spreadsheets.

4.1.4. Geographical Information system

When the decision was made to implement the Geographical Information System in 1993 it was recognised that the existing asset information was not of a suitable standard to be entered directly into the system. A contract was let for the capture and delivery of data in digital format suitable for entry into the Geographical Information System.

The data capture included contours, building outlines, road markings, kerb and channel, manholes, sumps, valves, hydrants etc. To ensure that underground services were captured as accurately as possible, students were employed to identify and mark every surface access point (e.g. manholes, valves).

The data was captured using photogrammetry in March 1994 and progressively delivered over the following three years. Nelson City Council staff carried out accuracy checks on the co-ordinate data supplied, searched all the engineering plans and field books for information on pipe alignment, material and age and entered this information into the Geographical Information System.

New data is updated into the Geographical Information System system on a monthly basis.

4.1.5. SCADA Telemetry

Council has a "Kingfisher" SCADA (Supervisory Control and Data Acquisition) system and an "Intouch" system at the base station. The system is used to monitor and control critical aspects of the network.

The only solid waste activity that utilises the SCADA system is the gas flare.

4.1.6. Existing Information Flow and Business Processes

In June 2000, Opus International Consultants Ltd completed a report entitled "The Development of Business Process Mapping for Asset Management Systems" preparatory to Nelson City Council purchasing and implementing a computer based Asset Management System.

The report details the existing business processes used by the Nelson City Council in its Asset Management planning.

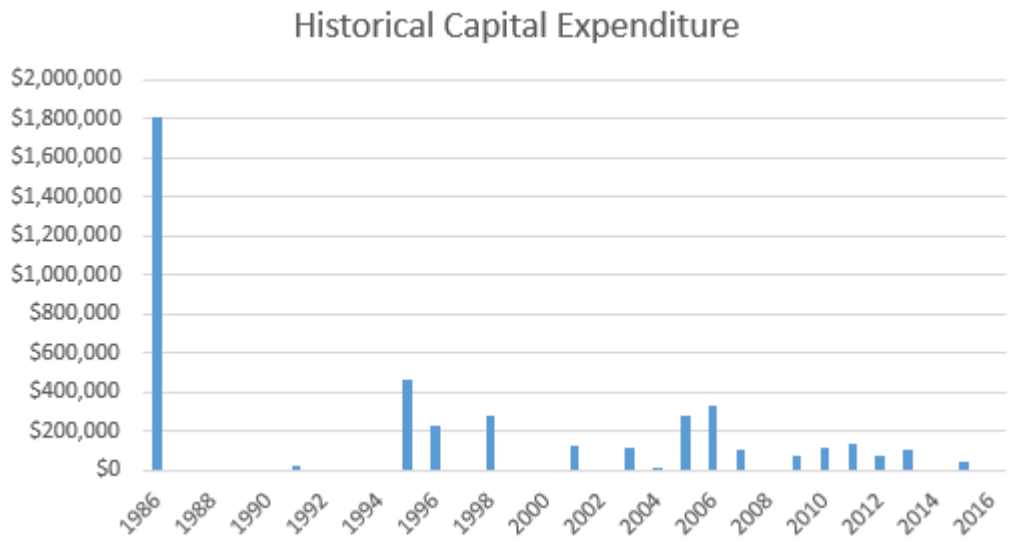
The report identified a preferred process for the management of Council assets and identified gaps in the current process for each asset group and recommended actions required to correct the gaps and implement the transition to the preferred management process.

The report concluded that the majority of data required for Asset Management is already collected and stored. However the data is stored in a myriad of systems and files and is therefore not extensively used to support the Asset Management planning decision making processes.

4.1.7. Asset condition

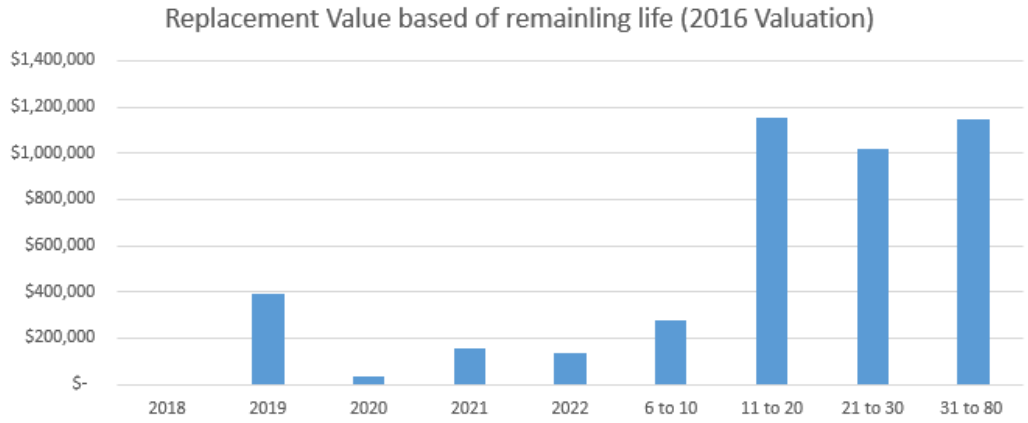
The value of the assets are depreciated on a straight-line basis over their nominal working life. The following graph provides a profile of when assets were created within the solid waste activity.

Figure 19: Historical Capital Expenditure



The following graph presents a profile of the renewal costs of assets associated with the activity based on the 2016 lifecycle assessment.

Figure 20: Remaining life profile of solid waste assets.



A large proportion of the renewals in the early part of the renewal cycle is associated with the maintenance paved areas at the transfer station.

The changes in the use of the transfer station area following the decision by Nelmac to take kerbside recycling material to the Richmond transfer station for processing mean a

review of activities concentrated in the transfer station area is needed in order to optimise the use of the available space and assets.

Any renewal works planned for this area are therefore subject to review until there is more certainty about how best to utilise the assets at the Pascoe Street Transfer Station.

Some of the mechanical components of the compactor units used at the transfer station are no longer freely available as replacement components. The condition of these units are monitoring by contractor and operation staff on a regular basis and issues are dealt with as they arise. Most of the mechanical components at the transfer station has been refurbished over the last few years and are expected to provide continued service without extensive renewals.

4.1.8. Asset valuations 30 June 2016

Table 11: Asset Valuations 30 June 2016

Category	Optimised Replacement Cost ($)	Optimised Depreciated Replacement Cost ($)	Annual Depreciation ($)
Formation and site works	$850,791	$543,212	$15,537
Transfer Stn Basement	$144,524	$100,636	$2,644
Transfer Stn Structure	$200,257	$89,273	$4,532
Hopper Structures	$113,496	$56,748	$4,540
Compactors	$362,826	$93,855	$16,236
Hoist & Crane System	$481,500	$233,446	$20,423
Hydraulic Arms	$72,206	$21,229	$3,979
Storage Containers	$405,142	$273,941	$15,357
Recyclables Sorting Area	$248,379	$150,225	$10,022
Fences & Signs	$155,648	$84,579	$6,082
Water, Wastewater & Drainage	$270,024	$262,147	$120,245
Buildings	$1,014,162	$587,933	$21,195
Total	**$4,318,955**	**$2,497,225**	**$240,792**

Valuation Method

The solid waste assets were valued by OPUS International Consultants (OPUS) in 2008. All assets are valued based on optimised replacement costs (ORC), assuming the use of modern techniques and pipe materials. The values are adjusted by Council officers annually based on an index provided by OPUS. Once the revaluation is completed the values are peer reviewed by OPUS.

All costs are reported in June 2016 dollars and Goods and Services Tax is not included in the costs.

All assets have been revalued as at 30 June 2016.

In addition to direct purchase/construction costs, professional fees for investigation, resource consent (where applicable), design, construction and "as built" information has been included.

Financial charges incurred in carrying project costs in the period prior to commissioning are included in valuations.

Replacement costs have been optimised to represent the lowest cost and most efficient combination of assets providing the same service as the existing assets. Optimisation involves adjustment to deduct any surplus capacity or over design.

Land, access roads and fencing are included on the inventory, as they are recorded in Council's Fixed Asset Register.

4.2. Operations and Maintenance Plan

To ensure that the solid waste activity is delivered seamlessly to the community it is imperative that the solid waste management plans and the performance of collection services are monitored and reviewed on a regular basis by Council staff.

Site operations include those operations involved with receiving and managing waste that is received at the transfer station and landfill.

The site management of the transfer station is contracted out and managed by the operations team. Operations include inspections to ensure general site management is occurring, and the assets are performing as intended.

Programmed maintenance includes regular cleaning and desludging of drains.

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

4.2.1. Operations and maintenance plan

All services are managed in-house by staff, with specialised activities and services undertaken by contractors.

