
THE NELSON–TASMAN JOINT WASTE ASSESSMENT 2017

Executive Summary

Introduction

The Nelson–Tasman region is doing better than the nation as a whole in terms of the waste disposed to landfill each year. While the national average is more than 700 kg per person, we disposed of 598 kg per person in the year ending June 2016.

Nelson City Council and Tasman District Council (the councils) are committed to further waste reduction. However, we need good information about where our waste is coming from, and what it is, in order to take effective action. However, we need good information about the composition of our waste and where it is coming from in order to take effective action.

This Waste Assessment brings together information about:

- waste tonnages
- sources of waste
- how much waste we keep out of the landfill by diverting it for productive uses
- our existing waste services
- a broad range of waste minimisation and management options for future consideration.

This Waste Assessment is a legal requirement of the Waste Minimisation Act 2008 (WMA). Tasman District Council and Nelson City Council prepared it together in recognition of the interconnected nature of the Nelson–Tasman region’s waste generation, minimisation and management activities.

Purpose

The purpose of this Waste Assessment is to gather enough background information regarding levels of waste, existing services and future needs to enable the councils to determine if their existing Joint Waste Management and Minimisation Plan (JWMMP) continues to meet the councils’ waste minimisation aspirations or if it needs to be amended, or completely revoked and a new plan substituted. This review of the JWMMP needs to occur by March 2018.

Scope

To achieve this purpose the councils compiled and analysed available information on existing waste management and minimisation infrastructure, as well as data regarding waste and diverted materials in the Nelson–Tasman region. This provides a combined inventory of waste management and minimisation for the whole region.

The councils have then used this information to forecast any future demands for waste management and minimisation activities which are not currently being addressed. This provides a planning framework to consider both public health protection issues and the promotion of efficient and effective waste minimisation.

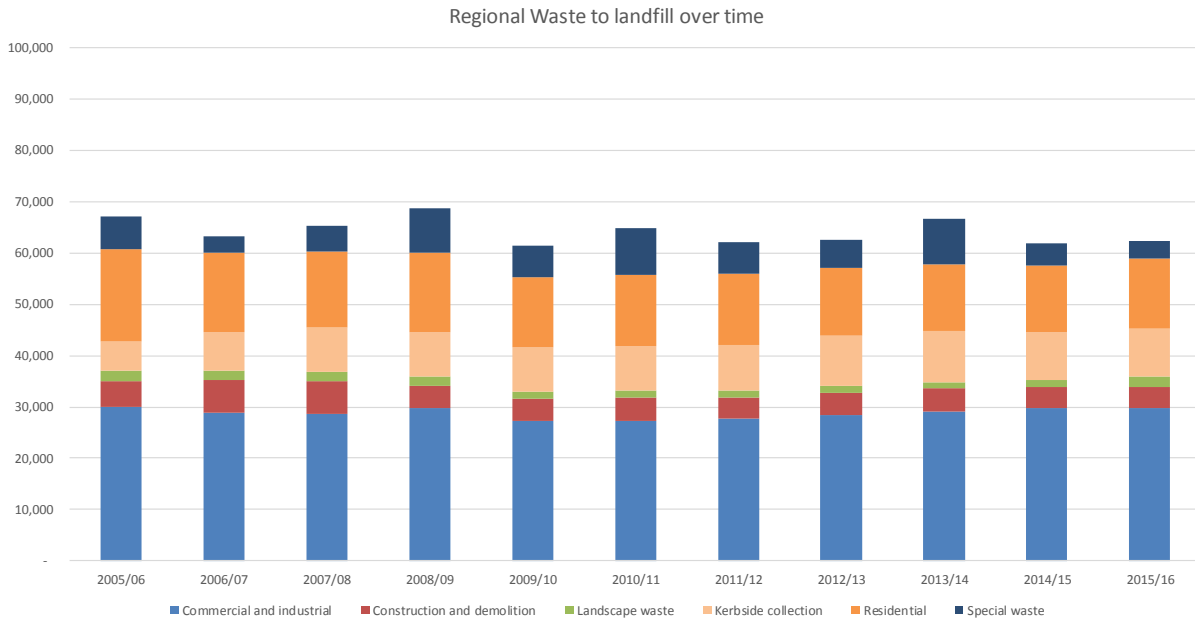
The third step of the Waste Assessment has been to summarise the reasonably practicable options available to the councils in terms of how they can meet future demand for services.

Public consultation is not carried out on the Waste Assessment as it is a factual supporting document rather than a plan. However, the Waste Assessment will be available to the public when the councils consults on the next JWMMP. Any agreed changes will be made to the JWMMP prior to its formal adoption and implementation.

Current Situation

Each year approximately 62,000 tonnes of waste, including around 2,000 tonnes from Buller District, is sent to landfill within the Nelson–Tasman region (see Figure 1). Total waste to landfill peaked in 2008/09 at 68,700 tonnes and since then has varied between 61,400 and 66,600 tonnes per annum.

Figure 1: Annual Tonnes of waste sent to landfill in the Nelson–Tasman region



Most of this waste is classed as “municipal waste” and, as shown in Figure 1, the levels of municipal waste have remained generally flat over this time. Municipal waste is all waste excluding special waste, which is waste that requires special handling due to its bulk, hazardous or offensive nature. (One example of special waste is contaminated soil removed from a property during its redevelopment).

Municipal wastes averaged just over 60,000 tonnes per annum for the period 2005-2009 and dropped to just over 55,000 tonnes in 2009/10. Since then, municipal wastes increased to nearly 57,000 tonnes in 2015/16.

In 2012 the councils commissioned a waste composition study, to assess make-up of materials being sent to landfill.

This gives us valuable information about the amount of recyclable and compostable materials which continue to be disposed to landfill. When compared with other landfill sites in New Zealand, we appear to have a greater proportion of paper, cardboard and plastics being landfilled at present.

Given that a kerbside collection is available for residential recyclables, it's likely that most of these remaining materials are primarily from commercial sources. New actions will be required if these materials are to be diverted from landfill, and a range of options to do this are identified in section 5 of this Waste Assessment.

The following table compares the 2012 Nelson–Tasman composition analysis with national data collected by the Ministry for the Environment (MfE) in 2007–2008. This data was collected from four ‘National Indicator Sites’ in order to establish baseline waste composition data for New Zealand and detect any trends over time. The National Indicator Sites include both provincial and major urban sites.

Waste type	Nelson—Tasman Waste Composition %	National Waste Composition %
Timber	14	11
Garden and food waste	28	26.5
Plastics	13	8
Paper and cardboard	17	7
Glass	6	4
Rubble/concrete/soil	6	15
Textiles	6	3.5
Ferrous metals	3	3.5
Non ferrous metals	1	4
Nappies and sanitary	2	3
Rubber	2	1.5
Potentially hazardous	2	13

What do the numbers tell us?

Over the last six years, waste to landfill per capita has decreased. From 2010 to 2016 the total waste to landfill per capita has decreased from 642kg to 598kg per person.

	Population estimate	Total municipal waste (tonnes)	Municipal waste per capita (kg)	Total waste to landfill (tonnes)	Total waste per capita (kg)
Year ending June 2010	92,700	n/a	n/a	59,556	642
Year ending June 2016	100,900	56,881	564	60,355	598

This doesn't mean we are all disposing of that much rubbish personally. We also have to take into account waste generated by commercial activities, which is 55% of the waste disposed to landfill.

How much material is 'diverted'?

The councils' combined efforts in promoting and facilitating waste reduction, recycling and composting result in approximately 12,000 tonnes of potential waste being diverted for productive uses each year.

This material is predominantly diverted by kerbside recycling and greenwaste drop-off and mainly comes from domestic sources. A similar portion of recoverable material is also likely to be diverted from commercial sources. However, as the diversion from commercial activities is managed by the private sector, the councils have limited data about this waste diversion.

Approximately 6,500 tonnes of recyclable materials (up from 5,656 tonnes reported in the previous Waste Assessment in March 2010) was diverted from landfill through kerbside collection services provided by the councils during 2015/16.

We are also diverting an increasing amount of greenwaste from landfill, by composting it instead. In the year ending June 2016, the amount composted was 5,310 tonnes, which equates to 52.7 kg per person compared to the 4,080 tonnes (44kg per person) composted in 2010.

Existing Waste Services and Facilities

The Nelson City Council and Tasman District Council jointly manage two landfills in the Nelson Tasman region: the York Valley and Eves Valley landfills.

Waste is transported direct to landfill by commercial customers and via transfer stations and resource recovery centres. There is no direct access to landfill for residential customers.

All of the following are pathways for materials to reach the resource recovery centres in Tasman and the transfer station in Nelson:

- public and commercial drop off of materials
- litter bin collections
- the councils' residential kerbside collections
- private commercial and residential kerbside collections.

Of the material received at resource recovery centres and the transfer station:

- recyclables are transferred to the Richmond Materials Recovery Facility for sorting and baling, and forwarding to reprocessors
- scrap metal, batteries, whiteware, paint, oil, rubble and timber are managed by local contractors before being forwarded to reprocessors
- greenwaste is transferred to various composting facilities.

Some construction and demolition (C&D) waste is handled directly by local contractors, and then forwarded to reprocessors or to landfill.

Reusable material is also diverted via reuse shops, food rescue services and home composting.

Material that can't be reused, recycled or composted is disposed of to landfill, various cleanfills, and 'out of district' landfills for special waste.

The existing waste services and facilities are described in more detail in section 3 of this Waste Assessment. This provides a summary of existing waste and waste minimisation services and facilities provided by the councils and other organisations (eg. the commercial waste sector and community groups) in the Nelson–Tasman region. The waste market infrastructure (landfills, transfer stations and resource recovery centres) in the region is predominantly owned by the councils.

Understanding the existing (and planned) services provides the basis for the councils to determine the degree to which the needs of the region are presently being met and what else might need to be provided to meet future demands.

The inventory of services and facilities has considered the waste hierarchy categories, as defined in the WMA, of: reduce, reuse, recycling, recovery, treatment and disposal. This inventory is not exhaustive, particularly with respect to the commercial sector/private waste industry, as these services are subject to change and information is not as readily accessible.

Reduce

There are several waste minimisation/behaviour change programmes and initiatives currently in place in the Nelson–Tasman area. These initiatives, combined with the collection and disposal services offered by the councils, aim to reduce waste to landfill. These programmes generally promote all levels of appropriate waste management behaviour such as reuse, recycling, recovery and treatment.

It is difficult to measure how much potential waste has been reduced through these programmes — given the waste has been avoided, there's nothing to measure. However, improved delivery of waste education services and more promotion of home composting and food growing would help to further reduce the amount of potential waste to be diverted or disposed to landfill.

Reuse

Traditionally the reuse sector has been measured through the activity of reuse shops, where materials which are no longer needed are donated as an alternative to disposal to landfill. More recently we have seen an increase in use of social media and online trading to achieve the same outcome.

Most of these activities occur outside of council–provided services and the volume of reused materials is not normally measured or collated.

Recycling

Approximately 6,500 tonnes of recyclable materials were diverted from landfill through kerbside collection services provided by the councils during the year ending June 2016. The councils have recently introduced a change in the collection of recyclable materials by providing wheelie bins (which are normally 240 litres), and the existing blue 60 litre crates have been retained for collection of glass. An immediate increase in the amount of material diverted occurred following the introduction of these wheelie bins.

Kerbside recycling collections remain the largest contributor of recycled material, followed by drop-off at sites managed by the councils, with small amounts of recyclables also coming from school programmes and recycling bins in urban areas. Resource recovery centres also collect car bodies, batteries, steel and tyres, which is additional to the kerbside recycling. Several other recycling businesses operate in the Nelson–Tasman region, but at present the councils do not have information on the amount of material processed through these recyclers.

Materials collected through the kerbside collections include glass, plastics, paper, cardboard, and both aluminium and steel cans. The amount of recycling collected by the councils equates to around 10% of the total solid waste disposed of at landfill.

Some recyclables collections from commercial and industrial properties are handled by private contractors. We estimate that around 5000 tonnes of paper and cardboard are recycled commercially, and around 12,000 tonnes of ferrous and non-ferrous metals (although this includes material from Marlborough and the West Coast). Smaller quantities of plastics and glass are also recycled commercially.

Recovery

Recovery is the extraction of materials or energy from waste or diverted material for further use or processing; in this assessment it relates to and this includes making waste or diverted material into compost.

The councils support home composting and separation of greenwaste as a way to extend the useful lives of landfills. The councils provide opportunities for disposal of separated greenwaste at the transfer station and resource recovery centres. The greenwaste is then transported to commercially run composting facilities for processing. Approximately 5,300 tonnes of separated greenwaste was received at the transfer stations and diverted from landfill during the year ending June 2016.

Treatment

Treatment means subjecting waste to any physical, biological, or chemical process to change its volume or character, so that it may be disposed of with no or reduced adverse effects on the environment (excluding dilution). The councils have limited data on the quantities of waste treated in the region.

Disposal

The councils jointly manage the two landfills in the Nelson Tasman region: the York Valley landfill and Eves Valley landfills, through the Nelson Tasman Regional Landfill Business Unit. The business unit was established on 1 July 2017, and from that date the York Valley landfill in Nelson has been the only operational landfill in the region.

There is some variation in approach to kerbside refuse collection between the two councils, due to geographic differences in the districts. Tasman has a larger rural area compared to that of Nelson (which is predominantly urban in nature) and requires the recycling contractor to provide a rubbish bag collection as part of the kerbside services. Nelson's community is able to enjoy greater economy of

scale and so services are available on a fully commercial basis with no support required from Nelson City Council.

Private waste collection operators provide a variety of collection services to residential users in both the Tasman and Nelson districts, including weekly collection from different sizes of wheeled bins, bags or drums. Additional operators offer skip and other refuse collection services.

Commercial and industrial businesses often contract out their waste disposal to haulage companies which provide bins or skips or use other arrangements. This waste is then transported to resource recovery centres, or sent directly to landfill. Waste from commercial operators is almost exclusively delivered to the resource recovery centres in Tasman, whereas commercial and industrial waste is generally delivered directly to landfill in Nelson.

The councils provide litter bins in parks, reserves and street side locations. They also remove illegally dumped waste from roadsides and streets. Other services are town centre litter collections and street sweeping.

The councils take responsibility for abandoned vehicle recovery and disposal in accordance with their own procedures.

Future Demand

Consideration of current and future demand for waste management and minimisation services is essential to forward planning and service delivery.

The future demand in the Nelson–Tasman region for waste management and minimisation services will be driven by a number of factors including:

- demographic change (e.g. population and/or household changes)
- changes in commercial and industrial activity/economic conditions
- natural hazards
- waste pricing — the cost of landfill disposal and the cost of alternative options
- impacts of waste flows from other areas
- consumption patterns/product quality
- national policy, legislation and regulations
- impact of waste minimisation programmes and services, and future initiatives
- community expectations
- projected diverted materials and commodities markets.

Forecasting Future Demand

Projected future waste volumes

With substantial growth in the region's population, we expect to also see growth in the amount of waste to landfill unless further actions are taken to avoid this happening. In particular, construction activity is likely to cause an increase in waste to landfill. Diversion of this waste through resource recovery activities could increase the longevity of the current landfill and decrease waste per capita.

The existing collection and disposal services are expected to be able to cope with the local changes in population, with new development areas being added to the existing collection routes over time.

Identifying Future Opportunities for Diversion of Waste

The 2012 analysis of waste disposed to landfill followed the Solid Waste Assessment Protocol (SWAP). The SWAP data provides the Councils with useful information on the types of materials it would be most effective to target in order to achieve more diversion of waste.

Paper and cardboard

Approximately 3,500 tonnes of paper and cardboard are currently collected within the Nelson–Tasman region through council controlled services and around 5000 tonnes is processed by the commercial

sector. However, the 2012 SWAP study identifies that paper or cardboard still makes up 16.8% of the material sent to landfill.

This suggests that a further 13,000 tonnes could be targeted for recycling per annum. Work completed by the councils in 2014 indicated that contamination of paper and cardboard will limit the amount able to be recovered, but it is likely that more diversion is still possible.