4.2.2. Operations and maintenance strategies

Council performs the following activities in managing the solid waste activity:

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

4.3. Renewal/Replacement Plan

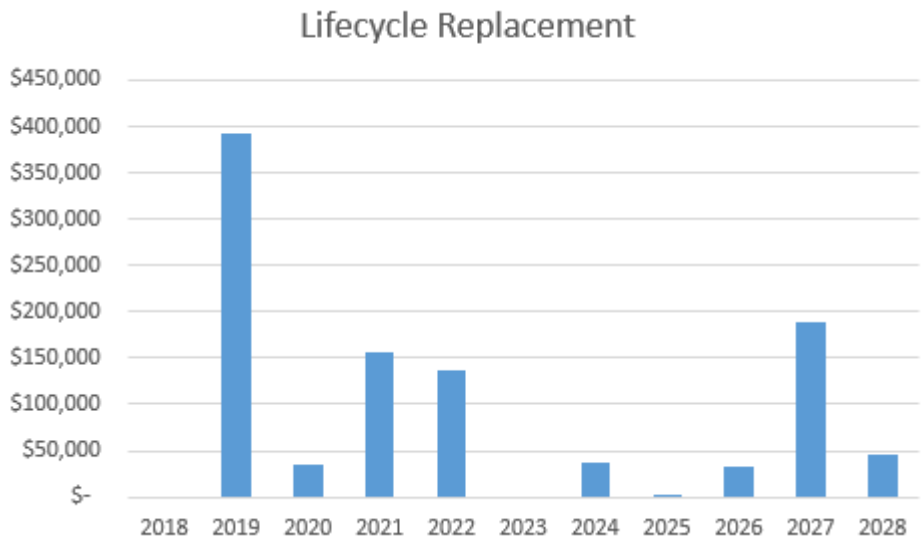
Renewals and replacements are aimed at renewing an asset to maintain the existing levels of service.

Upgrades are capital projects aimed at creating new capacity to provide for changes in the levels of service.

4.3.1. Renewal identification

The strategy for replacement of solid waste 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.

Figure 21: Lifecycle Replacement



Ongoing development of the asset register combining spatial, condition, value and lifecycle information will allow renewals decision making to be improved in the future.

4.3.2. Renewal Strategies and Prioritisation.

Projects and activities are prioritised based on best value of a project for the community. Best value is based on cost effectiveness and operational benefit, and environmental and community benefits are also considered. Community benefit may be ascertained or confirmed through public consultation or through specific targeted surveys, and these are typically conducted through the Long Term Plan process.

The Council has the following policies in place to direct solid waste activity management:

- *Policy 1.1.1 The Council(s) will promote waste minimisation, including especially the reduction of waste, the diversion of materials, and a reduction in the contamination of diverted material.*

The Council will promote and encourage beneficial reuse of organic material through home composting and work with the construction industry to develop improved waste management strategies for construction waste.

- *Policy 1.2.1 The Council(s) will engage in reducing waste through programmes which support behaviour change.*

The Council will continue to identify opportunities to develop and implement programmes that will engage the community in waste reduction.

- *Policy 1.2.2 The Council(s) take a leadership role in demonstrating waste reduction behaviours.*

The Council will provide recycling opportunities at Council facilities, consider waste awareness when developing procurement strategies and engage with the community to encourage ownership for the waste issues.

- *Policy 1.3.1 The Council(s) promote producer responsibility and product stewardship.*

The Council will work with industry to implement product stewardship with a focus on local businesses.

- *Policy 1.3.2 The Council(s) engage with central government in reducing waste.*

The Council will advocate that central government facilitate the development of markets for recycled material and strategies to reduce the generation of waste.

- *Policy1.3.3 The Council(s) recognise the benefit of collaborating with each other and other parties throughout the community in reducing waste.*

The Council will work with others on matters relating to waste reduction.

- *Policy 2.1.1 The Council(s) work to improve the diversion of material through promoting separation at source, and improved collection, storage and handling of diverted material.*

The Council continue to provide kerbside recycling to urban residential properties.

- *Policy 2.1.2 The Council(s) consider waste minimisation services and waste management services as components of an integral system.*

The Council will continue to provide services at the transfer station and facilitate the establishment of facilities to treat separated waste such as demolition and organic waste etc.

- *Policy 2.1.3 The Council(s) recognise the benefits of collaborating with other parties in the provision of waste minimisation services and meeting future demands.*

Collaborate with other parties to realise mutual benefits.

- *Policy 2.2.2 Improve the range of materials diverted taking into considerations the whole life cost and product stewardship.*

Improve the quality of diverted material.

- *Policy 2.2.3 The Council(s) will coordinate their statutory planning activities so that the outputs of the Waste Management and Minimisation Plan lead into the Long Term Plan process.*

The Council will maintain the quality of diverted material during collection and processing.

- *Policy 2.2.4 The Council(s) monitor and measure progress on the efficiency of resource use and the effectiveness of services.*

The Waste Management and Minimisation Plan will be reviewed annually.

- *Policy 2.2.5 The Council(s) will promote consumer awareness and responsibilities.*

This will be carried out by including specific questions in the resident survey to inform the Council on the solid waste services achieving the desired quality, recording relevant information, identification of problematic waste streams, customer satisfaction and the desired behaviour change.

- *Policy 2.3.1 The Council(s) continue to maintain ownership of their waste infrastructure and provide leadership in the provision of waste management services.*

Information on services provided is available to the community.

- *Policy 3.1.1 The Council(s) continue to maintain ownership of their waste infrastructure and provide leadership in the provision of waste management services.*

Council will facilitate refuse collection services and provide a refuse transfer station, commercial access to the landfill, remove illegally dumped waste, litter receptacles and continue to consider alternative disposal options of separated waste.

- *Policy 3.1.2 The Council(s) will provide facilities and services to assist with hazardous waste management.*

Council provides hazardous drop off facilities at the Pascoe Street transfer station.

- *Policy 3.1.3 The Council(s) maintain a user-pays charge system for waste collection and disposal that provides cost recovery as well as incentives and disincentives to promote the objectives of the Joint Waste Management and Minimisation Plan.*

Council will encourage user pays basis for waste services and encourage waste separation through pricing incentives.

- *Policy 3.1.4 The Council(s) may implement services that cannot be funded by user charges where a public good outcome can be demonstrated.*

Council will use revenue from waste services to fund waste management and minimisation initiatives that does not attract a direct user charge.

- *Policy 3.1.5 The Council(s) will jointly make the most effective and efficient use of York Valley and Eves Valley Landfill space.*

Having two landfills serving the two Districts is a duplication of services that could be more effective if managed jointly.

- *Policy 3.1.6 The Council(s) are to ensure jointly that there is landfill capacity in the two Districts for the safe disposal of waste.*

Having landfill capacity provides an environmentally secure repository for waste.

- *Policy 3.2.1 The Council(s) are to ensure that solid waste services, facilities and closed landfills have effective management plans and are managed according to these plans.*

Council maintain a landfill aftercare fund for the continued management of the landfill after closure.

- *Policy 3.2.2 The Council(s) are to consider the use of other instruments, such as by-laws and/ or Resource Management Plans, to manage the adverse effects of waste where these effects are not covered by currently available provisions.*

Council record and maintain data relating to waste and diverted material in a format and make arrangements to require private waste operators to collect and supply data to the Council that will facilitate improved decision making in future.

- *Policy 3.3.1 The Council(s) promote good health and safety practices with waste management and minimisation activities.*

Council ensure that any known health hazards in managing waste treatment processes that are promoted by Council are communicated to the intended participants in such activities.

Collection of Waste Disposal Charges

Council employs Nelmac to staff and manage the transfer station fee attendant's office and contracts out the end of day collection and banking to Armourguard.

Re-use Shop and Recyclable Materials Sorting Centre:

The operation of the re-use shop and recyclable materials sorting centre was tendered in 2004 as part of the residential kerbside recycling contract. The contract was awarded to Nelmac who sub-contracted the operation of the re-use shop to the Nelson Environment Centre. Nelmac manages the materials sorting facility where the overflow of the kerbside collection materials that are not taken to the Richmond MRF are sorted before it is placed into the waste processing market. Activities at the transfer station have decreased significantly since Nelmac decided to use the Richmond transfer station to process kerb side recycling collections.

Greenwaste

Council encourages green-waste diversion through education and providing a facility to the public and contractors to drop separated green-waste off at the Pascoe Street

Transfer station. The charges for separated green-waste are consistently lower than the charge for mixed waste. The treatment of green-waste is contracted out.

There are also a number of well established composting businesses located in the Nelson Tasman area. Within the context of providing affordable services to the community it is considered that Nelson residents are well served by a well developed composting industry.

The current charges for managing the green waste drop off do not match the cost of providing the service and is therefore subsidised from the Local Waste Disposal Levy. The subsidy is influenced by the volume of greenwaste received at the transfer station. If the volumes received are increasing the requirement for contribution from the Local Disposal Levy decreases.

However, the opposite is also true and income associated with this activity is lilely to decrease in line with customers deciding to make use of alternative services which are available at lower costs to users of these facilities. Such a trend will increase the dependence on the Local Waste Disposal Levy if charges for the drop off of greenwaste are not increased.

The cost of managing green-waste dropped off at the transfer station is marginally less than disposing green-waste to the landfill.