Plastics

Approximately 600 tonnes of plastics are currently collected within the region through council controlled activities. The 2012 SWAP study identified that plastics made up 13.5% of the material sent to landfill. This suggests that approximately 6,500 tonnes could be targeted for recovery.

Glass

Approximately 3,500 tonnes of glass is currently collected within the region. From this estimate, approximately 7,000 tonnes of glass could be targeted for recovery.

Metals

Approximately 600 tonnes of metal (both ferrous and non-ferrous) is currently collected by the Councils within the region and a further 12,000 tonnes by the commercial sector. We estimate a further 3,000 tonnes could be diverted from landfill.

Electronic waste

The Ministry for the Environment estimates 17-19kg per person of e-waste is generated annually, which suggests around 1,700 to 1,900 tonnes could be generated locally. Some e-waste contains substances that can be toxic to the environment and to human health if disposed of or handled inappropriately. Nelson Environmental Centre provides a user-pays e-waste recycling service, which is used by members of the public, schools and businesses throughout the region and has recycled 13.5 tonnes of e-waste for the year ending June 2017.

Food waste

The 2012 SWAP study estimated 14% of the material currently sent to landfill within the region is food waste. This suggests that some of the approximately 9,000 tonnes of food waste could be recovered or diverted from landfill each year, and this should be further investigated.

Greenwaste

Greenwaste separation for composting is an important contributor to the diversion of greenwaste tonnages from landfill.

How Are We Going To Meet and Manage Demand?

A variety of options are available to the councils to achieve effective and efficient waste minimisation, and these are summarised in Table 2 below, with a preliminary assessment of their suitability to meet demand. It should be noted that the indication of suitability does not necessarily indicate whether the option is preferred or not.

These options are described in more detail in section 5 of the Waste Assessment.

Table 2: Summary of options considered

Waste Hierarchy	Option	Suitability
Measure and Monitor (better data collection)	1. Maintain existing waste data collection within the region.	Suitable
	2. Improve waste data collection using existing systems within the region.	Suitable
	3. Improve waste data collection by implementing new systems within the region.	More work required
	1. Continue existing education programmes.	Suitable

Reduce – Communication and Education	<ol style="list-style-type: none"> 2. Councils lead behaviour change through their own activities. 3. Councils support behaviour change initiatives in the community. 4. Councils support a hierarchy of diverting resources for people, animals, compost and landfill within our community. 5. Councils lead behaviour change through regulation. 	Suitable
		Suitable
		More work required
		More work required
Reuse – Encouraging Community Engagement	<ol style="list-style-type: none"> 1. Councils fund reuse opportunities. 2. Councils promote reuse opportunities but provide limited funding. 	More work required
		Suitable
Recycling	<ol style="list-style-type: none"> 1. Councils continue current levels of collecting and sorting recyclable materials, with upgrades and improvements to accommodate user numbers. 2. Encourage others to provide additional capacity within the region for collecting and sorting recyclable materials. 3. Councils provide additional capacity within the region for collecting and sorting recyclables. 4. Investigate and develop new markets for recyclables, e.g., glass, C&D materials, and plastic bags. 	Suitable
		Suitable
		More work required
		More work required
Recovery	<ol style="list-style-type: none"> 1. Councils continue to provide the existing capacity within the region for the diversion of organic materials, with upgrades and improvements to accommodate growth. 2. Rely on commercial services for organic waste collection and processing. 3. Councils provide additional capacity within the region for a combined greenwaste and/or food waste processing facility and develop markets for the product. 4. Encourage the diversion of organic materials through regulation. 	Suitable
		More work required
		More work required
		More work required
Disposal	<ol style="list-style-type: none"> 1. Councils promote diversion of recoverable materials from landfill through regulatory controls at the disposal point. 2. Improve regulation of alternative disposal options to minimise environmental harm. 3. Increase landfill capacity within the region to meet future demands. 4. Reduce the potential for environmental harm from special waste within the region. 5. Provide additional hazardous waste services and facilities to manage hazardous or semi-hazardous wastes. 	More work required
		More work required
		More work required
		More work required
		More work required

Collection options	1. Maintain existing kerbside collection arrangements.	Suitable
	2. Councils opt out of the business of refuse collection but still provide kerbside recycling and organic waste collections — refuse collection provided by the commercial sector.	More work required
	3. Councils opt out of the business of all kerbside collections — leave this to commercial collectors.	More work required
	4. Councils operate or facilitate all kerbside collection services, refuse, recyclables and organics.	Not suitable

In developing these options the councils have considered:

- key waste streams for diversion
- future demand issues
- protection of public health
- the effectiveness and efficiency of services to achieve these aims.

At this stage the options are broadly strategic in nature and do not include a detailed operational review of service delivery models or provide full details on the feasibility of each option. Some operational considerations are highlighted, where relevant. As outlined in the Purpose and Scope, the options assessment will be used as a starting point for considering practical methods for meeting demand for waste management and minimisation services.

The Councils' Role in Meeting Future Demand

There are a range of approaches available to the councils to achieve waste minimisation objectives.

The most commonly used approaches to change behaviour and achieve waste minimisation objectives are set out within section 6 of the Waste Assessment and include:

- behaviour change programmes using tools such as social marketing and education
- leveraging, empowering and supporting community initiatives
- regulation
- direct action
- pricing incentives
- jointly or individually delivered waste services.

Once the desired outcomes and options have been identified, the implementation process can begin — recognising that successful programmes often involve a combination of approaches. The councils will make decisions on their preferred approaches during the review of the Long Term Planning processes.

At this stage, the councils' general preference is to work with existing operators and service providers to help them increase the efficiency of waste diversion and recycling activities. The councils are interested in helping community organisations and businesses which have already developed viable waste services to expand the scope and effectiveness of those services. Options for doing this include pricing signals, regulations and matching funding.

The region has ample land available for future development of landfills but there are multiple reasons to divert as much waste as practicable, including avoiding landfill costs, reducing greenhouse gas emissions and making better use of finite resources.

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1 INTRODUCTION

All councils are legally required to conduct a waste assessment and have regard to it in the review and preparation of their Waste Management and Minimisation Plans (WMMPs). Because of its importance, the Waste Minimisation Act (WMA) also requires that waste assessments be notified with the WMMP when it is made available for public consultation.

The Councils' current joint Waste Management and Minimisation Plan (JWMMP) was adopted in April 2012 and outlines the Councils' vision, goals, and objectives for achieving waste reduction and for meeting the forecast demand for services. The JWMMP's current vision and goals are as follows:

Vision

Valuing resources and eliminating waste.

Goals

The existing JWMMP sets goals of:

- Goal 1 — avoiding the creation of waste
- Goal 2 — improving the efficiency of resource use
- Goal 3 — reducing the harmful effects of waste.

These are well aligned with the New Zealand Waste Strategy goals.

Under the WMA, Councils are required to review their existing WMMPs at intervals of no less than every six years. This waste assessment has been prepared on behalf of Tasman District Council and Nelson City Council (the Councils) as prescribed in section 51 of the WMA.

1.1 What is the purpose of a waste assessment and how is it conducted?

The purpose of a waste assessment is to gather enough background information regarding levels of waste, existing services and future needs to enable a council (or group of councils) to determine a logical set of priorities and inform its waste management and minimisation activities.

To determine priorities, several steps are undertaken. The first step of a waste assessment is to compile and analyse available information on existing waste management and minimisation infrastructure, as well as data regarding waste and diverted materials produced in the Nelson–Tasman region. This provides an inventory of the Councils' combined circumstances in relation to waste management and minimisation.

Another key step of the waste assessment is to forecast future demand for services. This future demand forecasting step provides a planning framework to address both public health protection issues and the promotion of efficient and effective waste minimisation.

The third step of the waste assessment is to summarise the reasonably practicable options available to the Councils in terms of how they can meet future demand for services as well as how they might achieve their waste management and minimisation objectives.

Public consultation is not carried out on the Waste Assessment. However, the Waste Assessment will be available to the public when the Councils consult on the next JWMMP and make any agreed changes to that plan prior to its formal adoption and implementation.

1.2 Process for development

This Waste Assessment has been developed during a period in which the Councils are working together to consider possible improvements to how waste is managed and governed in the whole Nelson–Tasman region. It draws heavily on other documents, including the Councils' existing Joint Waste Management and Minimisation Plan, Activity (or Asset) Management Plans and the Long-Term Plans (LTPs).

1.3 Key terms and acronyms

Cleanfill	A cleanfill is any landfill that accepts only cleanfill material — which is described as material that, when buried, will have no adverse effect on people or the environment.
C&D Waste	Construction and demolition waste
Council(s)	Tasman District Council and Nelson City Council
Diverted material	Anything that is no longer required for its original purpose and would be disposed of or discarded if it was not diverted as a result of commercial or other waste minimisation activities.
Domestic waste	Waste from households
ETAA	Emissions Trading Amendment Act
HSNO	Hazardous Substances and New Organisms Act 1996
HSWA	Health and Safety at Work Act 2015
JWMMP	Joint waste management and minimisation plan, as defined in section 43 of the Waste Minimisation Act 2008
Landfill	A disposal facility as defined in section 7 of the Waste Minimisation Act 2008, excluding incineration.
LGA	Local Government Act 2002
LTP	Long Term Plan
Managed fill	A disposal site which requires a resource consent to accept well defined types of non-municipal waste, eg. low-level contaminated soils
MfE	Ministry for the Environment
MRB	Mobile recycling bin
MRF	Materials recovery facility
NES	National Environmental Standard
NZWS	New Zealand Waste Strategy
OECD	Organization for Economic Cooperation and Development
RMA	Resource Management Act 1991
RRC	Resource recovery centre
Transfer station	Refuse transfer station
SMART	Specific, measurable, agreed, realistic, time-based
SWAP	Solid Waste Analysis Protocol
Council	Territorial authority (a city or district council)
Nelson–Tasman region	For the purposes of this waste assessment, this means the area covered by the combined Tasman District and Nelson City Council boundaries.
Waste	Waste means: <ul style="list-style-type: none"> - anything disposed of or discarded; and - includes a type of waste that is defined by its composition or source (for example, organic waste, electronic waste, or construction and demolition waste); and

	- to avoid doubt, includes any component or element of diverted material, if the component or element is disposed of or discarded.
Waste Assessment	As defined by section 51 of the Waste Minimisation Act 2008. A waste assessment must be completed prior to a JWMMMP being reviewed.
WMA	Waste Minimisation Act 2008

1.4 Relevant strategies and legislation

The New Zealand Waste Strategy (NZWS) sets the framework, strategic vision, objectives and targets for achieving waste minimisation.

Waste management and minimisation planning is also guided by the following:

- Waste Minimisation Act 2008 (WMA)
- Local Government Act 2002 (LGA) and the 2014 Amendment Act, particularly with respect to consultation, bylaws and service reviews;
- Resource Management Act 1991 (RMA), particularly in relation to land disposal (landfills and cleanfills);
- Emissions Trading Amendment Act 2008 (ETAA) which has implications for some landfills;
- Hazardous Substances and New Organisms Act 1996 (HSNO) where hazardous wastes are present in the solid waste stream;
- Health Act 1956 (Health Act), as solid waste management must consider the potential impacts on public health;
- Litter Act 1979 (Litter Act) which sets out provisions for prevention and enforcement of litter offences; and
- Health and Safety at Work Act 2015 (HSWA).

See Appendices A and B for a more detailed summary of how the legislation listed above affects waste management and minimisation, and for a description of the key provisions of the WMA.

1.5 Documentation, accuracy and limitations

This document was prepared between December 2016 and May 2017 using information gathered from a variety of sources, including data managed by the Councils.

While every effort has been made to achieve a reasonable degree of accuracy in this assessment, it should be noted that there are limitations due to the level of data available, particularly about waste and diverted materials handled by commercial operators.

Where readily available, actual data has been collated and recorded, with its source noted. In some cases where estimates have been used, the basis for estimates and other data limitations has been indicated.

Where relevant, details have been noted regarding any limiting factors that have materially impacted on the completeness or accuracy of the data, forecasts or options in this waste assessment.

As per the WMA requirements, the information obtained in this Waste Assessment is considered appropriate, having regard to:

- the significance of the information;
- the costs of, and difficulty in, obtaining the information;
- the extent of the territorial authority's resources;
- the possibility that the territorial authority may be directed under the Health Act 1956 to provide the services outlined in that Act;
- the impact on the completeness of the assessment, particularly the forecast of future demands and options assessed.

2 WHERE ARE WE NOW?

This chapter summarises the available information about the materials that are recycled, recovered, treated or disposed of to landfill in the Nelson–Tasman area. The information includes data about quantities, trends, composition, source and destination of waste and diverted materials. This information also provides the basis for projecting future demand for waste management and minimisation services, as outlined in chapter 4 of this document.

For the purposes of this waste assessment, waste is defined as ‘waste to landfill’ and the term ‘diverted materials’ refers to materials collected for recycling, composting or other recovered or treated materials that are diverted from landfill. These definitions align with the Waste Minimisation Act.

2.1 How much waste is sent to landfill?

There are two operational landfills in the Nelson–Tasman region: the York Valley Landfill in Bishopdale, Nelson and the Eves Valley Landfill in Waimea West, Tasman.

Each year around 62,000 tonnes of waste, including around 2,000 tonnes from Buller District, is sent to landfill.

The waste comes from a variety of sources — residential properties, commercial and industrial activities, construction and demolition, and landscaping activities. This waste is termed “municipal waste” and results from the day-to-day activities of residents and businesses in the region. Municipal waste trends change over time and reflect the activity of the community.

The following table summarises annual totals of these wastes for each landfill in the region. Waste to landfill is recorded for both the Eves Valley and York Valley landfills. Data has been taken from the Councils’ annual records based on tonnages to landfill excluding cover material. The data collected is based on weighbridge records from each landfill.

Table 2-1: Quantity of waste disposed of to landfill in the Nelson-Tasman Region

	Total waste to landfill — year ending June 2016 (tonnes)				
	York Valley Landfill	Eves Valley Landfill	Total Nelson–Tasman	Buller District waste	Total Nelson–Tasman + Buller
Municipal waste	28,856	28,025	56,881	2,023	58,904
Special waste	2,402	1,072	3,474	0	3,474
Total waste	31,258	29,097	60,355	2,023	62,378

These waste totals for Eves Valley and York Valley do not necessarily represent the waste generated in each of the Tasman and Nelson districts, as some waste moves across the Nelson–Tasman boundary.

Some waste from Nelson–Tasman may also be disposed of at other landfills outside the region, but these quantities are likely to be small. This inter-region waste movement is likely to occur near the boundaries between districts (such as Rai Valley transfer station in Marlborough and Murchison Resource recovery centre in Tasman).

The figure below shows changes in waste volume over time in the Nelson–Tasman region and includes waste from Buller District, which has been landfilled in this region since 2008/09.

Municipal waste (all waste excluding special waste) has remained generally flat over this time. Municipal wastes averaged just over 60,000 tonnes per annum for the period 2005-2009 and dropped to just over 55,000 tonnes in 2009/10. Since then municipal wastes have risen to just under 59,000 tonnes in 2015/16.

Special waste over this period has fluctuated between 3,250 and 9,250 tonnes per annum.

Total waste to landfill peaked in 2008/09 at 68,700 tonnes and since then has varied between 61,400 and 66,600 tonnes per annum.