Table 12: Greenwaste Operation Cost for Next Three Years

Greenwaste Cost	Current	Landfill
Transfer Station Fees	374,739	392,765

Nelson residents have a wide choice of waste contractors who provide green-waste collection services for those who are not in a position to compost their own green-waste. (The Pascoe Street separated green waste charge is nearly double the cost of taking green waste to commercial operators operating out of premises located off Saxton Road and Beach Road in Richmond)

While a ban on green waste to landfill can be considered and is identified as a method in the Joint Waste Management and Minimisation Plan to achieve increased diversion of green-waste from landfill, this is only one of a mix of methods that will be considered jointly with Tasman District Council in future. An affordable disposal option of separated green waste is considered the most appropriate method to encourage the establishment of private initiatives within the region for the proper treatment of green waste. Nelson City Council will continue to actively encourage users of the green waste drop off facility at Pascoe Street to use the most economical and sustainable way to dispose of separated green waste and work towards phasing out the reception of separated green waste at the Pascoe Street Transfer Station over the first year of this plan.

Method 3.2.2.4 The Councils will investigate regulating the disposal of certain materials to landfill and/or cleanfill through solid waste by-laws.

Policy 2.2.1 The Councils work to improve the diversion of material through promoting separation at source, and improved collection, storage and handling of diverted material.

Method 2.2.1.3 The Councils will jointly investigate facilities that enhance the diversion of organic materials (e.g. organic kitchen scraps and garden foliage).

4.4. Creation/Acquisition/Augmentation Plan

The works proposed in the previous sections on Levels of Service, Future Demand, Lifecycle Management and Risk Management all impact on expenditure.

Cost implications that affect the Operations and Maintenance, Renewal and Capital Financial Plans include:

- Meeting levels of service;
- Meeting future demand;
- Managing risk;
- Maintaining/improving asset condition;
- Maintaining/improving asset performance;
- Operating assets;
- Maintaining assets.

4.4.1. Capital investment strategies

Funding

The solid waste activity is a self-funded account. Income generated from fees, charges, levies and grants are used to fund all expenditure, with surpluses retained in the Solid Waste Special Reserve Fund.

Solid waste activities, such as waste education or recycling, are funded from the National Waste Levy and the Local Waste Disposal Levy. (Received from the Regional Landfill Business Unit).

Transfer Station Capital Costs

Renewals and replacements are aimed at renewing the assets at the transfer station to maintain the existing levels of service. A number of methods in the Joint Waste Management and Minimisation Plan are aimed at rationalising recycling sorting facilities in the region.

Method 2.2.1.1 The Councils will investigate improving facilities that receive separated diverted material, such as construction and demolition material, at the refuse transfer station and resource recovery centres.

Method 2.2.1.2 The Councils will jointly investigate improving existing materials recovery facilities or a new facility that enhances the diversion of recyclable materials, particularly to accommodate paper and cardboard.

These methods are aimed at considering the advantages of integration of service provided by the two Councils to provide improved services to the communities.

Since December 2015 Nelmac has been processing the bulk of kerbside recycling collected in Nelson through the Richmond material recycling facility. This has resulted in a significant decrease in activity at the Pascoe Street sorting station. This rationalisation resulted in an opportunity to review the service provided from the Pascoe Street site.

This review will be funded from the waste minimisation activity.

Renewal Plan

The plan does not anticipate any large capital expenditure items over the next few years. Condition assessments on individual asset components indicated that there are no urgent renewals required over the next few years. Officers and contractors are keeping a close eye on the condition of asphalt seals and mechanical equipment.

Much of the mechanical equipment deployed at the transfer station are sturdy items that can generally be maintained through pro-active maintenance work funded from operation and maintenance budgets.

Financial statements and Projections

Operations and maintenance in running the solid waste activity includes:

- Management;
- Engineering supervision;

- Electricity and telephones;
- Maintenance of the solid waste activity includes:
    - The regular and ongoing annual expenditure necessary to keep the assets at their required service potential;
    - Work which provides 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.

Waste Minimisation

The Waste Minimisation activity includes waste education initiatives, feasibility studies and planning projects identified in the Joint Waste Management and Minimisation Plan. It is funded through the Local Waste Disposal Levy, National Waste Levy and grants. All projects in the first three years of the Long Term Plan are aligned with the Tasman District Council's budgets. Allowance has been made in the plan for a resource within the Strategy and Environment Group to deliver these programmes.

This plan includes $35,000 for investigation and development of joint waste management and minimisation initiatives in line with the Joint Waste Management and Minimisation Plan. An additional allowance of $15,000 in 2022/23 and 2023/24 is included for a Waste Assessment and the development of the next generation Joint Waste Management and Minimisation Plan, as required by Waste Minimisation Act 2008.

The plan also includes a budget of $20,000 per annum for waste grants. This fund is used to provide assistance to entities which promote and provide waste minimisation services.

The residue of electronic waste recycled by Council accredited organisations will be received at no charge at the Pascoe Street Transfer Station. Organisations will be accredited at the sole discretion of Nelson City Council. The aim of the scheme is to provide an affordable electronic waste disposal option for Nelson residents as a temporary solution to bridge the gap until central government establishes a compulsory electronic waste stewardship programme.

The subsidies for ratepayers to procure organic treatment systems will be extended to include a redeemable voucher for disposal of e-waste at a council approved e-waste recycling centre.

Recycling

The recycling activity funds residential kerbside recycling, school recycling and Central Business District recycling bins. Kerbside recycling will be rolled out to the commercial sector at a level comparable to the service provided to residential households. No provision is made in the budget for commercial or institutional recycling at a larger scale.

The Council receives no income from recycling activities in the City as the proceeds from the sale of recyclables are accrued by the supplier of the service.

Transfer Station

Solid waste is received at the transfer station and charges are based on volumes as assessed by the ticket office operators.

Table 13: General waste bulking factor

General waste bulking factor

Residual waste TS	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
Bulking factor	3.24	3.15	3.10	3.24	3.13	3.31	3.27	3.21

The bulking factor has remained consistent over an extended period and can be considered a reliable method for determining charges at the transfer station.

The cost of managing hazardous waste and tyres are included in the transfer operation cost. The greenwaste activity contributes to the over-head cost of the transfer station.

Greenwaste Operation

Green waste is accepted at the transfer station and then provided to a suitable contractor for processing. The successful contractor must comply with the Council's requirement to treat green waste sustainably. Currently the green waste contractor is paid to receive and treat the separated green waste received at the transfer station. The cost to Council for disposing of green waste in this manner is lower than disposing of the green waste at the York Valley landfill.

Table 14: Greenwaste Operation and Maintenance Cost

Greenwaste Cost	Current	Landfill
Transfer Station Fees	374,739	392,765

The cost of managing the green waste at the transfer station is not accounted for directly within the activity but is accounted for in the form of an overhead calculated as a percentage of the cost of operating the transfer station.

Transfer Station Capital Programme

Capital development at the Transfer station is affected by the rationalisation of transfer station activities for the Richmond/Nelson area. Improvements in levels of service are closely linked to joint disposal opportunities identified in the Joint Waste Management and Minimisation Plan.

The replacement of bins used to transport waste from the transfer station to the landfill is allowed for in the capital programme.

4.5. Income

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

Direct and indirect subsidisation of waste management and minimisation activities through the local waste disposal levy that is funded from landfill charges should be fully appreciated.

Waste Minimisation

The income received from the national waste levy does not include any increase in the national levy. It is likely that this levy will be increased by Government in future once economic growth warrants this. Such increase will effectively increase the income that Council will derive from this source but also increases the cost of solid waste activities associated with residual waste management.

The Local Waste Disposal Levy is used to make up the cost of funding the waste minimisation activity.

Transfer Station Income

Solid waste disposed of at the transfer station is charged based on a visual assessment of the volume of waste discharged. When setting the charge the waste received during the previous year is compared with the tonnage of transfer station residual waste disposed of at York Valley for the same period. The conversion rate between volume and tonnage is then used to set a transfer station volumetric charge so that the disposal cost for mixed waste at the transfer station is comparative with the landfill charge.

The differential between the mixed waste charge and the separated greenwaste charge encourages the separation of greenwaste. A mixed waste load containing a substantial volume of greenwaste will attract a much higher charge than a separated greenwaste load.

Greenwaste Income

The cost and income for the greenwaste activity is balanced with a contribution from the Local Waste Disposal Levy.

Separated green-waste received at the transfer station has decreased gradually over the last few years. It is likely that previous users of the facility are now going directly to the cheaper alternative service providers.

Recycling Income

The National Waste Levy income is credited to the Waste Minimisation activity. This was done in order to simplify the reporting on the allocation of the Waste Levy to the Ministry for the Environment (MfE).

Residential kerbside collection is provided free of charge to households at a cost of just over $1.15M per annum. This is funded by incomes accrued from the landfill and the MfE waste levy.