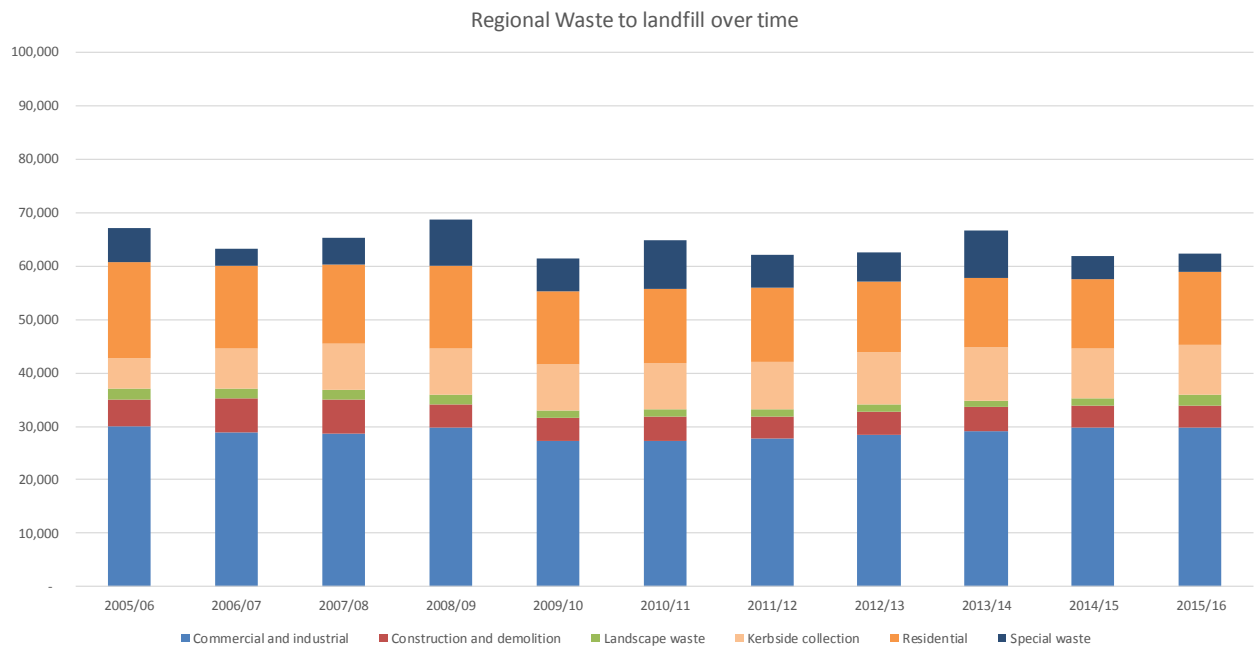


Figure 2-1: Annual Tonnes of waste sent to landfill in the Nelson–Tasman region

2.2 Where does the waste come from?

Waste to landfill in the Nelson–Tasman region is transported direct to landfill by commercial customers and via transfer stations and resource recovery centres. There is no direct access to landfill for residential customers.

In the Nelson City area, around 82% of waste is delivered directly to the York Valley Landfill by commercial customers, with the remaining 18% coming via the Pascoe Street transfer station.

In the Tasman District 95% of all waste is delivered via resource recovery centres (from Richmond, Motueka, Golden Bay, Murchison and Buller District) and just 5% of waste is delivered direct to landfill.

Waste comes from a variety of sources — residential, commercial, industrial, construction, demolition and landscaping activities. The following figure shows the estimated split for the 2015/16 year. (Imported cover material is not included in this estimate.)

Until recently, the Councils have not collected detailed information on the source activity and location of waste to landfill and so the source estimate represented above relies on categorisation rules, which vary between the two Councils.

The Councils have improved source data collection and we expect the reliability of source data to improve in the future.

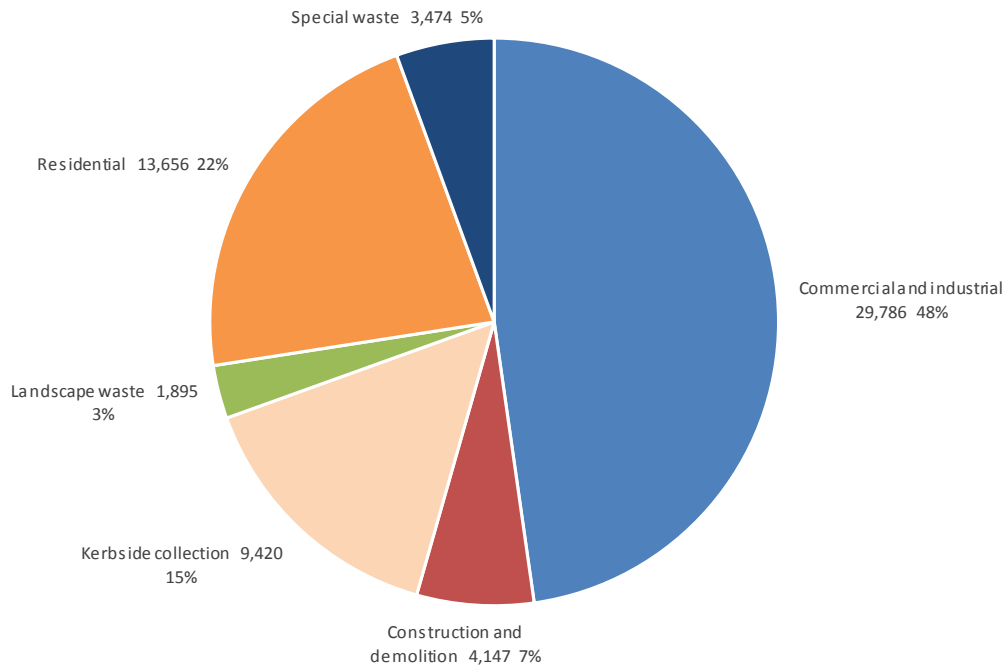


Figure 2-2: Source of waste sent to landfill in the Nelson-Tasman region (2015/16)

2.3 What is the waste made up of?

The graph below illustrates the resource composition of material that is disposed to landfill in the Nelson–Tasman region.

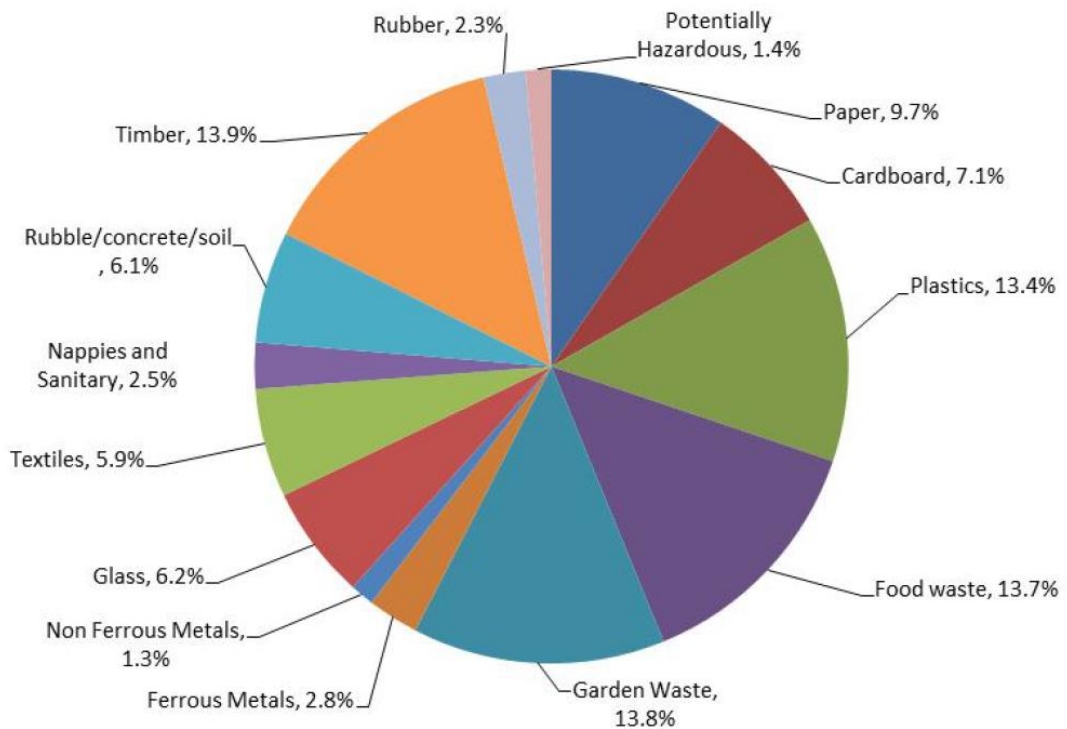


Figure 2-3: Composition of material disposed to landfill in the Nelson–Tasman region

The composition data reflects information from a waste composition study, completed in 2012, which was carried out in accordance with the MfE Solid Waste Analysis Protocol (SWAP). The SWAP surveys were carried out at the following areas:

- York Valley Landfill in Nelson City
- Richmond resource recovery centre in Tasman District
- Mariri resource recovery centre in Tasman District.