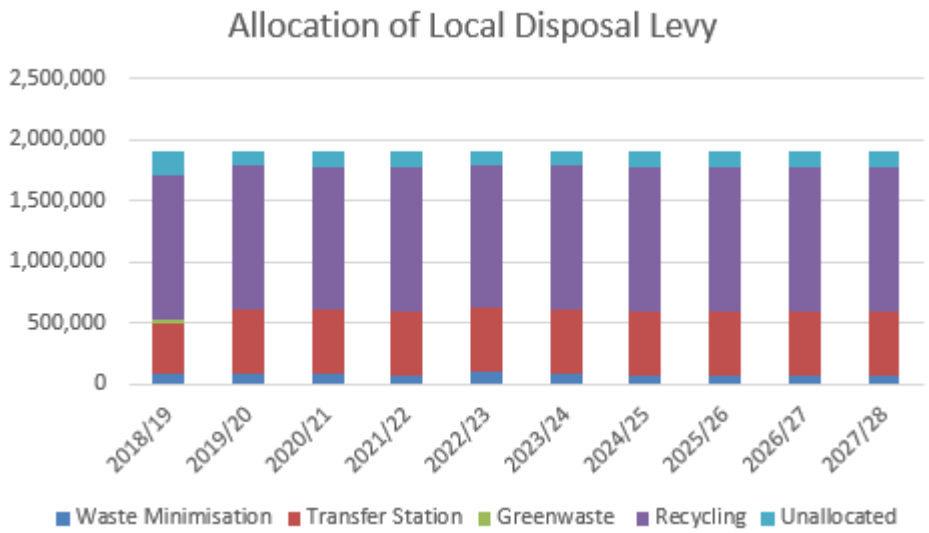
We estimate that residents who use the recycling service extensively are able to reduce their waste disposal cost by more than.

Local Waste Disposal Levy

The Local Waste Disposal Levy funds waste management and minimisation activities that provides a public good but cannot be fully funded through a user pays model.

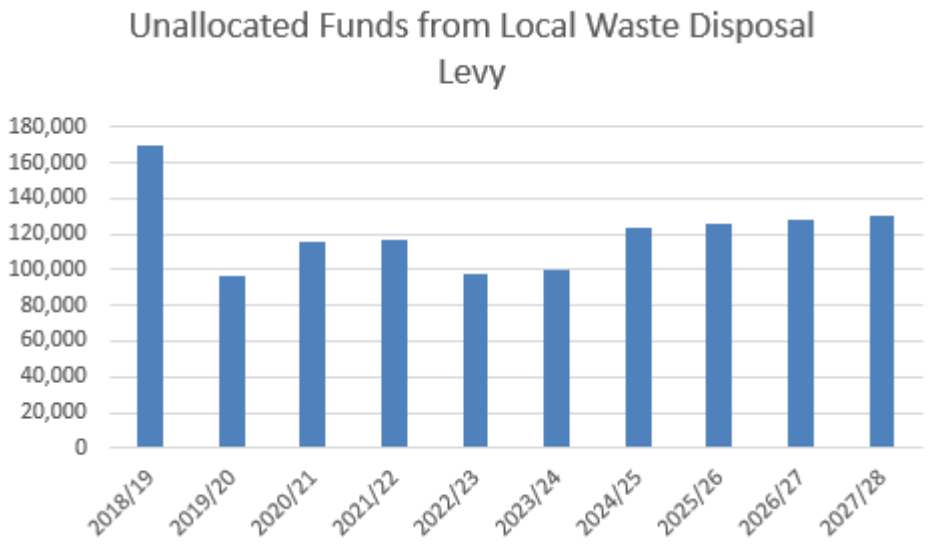
The value of this levy was set by agreement between Nelson City Council and Tasman District Council at a value of $1,915,625 for the 2017/18 financial year. Each of the two Councils receive this amount to fund solid waste management and minimisation initiatives. The value of the levy is reviewed annually as part of the annual planning processes in liaison between the two councils and the Joint Committee mandated to govern the Regional Landfill Business Unit.

Figure 22: Allocation of Local Disposal Levy



The unallocated funds can be used at the discretion of Council to fund waste management and minimisation activities but are subject to the Joint Waste Management and Minimisation Plan.

Figure 23: Unallocated funds from Local Waste Levy



4.6. Disposal Plan

Assets may be disposed of due to under-utilisation, obsolescence, exceedance of required levels of service, being uneconomical to upgrade or operate, or if the service is provided effectively by other means.

5. Risk Management Plan

This section looks at the Risk Management processes set up by Nelson City Council for assessing and managing risk.

Risk management is the systematic application of management policies and procedures to identify, analyse, evaluate, treat and monitor risk so consequences of risk events are controlled and mitigated as far as practicable.

It is important to note that risk management is not simply about the downside of events such as financial loss or legal proceedings. It also refers to the upside and opportunities that exist for the Nelson City Council to do things more innovatively, sustainably and effectively.

Risk assessment is used as a strategic decision-making tool assisting with developing and prioritising strategies and work programmes.

The Council will manage risks in accordance with ISO 31000.

Nelson City Council is committed to using risk management principles and techniques to understand and appropriately manage all internal and external factors and influences which affect the achievement of its objectives. Doing this will:

- Provide a reliable basis for sound decision making
- Increase the likelihood of achieving objectives
- Provide an agreed basis for prudent risk taking
- Enable the organisation to understand the level of risk associated with each decision as well as the Council's aggregate exposure to risk
- Improve accountability and assurance of control
- Enable the Council to avoid threats and seize opportunities
- Foster an organisational culture based on reasonable foresight and responsible hindsight.

5.1. Critical assets

5.1.1. How critical assets are identified and managed

Critical assets are considered to be those assets for which the consequence of failure is unacceptable and would result in a major disruption or failure in meeting one or more levels of service.

5.2. Risk Assessment

5.2.1. Approach for assessing risks

The Council's standardised risk assessment method explicitly follows the process part (section 5) of AS/NZS 31000:2009.

Risk analysis involves consideration of the sources of risk, their consequences and the likelihood that those consequences may occur. The objective of risk analysis is to separate the low impact risks from the major risks, and to provide data to assist in the evaluation and treatment of the risks.

It is the organisation's intention to progressively align the risk management practices used in asset management with Council's Policy and Criteria and to apply generally accepted good practice based on the risk management policy adopted in August 2017.

5.2.2. Top risks and how these will be managed

Risk is understood and identified.

5.3. Infrastructure resilience approach

Development of resilient infrastructure and services that will mitigate the effects of climate change predictions where feasible.

Insurance

Nelson City Council is a member of an Aon South Island collective of councils from 1 July 2017 after withdrawing from the Local Authority Protection Programme Disaster Fund.

In the event of a natural disaster, the insurance cover will generally cover 40% of the reinstatement cost of infrastructure assets that have been damaged and declared for cover by the Aon SI collective.

The Aon SI collective is a shared program limit, Council has a sub-limit of $160 million plus AICOW – Additional Increased Cost of Working – this allows for additional costs to be paid over and above normal operating costs during a loss.

Emergency Management

The following documents are available for guidance in the Civil Defence and Emergency Management:

Civil Defence Emergency Management Plan.

Nelson City Council Emergency Procedures Manual - exercises are carried out on a six monthly basis to ensure all staff are familiar with the procedures.

Section 64 of the Civil Defence Emergency Management Act 2002 requires Local Authorities to plan and provide for civil defence emergency management within its district and ensure that it is able to function to the fullest possible extent, even though this may be at a reduced level, during and after an emergency".

Local Civil Defence Emergency Management Arrangements

Nelson-Tasman Civil Defence Emergency Management Group is a joint committee of both Nelson City Council and Tasman District Council.

The Nelson Tasman Civil Defence Emergency Management Group Plan provides for an 'all hazards' approach to emergency management planning and activity within the Civil Defence Emergency Management Group area for Nelson City and Tasman District. The Civil Defence Emergency Management Group Plan states the civil defence emergency management structure and systems necessary to manage those hazards, including the arrangements for declaring a state of emergency in the Group's area. The Group Plan is the primary instrument whereby the community identifies and assesses its hazards and risks, and decides on the acceptable level of risk to be managed and how it is to be managed.

Lifelines Responsibility

Section 60 of the Civil Defence Emergency Management Act 2002 requires Local Authorities to ensure that it is able to function to the fullest possible extent, even though this may be at a reduced level, during and after an emergency

Nelson City Council participate in the Nelson-Tasman Engineering Lifelines project as a life line utility.

The following table indicates the status of the solid waste activity in the areas of Risk Reduction, Readiness, Response and Recovery.

Table 15: Risk Reduction, Readiness, Response and Recovery Status

Activities Required	Description	Status
Risk Reduction	Identifying hazards, describing risks, and taking actions to reduce the probability or consequences of potential events.	Asset Management Plan Risk Register
Readiness	Planning and preparation required to equip agencies and communities to respond and recover.	Emergency procedures manual and exercises.
Response	Addressing immediate problems after an emergency.	Mutual Aid Plan.
Recovery	Addressing the long-term rehabilitation of the community.	Nelson-Tasman Civil Defence Emergency Management Group.

Table 15.1 Solid Waste Risk Register

Identification			Analysis: Residual Risk						
Event Description	Asset Group	Consequence	Existing Controls	Consequence	Likelihood	Current Risk Level Score	Current Risk Level	Response	Treatments
Tsunami	Solid Waste	Sorting facility not operational	Collected material diverted to landfill	2	1	2	Very Low	Accept	
Flooding	Solid Waste	LOS not achieved	Location of infrastructure.	1	3	3	Low	Accept	
Earthquake	Solid Waste	LOS not achieved	Warrant of fitness for buildings	3	1	3	Low	Accept	
Wind damage	Solid Waste	LOS not achieved	Warrant of fitness for buildings	2	2	4	Mediam	Accept	
Fire	Solid Waste	LOS not achieved	Fire extinguishers and sprinkling systems where required.	2	2	4	Medium	Reduce	Review buildings and use.
Structural failure of	Solid Waste	LOS not achieved	Divert material to Richmond	1	2	2	Very Low	Accept	
Power failure	Solid Waste	Failure to operate equipment and systems.	Nil	1	3	3	Low	Accept	
Health and Safety	Solid Waste	Injury	InControl	3	3	9	Medium	Accept	
Machine safety	Solid Waste	Injury	InControl and contract management	3	3	9	Medium	Reduce	Six monthly H&S audit
Industrial action	Solid Waste	LOS not achieved	Nil	2	1	2	Very Low	Accept	
Civil unrest	Solid Waste	LOS not achieved	Nil	2	1	2	Very Low	Accept	
Fuel shortage	Solid Waste	LOS not achieved	Nil	1	1	1	Very Low	Accept	
Contractor insolvency	Solid Waste	LOS not achieved	Nil	2	1	2	Very Low	Accept	

Electricity Supply

The electricity lines suppliers are Network Tasman Ltd and Nelson Electricity Ltd.

Energy supply is currently via a contract with Trustpower.

Interconnectivity Effects

Interconnectivity or interdependence between different utilities during and after a disaster is of utmost importance. In the event of failure, access is necessary to visit a site and provide power for recovery or removal of debris. To enable effective and efficient recovery of lifelines from an event which disrupts their service, dependencies on other lifelines must be understood and where necessary, mitigated against.

Figures 24 and 25 summarise interdependencies between lifelines sectors during business-as-usual and major disaster events where disruption is expected to roads and electricity networks. The ratings presented in this section are illustrative only – obviously the extent of dependence in a response and recovery situation will depend on the specific scenario. The total dependency scores clearly illustrate the importance of electricity, roads, fuel and telecommunications to the other sectors, with air transport, VHF and broadcasting becoming more important in a major disaster event.

Figure 24: Interdependency Matrix – Business As Usual

The degree to which the utilities listed to the right are dependent on the utilities listed below	Roads	Rail	Sea Transport	Air Transport	Water Supply	Wastewater	Stormwater	Electricity	Gas	Fuel Supply	Broadcasting	VHF Radio	Telecomms	Total Dependency
Electricity	1	2	3	3	3	3	2		2	2	3	3	3	30
Roads		3	3	3	2	2	2	2	2	3	2	2	2	28
Fuel	2	3	3	3	2	2	2	2	2		2	2	2	27
Tele-comms	2	2	2	2	2	2	2	2	2	2	2	3		25
Water Supply	1	1	1	2		3	1	1	1	1	1	1	2	16
VHF Radio	2	2	2	2	1	1	1	1	1	1	1		1	16
Stormwater	2	1	1	2	1	1		1	1	1	1	1	1	14
Wastewater	1	1	1	2	1		1	1	1	1	1	1	1	13
Rail	1		1	1	1	1	1	1	1	1	1	1	1	12
Sea Transport	1	1		1	1	1	1	1	1	1	1	1	1	12
Air Transport	1	1	1		1	1	1	1	1	1	1	1	1	12
Gas	1	1	1	1	1	1	1	1		1	1	1	1	12
Broadcasting	1	1	1	1	1	1	1	1	1	1		1	1	12

Figure 25: Interdependency Matrix – During / Post Disaster Event

The degree to which the utilities listed to the right are dependent on the utilities listed below	Roads	Rail	Sea Transport	Air Transport	Water Supply	Wastewater	Stormwater	Electricity	Gas	Fuel Supply	Broadcasting	VHF Radio	Telecomms	Total Dependency
Fuel	3	3	3	3	3	3	3	3	3		3	3	3	36
Roads		3	3	3	3	3	3	3	3	3	2	2	3	34
Tele-comms	3	2	2	2	3	3	3	3	3	2	2	3		31
Electricity	1	2	3	3	3	3	2		2	2	3	3	3	30
VHF Radio	2	2	3	3	2	2	2	2	2	2	2		2	26
Broadcasting	2	2	2	2	2	2	2	2	2	2		2	2	24
Air Transport	2	1	1		2	2	2	2	2	2	2	2	2	22
Water Supply	1	1	1	2		3	1	1	1	1	1	1	2	16
Stormwater	2	1	1	2	1	1		1	1	1	1	1	1	14
Wastewater	1	1	1	2	1		1	1	1	1	1	1	1	13
Rail	1		1	1	1	1	1	1	1	1	1	1	1	12
Sea Transport	1	1		1	1	1	1	1	1	1	1	1	1	12
Gas	1	1	1	1	1	1	1	1		1	1	1	1	12

1: Minimal requirement for service to function.
2: Important but can partially function and/or has full backup.
3: Required for Service to Function.

Succession Planning

Succession planning within any business is considered necessary to reduce the risk associated with staff leaving the organisation. Succession planning allows institutional knowledge to be passed on, and assists in ensuring continuity of organisational culture.

Currently succession planning is largely by way of multiple staff members involved in administering the activity and detailing strategies for the future in asset management

plans. In order to ensure greater effectiveness there is a need to improve planning and recording of strategies over the next three years.

Climate Change Effects

There has been considerable work undertaken at a national level on the possible effects of climate change and sea level rise.

The Ministry for the Environment have provided the following information regarding the likely impacts of climate change in the Nelson-Tasman Region:

"Temperatures are likely to be around 0.9°C warmer by 2040 and 2.0°C warmer by 2090, compared to 1990. By the end of the century, some parts of Nelson-Tasman are projected to have about 10–-40 extra days per year where maximum temperatures exceed 25°C, with around 10–40 fewer frosts per year"

"Rainfall will vary locally within the region. In Nelson, average annual rainfall is likely to increase by 4 per cent by 2090. Seasonal projections show summer, autumn and winter rainfall increasing by 5–6 per cent in Nelson by 2090, with very little change in spring rainfall. For Motueka and the Waimea plains, annual average rainfall is likely to increase slightly by 2090. Seasonal projections show slightly more rainfall in most seasons (except spring) for much of this part of Tasman. The western part of the Tasman district is likely to experience slightly less rainfall in summer, but significantly more rainfall in winter, especially by 2090. Very heavy rainfall events are likely to become more frequent throughout the Nelson-Tasman region. For example, in Richmond heavy rainfall events are likely to occur twice as often by 2090."

"New Zealand tide records show an average rise in relative mean sea level of 1.7 mm per year over the 20th century. Sea levels are expected to continue to rise into the future. The Ministry for the Environment recommends planning for future sea-level rise of at least 0.5 m, along with consideration of the consequences of a mean sea-level rise of at least 0.8 m (relative to the 1980–1999 average) by the 2090s."

There is scientific evidence that sensible actions at reasonable cost by the general public when disposing of unwanted products can slow down effects of global warming. Through the implementation of this plan we will endeavour to share this information with Nelson residents and encourage people to act responsibly.

Table 16: Consequence Rating (Impact)