More detailed composition data, and estimates for the combined composition for the two districts, is provided in Appendix E.

This composition data may not be representative of waste in the region at present, due to changes to the waste situation since 2012.

Because the survey did not include sampling at the Eves Valley Landfill it excludes special waste from the Tasman District, and may slightly under-estimate potentially hazardous wastes for the region.

The following graph shows a comparison of the 2012 Nelson–Tasman composition analysis with national data collected by the Ministry for the Environment (MfE) in 2007–2008. This data was collected from four “National Indicator Sites” in order to establish baseline waste composition data for New Zealand and detect any trends over time. The National Indicator Sites include provincial and major urban sites.

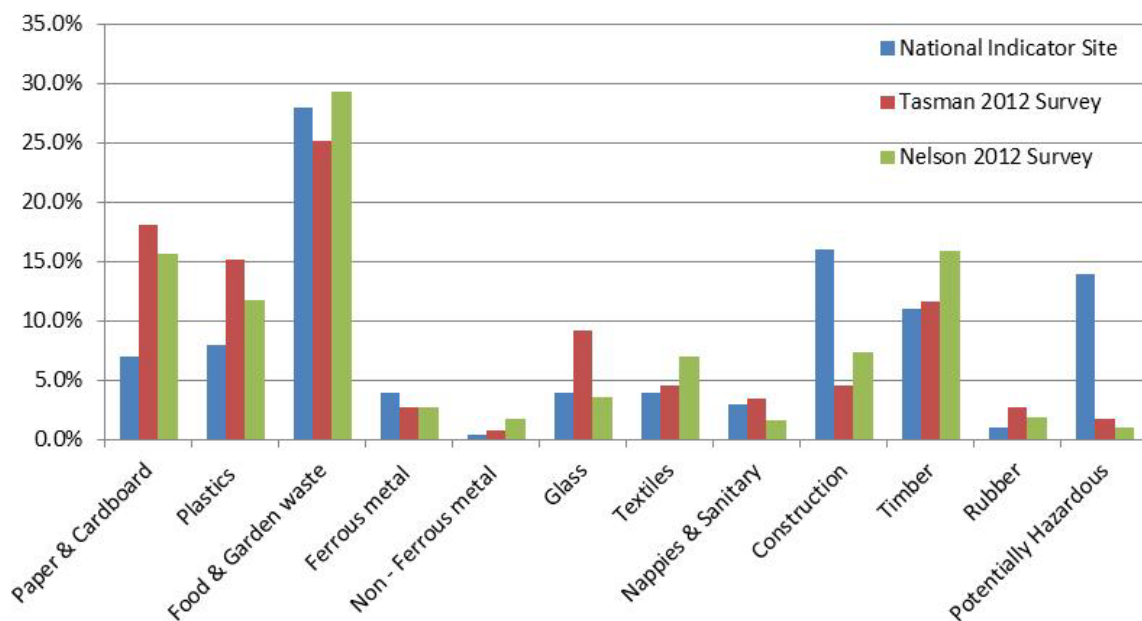


Figure 2-4: Nelson and Tasman Waste Composition Compared with MfE National Indicator Sites

The results appear to show a higher percentage of recyclable materials such as paper, cardboard and plastics in the Nelson–Tasman region than was recorded for the indicator sites (although the MfE notes that the indicator sites possibly under-estimate paper and plastic waste¹).

2.4 What is the ‘per capita’ waste in Nelson–Tasman?

“Waste per capita” is a commonly used indicator for waste generation. It represents the total amount of waste produced in an area divided by the total number of people living in that area.

It is an indicator of average waste generation production on a per person basis, but is not directly equivalent to the amount of waste an individual throws away each year. This is because waste is generated from commercial activities in the region as well as from the residential activities of each person.

The per capita estimate is based on the total tonnage recorded at both landfills in Nelson–Tasman and the population estimates from Statistics New Zealand for both council populations.

Waste to landfill per head of population

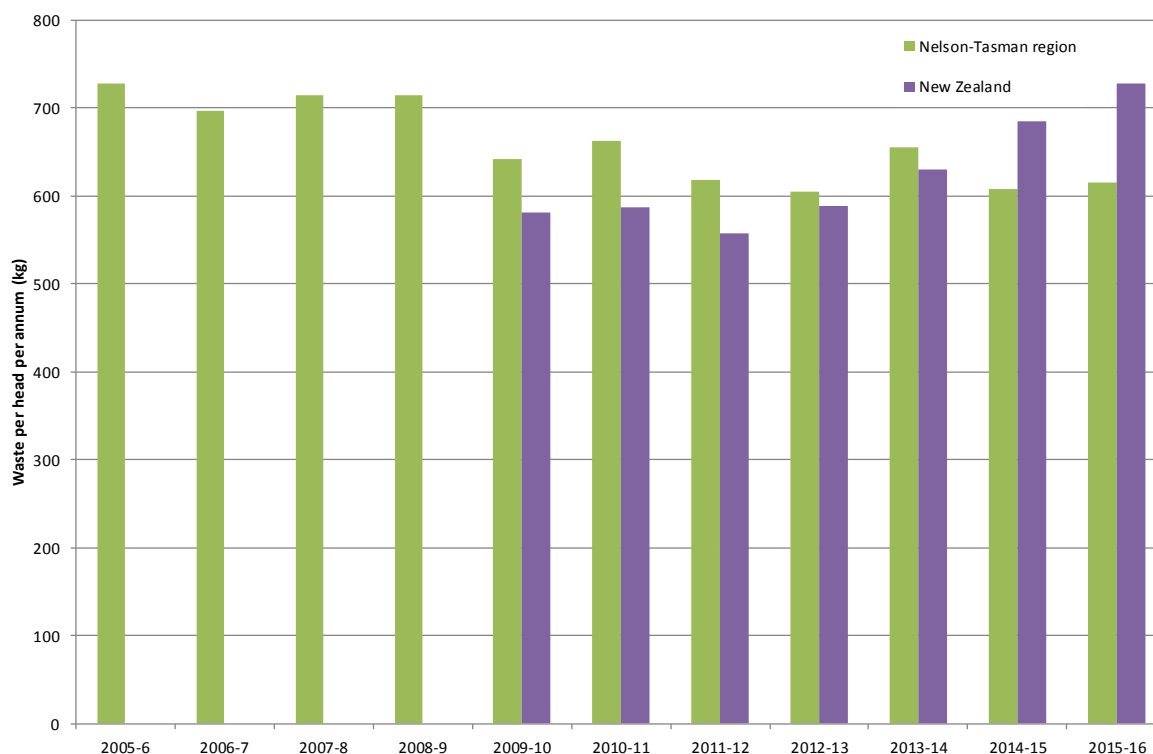


Figure 2-5: Waste to landfill per head of population

Typically in sustainability reporting, targets are set against a baseline or a ‘base year’. For the purposes of this Waste Assessment, the 2009/10 year has been used as a base. This was the first year in which the national waste disposal levy was collected, and for which reliable national landfill data is available.

On this basis, the table presents the baseline and performance for Nelson–Tasman:

	Population estimate	Total Municipal waste (tonnes)	Municipal waste per capita (kg)	Total waste to landfill (tonnes)	Total waste per capita (kg)
Year ending June 2010	92,700			59,556	642
Year ending June 2016	100,900	56,881	564	60,355	598

2.5 How much material is diverted?

Diverted materials is the term that applies to discarded materials that are recovered from the waste stream through recycling, composting or other resource recovery activities. This section contains information about known sources of diverted materials generated and recycled or recovered in Nelson–Tasman, such as information about kerbside recycling and greenwaste separation.

Data from the Councils' records is used for this assessment, and provides a good record of volumes, particularly from residential sources. Information about privately managed diverted materials is not generally available. There are no regulatory tools, either at a local or national level that provide aggregated information on diverted materials at a district level.

This information provides an indication of the size of the council–controlled diverted materials stream in Nelson–Tasman. It demonstrates the direct impact the Councils make through their services.

2.5.1 Reused

Reused material is material that would otherwise be disposed of that is used again in its original form.

Some reuse of materials will happen within businesses or organisations and is not visible from outside that organisation (for example reuse of parts, components or packaging). Some reuse occurs on a free or charitable basis (such as donations of used equipment, clothing or household goods). Other reuse occurs through sale or trading of second hand goods.