Rating	Safety	Health	Asset Performance/ Service Delivery	Environmental/ Historical/cultural	Financial	Political / Community/ Reputational	Relationship with Iwi	Legal compliance	Information/ decision support
Exterme (5)	Multiple fatalities of workers or public (MF)	Significant loss of life expectancy for multiple persons or incapacity for more than 1000 person days	Service not provided for more than 5000 person days	Permanent environmental damage on a nationally significant scale and/or permanent loss of nationally significant building, artwork, or other valued entity	Overspend, loss (i.e. spend without result) or income loss of > $5m OR >100% of business unit budget	Major loss of public confidence in Council (>2000 opponents via social media or other mediums) Negative international mainstream media coverage; shareholder or key stakeholder outage; or loss of a key customer	Major breakdown of relationship affecting multiple areas. Refusal to resolve without one or more major concessions from council	Litigation/ prosecution or civil action successful resulting in major (>50% of maximum available) fine/costs awarded and/or imprisonment of council officer.	Multiple errors in information and analysis and presentation misleading (intentionallly or not) or not understandable by non- specialists
Major (4)	Single fatality of workers or public (SF)	Single loss of life expectancy or incapacity for between 100 and 1000 person days	Service not provided for less than 5000 person days but more than 500 person days	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	Overspend, loss (i.e. spend without result) or income loss of > $1m and <$5m OR between 70% and 100% of business unit budget	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	Significant breakdown of relationship largely in in one area. Some concessions from council sought before substantive issue considered by iwi grouping affected	Litigation/ prosecution or civil action successful resulting in minor fine(<50% of max available)/ costs awarded.	One major error in information, analysis incomplete and presentation ambiguous
Moderate (3)	Notifiable injury of workers or public.	Incapacity for between 20 and 100 person days	Service not provided for less than 500 person days but more than 50 person days	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	Overspend, loss (i.e. spend without result) or income loss of > $0.5m and <$1m OR between 30% and 70% of business unit budget	Some negative public reaction likely (30-200 opponents via social media or other mediums) Repeated complaints; Regulatory notification; or negative stakeholder, local media attention	Major relationship damaged in a single area but amenable to negotiation	Documented Breach of legislation, no legal action or prosecution or civil action not successful.	Information correct but presentation/ analysis insufficient to support decision on the day
Minor (2)	Serious injury on one person requiring medical treatment (MA)	Incapacity for between 1 and 20 person days	Service not provided for less than 50 person days but more than 5 person days	Medium term environmental impact at a local level and/or development compromising the integrity of a registered historical, cultural or archaeological site	Overspend, loss (i.e. spend without result) or income loss of > $100k and <$500k OR between 10% and 30% of business unit budget	Minor public reaction likely (<30 active opponents via social media or other mediums) Workforce attention; limited external attention;	Relationship damage resolvable through normal communication/ consultation mechanisms	Formal warning of breach from legislative authority.	Information correct, analysis complete but presented in a way which could be misinterpreted
Insignificant (1)	Minor injury requiring only first aid or less (FA)	Incapacity for less than 1 person day	Service not provided for between 1 & 5 person days	Short term and temporary impact requiring no remedial action and/or restorable loss damage to historical/ cultural record	Overspend, loss (i.e. spend without result) or income loss of > $10k and <$100k OR between 5% and 10% of business unit budget	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.	Iwi/ tribe/ hapu public dissatisfaction resolvable through routine communication	Breach of minor legislation/ no legal action	Small errors in information or presentation - no effect on decision

Table 17: Risk Matrix – Consequences x Likelihood

CONSEQUENCES					LIKELIHOOD of the given consequence occurring			
Insignificant(1)	Minor (2)	Moderate (3)	Major (4)	Extreme (5)	Descriptor	Qualitative guidance statement	Indicative Probability range %	Indicative frequency range (years)
Medium (5)	Medium (10)	High (15)	Very High (20)	Very High (25)	Almost certain (5)	The consequence can be expected in most circumstances OR *A very low level of confidence/information*	>90%	>1 occurrence per year
Medium (4)	Medium (8)	High (12)	High (16)	Very High (20)	Likely (4)	The consequence will quite commonly occur OR *A low level of confidence/information*	20% - 90%	Once per 1-5 years
Low (3)	Medium (6)	Medium (9)	High (12)	High (15)	Possible (3)	The consequence may occur occasionally *A moderate level of confidence/information*	10% - 20%	Once per 5-10 years
Very Low (2)	Low (4)	Medium (6)	Medium (8)	High (10)	Unlikely (2)	The consequence may occur only infrequently *A high level of confidence/information*	2% - 10%	Once per 10 - 50 years
Very Low (1)	Very Low (2)	Low (3)	Medium (4)	Medium (5)	Rare (1)	The consequence may occur only in exceptional circumstances *A very high level of confidence/information*	<2%	Less than once per 50 years

6. Financial Summary

The works proposed in the previous sections on Levels of Service, Future Demand, Risk Management and Lifecycle Management all impact on expenditure.

Cost implications that affect the Operation and Maintenance, Renewal and Capital Financial Plans include:

- Meeting levels of service;
- Meeting future demand;
- Managing risk;
- Maintaining/improving asset condition;
- Maintaining/improving asset performance;
- Operating assets;
- Maintaining assets.

Depreciation is an expense which allows for the future replacement of an asset by setting aside its replacement value during its working life.

Operations and Maintenance is an expense to run assets and keep them in good working order.

Renewals are an expense to replace existing assets.

6.1. Funding Strategy

The solid waste 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 Solid Waste Special Reserve Fund.

Solid waste activities, such as waste education or recycling, are funded from the National Waste Levy and the Local Waste Disposal Levy (Landfill Levy).

Fees and Charges

Solid waste activities, such as waste education or recycling, are funded from the National Waste Levy and the Local Waste Disposal Levy (Landfill Levy).

Fees and charges are set following the approval of either the Long Term Plan or the Annual Plan budget and makes up the largest part of the income stream for the solid waste activity.

Solid Waste Reserve Fund

Surpluses generated within the solid waste activities will be placed in a reserve fund that can be drawn from at the discretion of Council to fund solid waste activities. (This will include unallocated Local Waste Disposal Levy contributions received from the Regional Landfill Business Unit.)

6.2. Key assumptions made in Financial Forecasts

It is assumed that operations and maintenance will be carried out at the same level as at present. These activities are programmed based on best information available and will be reviewed as further information becomes available.

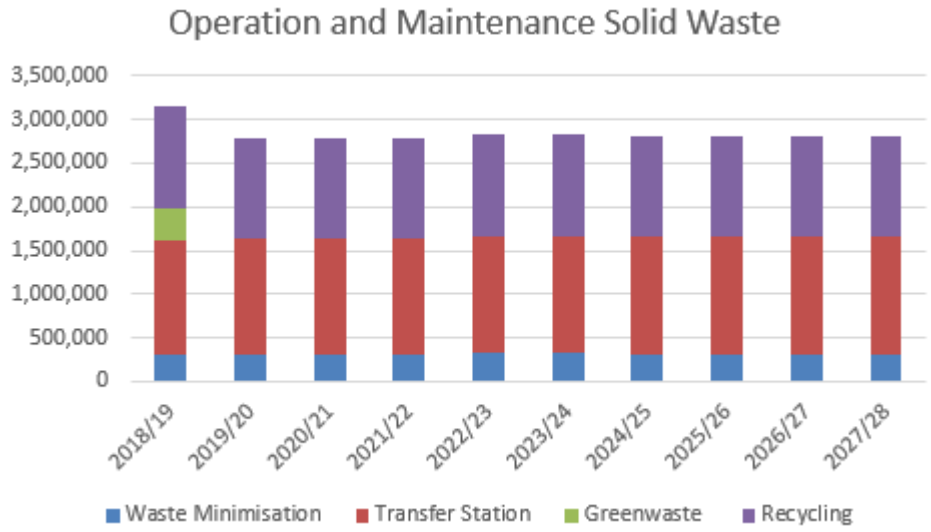
6.2.1. Summary of Future costs

Background: Operations and maintenance

Operations and maintenance constitute the cost running of the solid waste activities and includes the following:

- Staffing and Overhead - Engineering supervision, asset management, corporate services, IT support, etc;
- Operations - Reactive maintenance, telephones, rates, closure costs, levies, resource consent compliance, reactive maintenance etc;
- Maintenance - Programmed maintenance and minor renewals.

Figure 26: Operation and Maintenance Cost of Solid Waste Activity

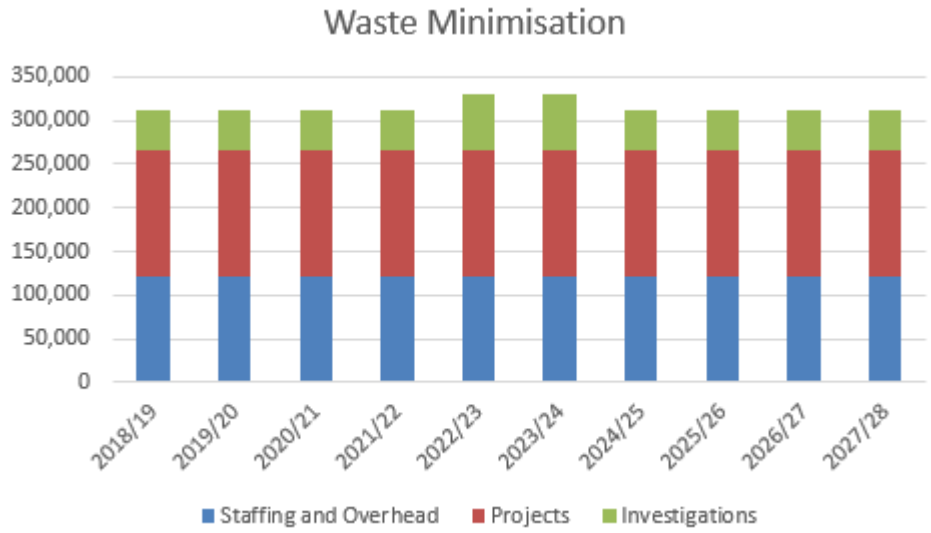


Long Term Plan projections

Each of the four separate components of the solid waste activity will be discussed in terms of operation and maintenance, upgrade and renewal, and income. (A financial summary is included in Appendix 1)

Waste Minimisation Cost

Figure 27: Waste Minimisation

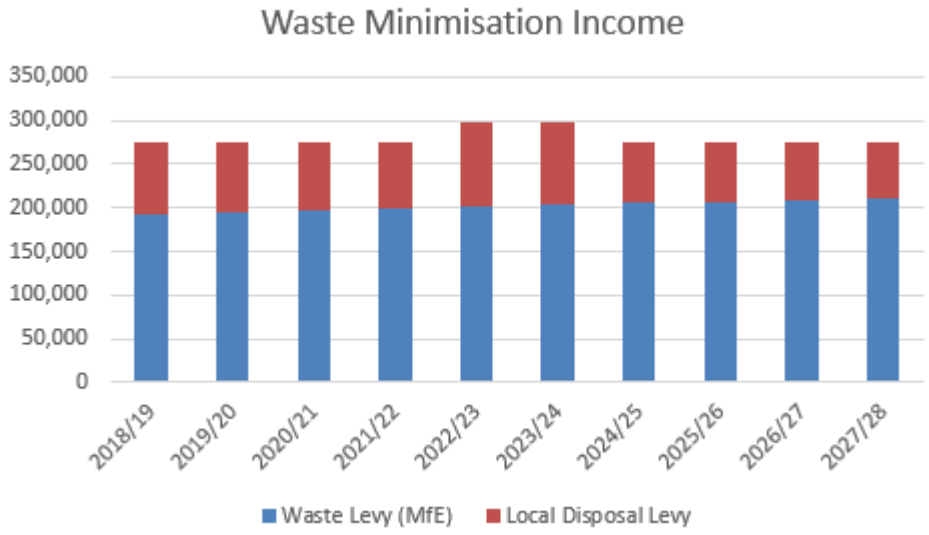


This sub-activity is used to fund education, planning, investigations and policy development. Education programmes are provided through the Strategy and Environment Group in liaison with the Infrastructure Operations team. Waste minimisation subsidies (i.e. compost bin subsidies) are managed jointly by the Strategy and Environmental and Infrastructure Groups.

Table 18: Waste Minimisation

6005 Waste Minimisation ($1,000)	2018/19 Est	2019/20 Est	2020/21 AMP
Unprogrammed Expenses	8.9	8.9	8.9
Subsidy on Compost Bins	8.9	8.9	8.9
Programmed Expenses	136.1	136.1	136.1
Waste Minimisation Resources	9.1	9.1	9.1
Zero Waste Grants/Product Stewardship	20.0	20.0	20.0
Community engagement-schools	30.0	30.0	30.0
Waste Minimisation at Council Facilities	3.3	3.3	3.3
Waste min: composting & food growing prog	13.4	13.4	13.4
600543421645. Waste min: community engagement contract	55.0	55.0	55.0
600543421646. Waste minimisation at events	5.3	5.3	5.3

Figure 28: Waste Minimisation Income



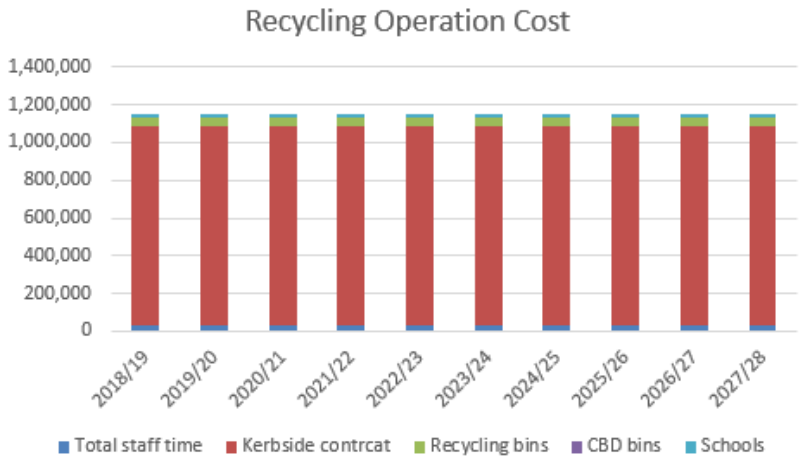
The income received from MfE is supplemented from the income received from the Regional Landfill.

Recycling

Council has a contract with Nelmac for the provision of kerbside recycling services to residential properties in Nelson. The cost of the service is paid from the Local Waste Disposal Levy included in the landfill disposal charges.

The roll out of recycling bins to non-residential properties at a level of service similar to that provided to residential properties will be carried out over a three year period staring 1 July 2018.

Figure 29: Recycling Operation Cost



This sub-activity is used to fund kerbside, school and CBD recycling initiatives.

Table 19: Recycling Operation Cost

Recycling	2018/19	2019/20	2020/21
Staffing and Overhead	33,509	33,509	33,509
Operations	1,118,267	1,118,267	1,118,267
Total	1,151,776	1,151,776	1,151,776

Operations and Maintenance (Transfer Station)

The Pascoe Street Transfer Station has three distinct areas of operation:

- Collection, compaction and transport of general refuse and greenwaste;
- Operation of a re-use shop;
- Recycled materials processing centre.

Figure 30: Transfer Station Operation and Maintenance Cost

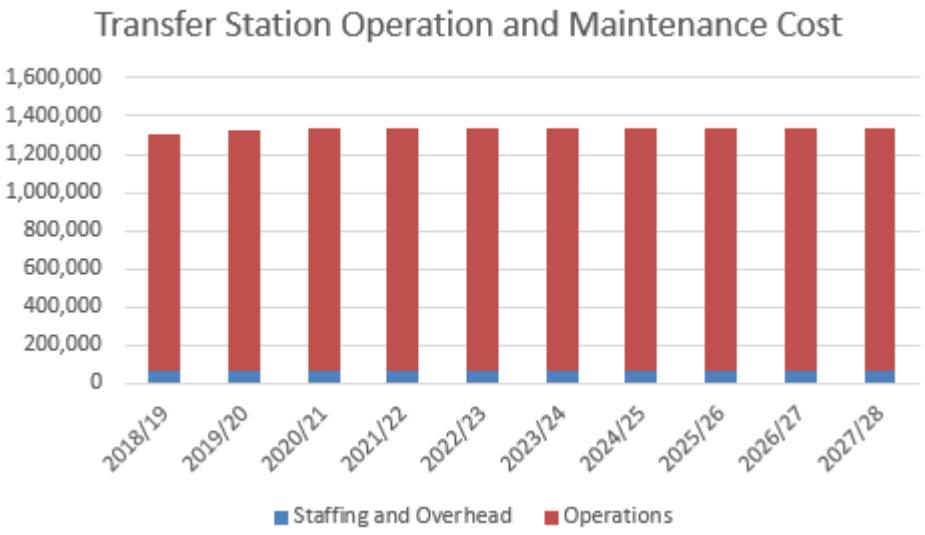


Table 20: Transfer Station Operation and Maintenance Cost

Transfer Station	2018/19	2019/20	2020/21
Staffing and Overhead	62,500	62,500	62,500
Operations	1,244,000	1,262,000	1,269,300
Total	1,306,500	1,324,500	1,331,800

The management of domestic hazardous waste and tyres are included in the transfer station operational cost.

Table 21: Transfer Station Income Projections

Transfer Station Revenue	2018/19	2019/20	2020/21
Transfer Station Fees	784,944	796,719	804,686
Local Disposal Levy	783,334	789,340	788,895
Sundry Income	2,000	2,000	2,000

The Local Waste Disposal Levy represents the value to which the transfer station activity is subsidised from the Regional Landfill income.

Greenwaste

Separated greenwaste is received at the transfer station and transported for treatment at a commercial composting facility contracted by Council.

Greenwaste Operation Cost

Table 22: Greenwaste Operation Cost

Greenwaste	2018/19	2019/20	2020/21
Staffing and Overhead	8,095		
Operations	366,644		
Total	374,739		

The compost is owned the commercial entity.

Greenwaste Operation Income

Table 23: Greenwaste Operation Income

Greenwaste Income	2018/19	2019/20	2020/21
Transfer Station Fees	335,761		
Local Disposal Levy	42,306		

The Local Waste Disposal Levy represents the value to which the green waste activity is subsidised from the Regional Landfill income.

Atawhai Closed Landfill Management

Landfill gas emissions will be monitoring twice a year at an estimated cost of $31,500 per annum. The cost of extending the monitoring to private properties located on the Atawahi Landfill footprint adds $13,190 per survey (An additional cost of $26,380 per annum for the first two years).

Any work or costs associated with the remediation of the land or utility services within the Atawhai landfill footprint will be the responsibility of the respective activity management discipline.

The Atawhai investigation report has not identified any significant issues that require remediation and it remains difficult to project future costs with any measure of accuracy.

7. Plan Improvement and Monitoring

The effectiveness of the Solid Waste Asset Management Plan will be monitored and the results used in the updating and revision of the Plan.

7.1. Status of AM Practices

Asset management improvements and associated objectives are noted throughout the Asset Management Plan. These improvements will improve the accuracy of, and confidence in, the Solid Waste Asset Management Plan.