Traditionally the reuse sector has been measured through the activity of “reuse shops”, where materials which are no longer needed are donated as an alternative to disposal to landfill. More recently we have seen an increase in use of social media and online trading in this area.

Most of the activity occurs outside of council–provided services and the volume of activity is not normally measured and collated.

Because of the lack of information in this area we have not estimated the quantity of material which is reused within the region.

2.5.2 Recycling

The following section describes council-recorded tonnages for recyclables collected at kerbside and accepted at Council facilities in Nelson–Tasman. These recyclables consist of materials such as glass, aluminium, plastic and tin/steel, paper and cardboard — primarily from household domestic sources. Approximately 6,500 tonnes of recyclable materials (up from 5,656 tonnes reported in the previous Waste Assessment in March 2010) was diverted from landfill through kerbside collection services provided by the Councils during 2015/16.

In 2015 Tasman District Council constructed a new materials recovery facility building at the Richmond resource recovery centre. The sorting facility inside is owned by Smart Environmental (Tasman's contractor), and will pass to Council ownership in 2023.

In November 2015 Nelson City Council's contractor, Nelmac, reached agreement with Smart Environmental for Nelson City material to be processed in this facility. A number of commercial waste companies and other businesses also contract directly with Smart Environmental to process recyclable material through the materials recovery facility.

Kerbside recycling collections remain the largest contributor of recycled material, followed by drop-off at Council sites, with small amounts of recyclables also coming from school programmes and recycling bins in urban areas. Resource recovery centres also collect batteries, steel and tyres, which is additional to the kerbside recycling.

The Councils have recently introduced a change in the collection of paper, cardboard, plastic and cans by providing wheelie bins (normally 240 litres). The existing blue 60 litre crates have been retained for collection of glass. These collections are now provided on a fortnightly basis.

The introduction of these bins has increased the amount of material collected. In Tasman District the change occurred in July 2015 and total recycling volumes increased by 28% in the first year, driven by increases in non-glass recycling (predominantly paper and cardboard). In Nelson City the change commenced in October 2016.

The following figure shows kerbside recycling tonnages for the Councils since 2006-07.

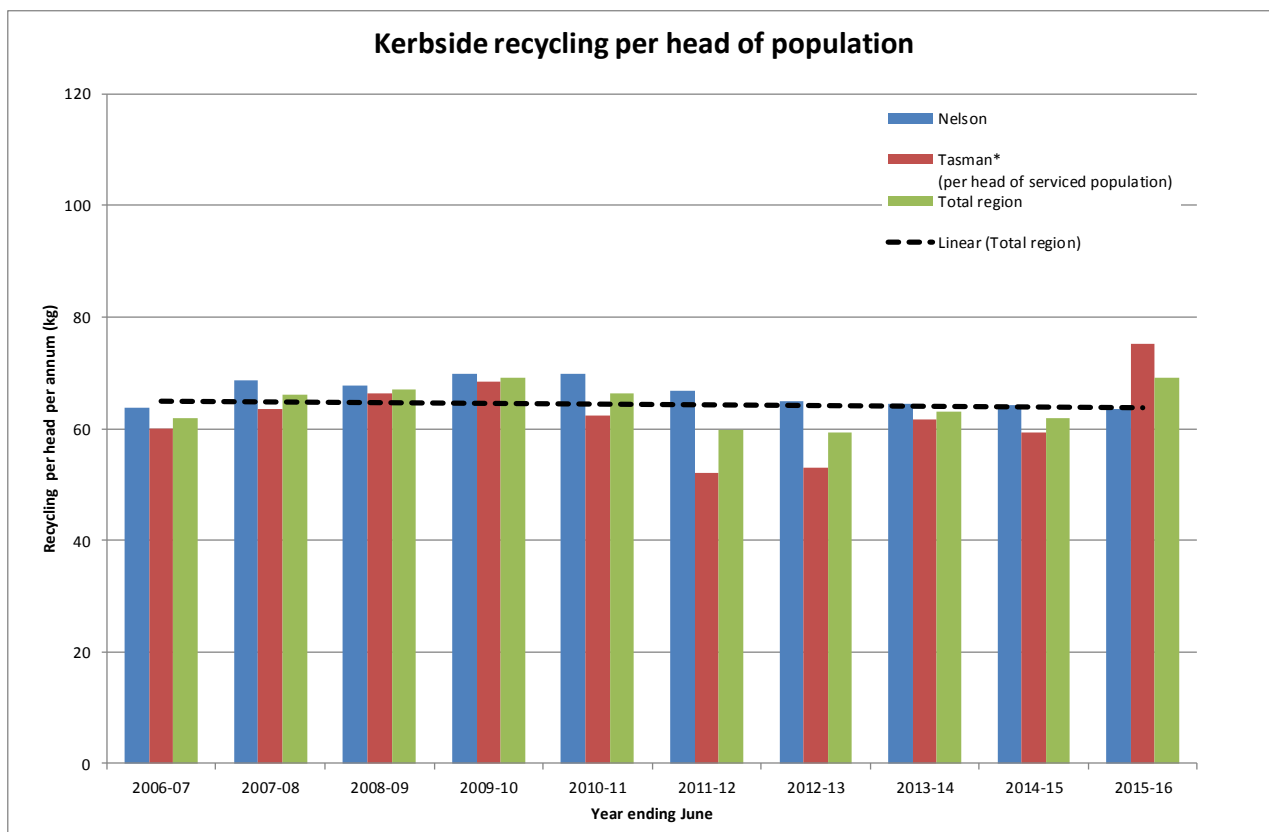


Figure 2-6: Kerbside recycling per head of population

Several other recycling businesses operate in the Nelson Tasman region but the Councils have limited information on material processed through these recyclers. We expect that the largest two processors will be Sims Pacific Metals and Oji Fibre Solutions (formerly Fullcircle).

Sims Pacific Metals operates a recycling centre in Tahunanui, Nelson, where scrap metal from the region is consolidated and dispatched for recycling. Sims Pacific Metals supplies Pacific Steel with scrap metal which is converted to rebar (reinforcing steel) and wire for sale on the domestic and overseas markets. They also supply smaller foundries within New Zealand, and the rest is exported overseas.² We understand that around 12,000 additional tonnes are processed by Sims Pacific Metals in the region, but this includes material sourced from Marlborough and the West Coast.

The largest known non-metal recycling processor in the region is Oji Fibre Solutions which operates a baling facility in Tahunanui, Nelson. Oji primarily bales commercial cardboard and paper, but also processes soft and hard plastics. Around 5,000 tonnes of paper and cardboard are processed by Oji in the region, around 100 tonnes of soft plastics and smaller quantities of hard plastics.

2.5.3 Recovery

Both councils support home composting and separation of greenwaste as a means to extend the useful lives of landfills. The Councils provide opportunities for disposal of separated greenwaste at transfer stations where the service is not provided by commercial operators, and rely on the commercial sector to process greenwaste. There are at least four privately owned composting facilities, two commercially operated greenwaste drop off areas and a number of contractors who provide kerbside collection services in the Richmond/Nelson area.

The Richmond resource recovery centre does not offer a greenwaste disposal service as a neighbouring commercial operation provides this service more efficiently and at a lower cost.

² <http://www.simpacificmetals.co.nz/About.html> accessed 27 March 2017.

Separated greenwaste processed at transfer stations and diverted from landfill is shown in the figure below.

Table 2-2: Quantity of greenwaste diverted from landfill in the Nelson–Tasman Region

	Total Tonnage	Population estimate (Statistics NZ)	Per capita (kg)
Baseline: Year ending June 2010	4,080	92,800	44
Year ending June 2016	5,310	100,900	52.7

2.5.4 Other diverted material

The Councils' combined efforts result in approximately 11,790 tonnes of diverted material each year, mainly from domestic sources. A similar portion of recoverable material is also likely to be diverted from commercial sources (which make up 55% of waste to landfill). However, as this diversion is managed by the private sector, the Councils do not have data for this activity.