- A risk assessment is an essential element of any asset management plan. This involves identification of critical assets, risk analysis and development of risk reduction and contingency planning to suit the business situation.
- Asset Management Planning is a constantly evolving process, with underpinning Asset Management systems constantly providing better information.
- In recent years it has been recognised that a new rating level of "Core Plus" is the most appropriate rating for cities of Nelson's size. This rating reflects that parts of the asset can be managed at a Core level and parts at an Advanced level. This approach achieves effective asset management tool without becoming unnecessarily expensive.

7.2. Improvement Programme

Throughout the Asset Management Plan, objectives, targets, capital works, maintenance and improvements to general business processes are referred to including:

- Ongoing management actions;
- Recording landfill tonnages monthly;
- Recording diverted recyclables monthly;
- Continuing Civic House recycling.

Table 24: Improvement Programme

	Actions
AP-1	Develop the mechanism for developing and manage joint waste management and minimisation projects.
AP-2	Investigate construction and demolition waste recovery and diversion of clean fill material.
AP-3	Investigate joint refuse collection.
AP-4	Investigate joint green-waste composting initiatives.
AP-5	Investigation into organic waste collection and treatment.
AP-6	Re-use of glass.
AP-7	Commercial Food waste/collection and treatment.
AP-8	Develop a policy for allocation of funds from Solid Waste Reserve fund.
AP - 9	Increase the effectiveness of commercial recycling activity through regulation and/or incentives.
AP - 10	Develop and improve the risk schedule in compliance with NCC risk policy.

The mechanism for the setting of joint waste management and minimisation programmes is currently under review.

7.3. Monitoring and Review Procedures

- The plan will be reviewed annually and revised every three years to incorporate, amongst other things, improved decision making techniques, updated asset

information, and Council policy changes which impact on targeted levels of service.

- 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 asset management planning.
- An internal audit will be carried out to assess the effectiveness with which the plan meets its objectives prior to the development of the next asset management plan.
- The Solid Waste Asset Management Plan programmes and costs will be reviewed and updated annually for incorporation into the Annual Plan.

7.4. Performance Measures

Some joint waste management and minimisation initiatives between Nelson City Council and Tasman District Council have been delayed as a result of slower than projected progress with the development of the Joint Landfill Initiatives.

- These joint programmes will need to be reprioritised over the implementation period of this asset management plan.
- The mechanism for the setting of joint waste management and minimisation programmes is currently under review.

8. Appendices

Table 25: Financial Summary

Account	2018/19 Est	2019/20 Est	2020/21 AMP	2021/22 AMP	2022/23 AMP	2023/24 AMP	2024/25 AMP	2025/26 AMP	2026/27 AMP	2027/28 AMP
Grand Total	**4,967.9**	**4,517.9**	**4,509.9**	**4,509.9**	**4,569.9**	**4,602.4**	**4,582.4**	**4,517.5**	**4,517.5**	**4,517.5**
6005 Waste Minimisation	**190.8**	**190.8**	**190.8**	**190.8**	**210.8**	**210.8**	**190.8**	**190.8**	**190.8**	**190.8**
Expenses	**190.8**	**190.8**	**190.8**	**190.8**	**210.8**	**210.8**	**190.8**	**190.8**	**190.8**	**190.8**
Unprogrammed Expenses	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9
60053312. Subsidy on Compost Bins	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9
Programmed Expenses	181.9	181.9	181.9	181.9	201.9	201.9	181.9	181.9	181.9	181.9
60054310. Waste Minimisation Resources	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1
60054312. Zero Waste Grants/Product Stewardship	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
600543421641. Community engagement-schools	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
600543421643. Waste Minimisation at Council Facilities	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
600543421644. Waste min: composting & food growing prog	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4
600543421645. Waste min: community engagement contract	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0
600543421646. Waste minimisation at events	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
600543721583. Waste Mgmt and Minimisation Plan	35.0	35.0	35.0	35.0	55.0	55.0	35.0	35.0	35.0	35.0
600543722018. Feasibility Study SWAP	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8
6010 Transfer Station	**1,243.9**	**1,261.7**	**1,269.2**	**1,269.2**	**1,309.3**	**1,341.7**	**1,341.7**	**1,276.8**	**1,276.8**	**1,276.8**
Expenses	**1,243.9**	**1,261.7**	**1,269.2**	**1,269.2**	**1,276.8**	**1,276.8**	**1,276.8**	**1,276.8**	**1,276.8**	**1,276.8**
Base Expenditure	1,177.4	1,195.1	1,202.7	1,202.7	1,210.3	1,210.3	1,210.3	1,210.3	1,210.3	1,210.3
60102310. Provide: Operator Contract	155.6	155.6	155.6	155.6	155.6	155.6	155.6	155.6	155.6	155.6
601023100462. Provide: Cartage Contract	88.0	88.0	88.0	88.0	88.0	88.0	88.0	88.0	88.0	88.0
601023100463. Provide: Hazardous Waste	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.6
601023100464. Provide: Car Tyre Disposal	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
601023100800. Provide: Operator/Ticket Office	118.5	118.5	118.5	118.5	118.5	118.5	118.5	118.5	118.5	118.5
601023830130. Landfill Charges	734.4	752.2	759.8	759.8	767.4	767.4	767.4	767.4	767.4	767.4
60102617. Electricity	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1
60102621. Rates	28.4	28.4	28.4	28.4	28.4	28.4	28.4	28.4	28.4	28.4
60102625. Water By Meter	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
60102637. Insurance	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Unprogrammed Expenses	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7
60103011. Building Maintenance	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7
Programmed Expenses	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9
60104016. Grounds Maintenance	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
60104030. Plant & Equipment Maintenance	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
Capital Expenditure	**0**	**0**	**0**	**0**	**32.4**	**64.9**	**64.9**	**0**	**0**	**0**
Capital Increased LOS	0	0	0	0	32.4	64.9	64.9	0	0	0
601077202770. Container renewal	0	0	0	0	32.4	64.9	64.9	0	0	0
6015 Landfill	**1,947.1**	**1,947.1**	**1,931.6**	**1,931.6**	**1,931.6**	**1,931.6**	**1,931.6**	**1,931.6**	**1,931.6**	**1,931.6**
Expenses	**1,915.6**	**1,915.6**	**1,915.6**	**1,915.6**	**1,915.6**	**1,915.6**	**1,915.6**	**1,915.6**	**1,915.6**	**1,915.6**
Base Expenditure	1,915.6	1,915.6	1,915.6	1,915.6	1,915.6	1,915.6	1,915.6	1,915.6	1,915.6	1,915.6
601523830128. Waste Minimisation Local Disposal Levy	284.3	209.3	210.0	210.0	210.4	210.4	210.4	210.4	210.4	210.4
601523830129. Transfer Station Local Disposal Levy	408.5	525.8	525.1	525.1	524.7	524.7	524.7	524.7	524.7	524.7
601523830131. Greenwaste Local Disposal Levy	42.3	0	0	0	0	0	0	0	0	0
601523830132. Recycling Local Disposal Levy	1,180.5	1,180.5	1,180.5	1,180.5	1,180.5	1,180.5	1,180.5	1,180.5	1,180.5	1,180.5
Atawhai Closed Landfill gas monitoring	31.5	31.5	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
6030 Green Waste	**366.6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Expenses	**366.6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Base Expenditure	366.6	0	0	0	0	0	0	0	0	0
60302310. Provide: Green Waste Disposal	137.3	0	0	0	0	0	0	0	0	0
603023100462. Provide: Transport Green Waste	118.3	0	0	0	0	0	0	0	0	0
603023830129. Transfer Station Overhead	111.1	0	0	0	0	0	0	0	0	0
6035 Recycling	**1,219.5**	**1,118.3**	**1,118.3**	**1,118.3**	**1,118.3**	**1,118.3**	**1,118.3**	**1,118.3**	**1,118.3**	**1,118.3**
Expenses	**1,118.3**	**1,118.3**	**1,118.3**	**1,118.3**	**1,118.3**	**1,118.3**	**1,118.3**	**1,118.3**	**1,118.3**	**1,118.3**
Base Expenditure	1,118.3	1,118.3	1,118.3	1,118.3	1,118.3	1,118.3	1,118.3	1,118.3	1,118.3	1,118.3
60352310. Provide: Kerbside Contract	1,054.0	1,054.0	1,054.0	1,054.0	1,054.0	1,054.0	1,054.0	1,054.0	1,054.0	1,054.0
603523100471. Provide: Recycling Bins	46.1	46.1	46.1	46.1	46.1	46.1	46.1	46.1	46.1	46.1
603523100472. Provide CBD Recycling Bins	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
60352332. Provide: Schools recycling	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2
Capital Expenditure	**101.2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Capital Increased LOS	101.2	0	0	0	0	0	0	0	0	0
603577903085. Recycling Bins	101.2	0	0	0	0	0	0	0	0	0

Notes

Projections are in June 2017 dollars.

Projections do not include inflation adjustment beyond year 2018/17.