2.6 Markets for resources

The recovered materials market (sometimes referred to as the 'diverted' materials market) is much more fragmented than the waste market. Unlike the waste market, in which the important divisions are 'horizontal' (collection, bulking and disposal), the recycling industry is divided into distinct markets according to material types — paper/cardboard, glass, metal and plastics.

The major local processors of the different material types tend to have a dominant position in each marketplace. Unlike the waste market, the recovered materials market is integrated with an international market.

3 EXISTING WASTE SERVICES AND FACILITIES

3.1 Overview

The waste assessment must contain information indicating existing (and planned) waste and waste minimisation services and facilities. This section includes a summary of information regarding waste collection and disposal services provided by the Councils and other organisations (eg. the commercial waste sector and community groups).

The inventory of services and facilities has considered the waste hierarchy categories (as defined by the WMA) of:

- **Reduce**
Reduction refers to a lessening of waste generation, including by using products more efficiently or by redesigning products; and in relation to a product, through lessening waste generation in relation to that product.
- **Reuse**
Reuse is the further use of waste or diverted material in its existing form for the original or similar purpose of the materials or products that constitute the waste.
- **Recycling**
Recycling is the reprocessing of waste or diverted material to produce new materials.
- **Recovery**
Recovery is the extraction of materials or energy from waste or diverted material for further use or processing; and this includes making waste or diverted material into compost.
- **Treatment**
Treatment is subjecting waste to any physical, biological, or chemical process to change its volume or character so that it may be disposed of with no or reduced adverse effect on the environment (excluding dilution).
- **Disposal**
Disposal is the final (or more than short term) deposit of waste into or onto land set apart for that purpose, or the incineration of waste.

In many cases the services or facilities described involve multiple processes across the waste hierarchy simultaneously.

The waste market infrastructure (landfills, transfer stations and resource recovery centres) in the Nelson–Tasman region is predominantly owned by the Councils.

The inventory of services available to the Nelson–Tasman region is a combination of both council-owned, operated or managed services and facilities as well as those owned or operated by other organisations e.g. commercial entities or community groups.

This inventory is not exhaustive, particularly with respect to the commercial sector/private waste industry, as these services are subject to change and information is not readily accessible.

Understanding the existing (and planned) services provides the basis for the Councils to determine the degree to which the needs of the region are presently being met and what might need to be provided to meet future demands.

3.2 Collection services

Consultation with the community has indicated a demand for ongoing diversion and recycling facilities/collection services, and there are opportunities for the Councils to work collaboratively with private waste companies to provide commercial waste and recyclables collections.

3.2.1 Kerbside recycling collections

In Nelson and Tasman a fortnightly kerbside recycling collection service is offered to residential properties by the Councils using a wheelie bin and a crate (for glass containers). In addition the Councils offer a paper and cardboard recycling collection service to schools. In Tasman this service is also offered to commercial properties that fall within the rating area (Wheelie bin and crate for glass).

The Nelson recycling service is mainly self-funded from refuse disposal charges (with a small rates component used to fund the roll out of wheelie bins for residential recycling), while the Tasman service is funded by a targeted rate.

Materials collected through the kerbside collections include glass, plastics, paper, cardboard, and both aluminium and steel cans. Recycling collected by the Councils is around 10% of the total solid waste disposed of at landfill.

Processing of Nelson and Tasman recycling material is centralised at the materials recovery facility at the Richmond resource recovery centre. Glass is stored in colour sorted bulk bunkers at Richmond, Mariri, Takaka resource recovery centres and the Pascoe Street transfer station, and is dispatched to O/I in Auckland for recycling into glass bottles. The majority of glass is consolidated at the Richmond resource recovery centre prior to dispatch.

Some recyclables collections from commercial and industrial properties are handled by private contractors. The Councils' contractors are also encouraged to offer recyclables collection services to businesses on a commercial basis.

3.2.2 Other recycling collection services

Agpac and Agrecovery run schemes to facilitate the storage and collection of agricultural/farm plastics directly from farm premises. Waste Management, Envirowaste and other organisations offer soft plastic recycling services.

3.2.3 Greenwaste collections

Commercial waste companies provide collection of greenwaste from residential households in the Nelson–Richmond urban area. This market has grown substantially in the past three years.

3.2.4 Kerbside refuse collections

Tasman District Council provides a bag collection service, available to approximately 18,000 urban and rural properties. This service is provided on a user-pays basis by the Council's kerbside contractor who is contracted to provide the service but competes with private collection companies, who provide bag and wheelie bin services.

Nelson City Council relies on commercial waste operators to provide domestic refuse collection services to the public. Two types of service are available, on a user-pay basis:

- plastic rubbish bags that are available for purchase at most supermarkets, from the Council and waste operators;
- bins that can be rented or purchased from waste operators.

The two Councils' funding policies for the provision of refuse collection differ. Collections in Nelson are fully paid for through user charges while Tasman's are supported through a targeted rate and part paid through user charges.

This variation in approach is due to geographic differences in the districts. Tasman has a larger rural area compared to that of Nelson (which is predominantly urban in nature) and Tasman District Council has decided to ensure that services are available to most residents. Nelson's community is able to enjoy greater economy of scale and so services are available on a fully commercial basis with no support required from the Council.

Private waste collection operators provide a variety of collection services to residential users in both Tasman and Nelson districts, including weekly collection from different sizes of wheeled bins or drums. Additional operators offer skip and other refuse collection services.

Commercial and industrial businesses often contract out their waste disposal to haulage companies who provide bins, skips or other arrangements. This waste is then transported to resource recovery centres, or directly to landfill. Waste from commercial operators is almost exclusively delivered to the resource recovery centres in Tasman, whereas commercial and industrial waste is generally delivered directly to landfill in Nelson.

The following table lists the known operators providing services related to waste/refuse collection in the Tasman and Nelson area.

Table 3-1: Private waste operators in the Nelson–Tasman region

Name	Where they operate
Smart Environmental	Tasman District, excluding Murchison and Motueka Valley
Nelmac	Nelson City, Richmond
Waste Management	Nelson City, Richmond, Brightwater, Wakefield, Mapua, Motueka
Envirowaste	Nelson City, Richmond, Brightwater, Wakefield, Mapua,
Can Plan	Nelson City, Richmond, Brightwater, Wakefield, Mapua, Motueka
Motueka Bin Hire	Motueka, Motueka Valley, Riwaka, Kaiteriteri
Bingo Skip Hire	Motueka, Tapawera, Motueka Valley, Mapua, to top of Takaka Hill
Scotts Bin Hire	Motueka, Tapawera, Motueka Valley, Mapua, Moutere Valley
Golden Bay Rubbish Collection	Golden Bay (Takaka Hill to Pakawau)
Golden Bay Skip Hire	Golden Bay (Takaka Hill to Pakawau)
Town and Around Rubbish	Murchison and surrounding areas

3.2.5 Other refuse collections

The Councils provide litter bins in parks, reserves and street side locations. They also remove illegally dumped waste from roadsides and streets. Other services are town centre litter collections, street sweeping and cleaning of public toilets.

The Councils take responsibility for abandoned vehicle recovery and disposal in accordance with their own procedures. These procedures address recovery of costs (where possible) as well as removal notices and owner claim provisions. Section 356 of the LGA 1974 sets out the procedure for how this process is to be conducted in terms of notification requirements and recovery of vehicles.

3.3 Reduction services

3.3.1 Waste minimisation education/behaviour change programmes

There are several waste minimisation/behaviour change programmes and initiatives currently in place in the Nelson–Tasman area. These initiatives, combined with collection and disposal services offered by the Councils, aim to reduce waste to landfill in the region. These programmes generally promote all levels of appropriate waste management behaviour such as reuse, recycling, recovery and treatment.

There is no bylaw or other legal requirement to do so, but the Councils encourage waste separation for recycling at all major events, particularly Council-sponsored events. The Councils also work together on campaigns and on the development and management of a number of environmental education initiatives.

The Councils run a range of behaviour change programmes for households, businesses and schools in the region which are modelled on social marketing principles. To date, most of these programmes have been delivered under contract.

In order to achieve further reduction in waste disposal to landfill the Councils continue to provide education and promote behaviour change.

The following programmes are currently provided in Nelson and Tasman.

- Engagement of school students in waste minimisation (across early childhood centres, primary and secondary schools) to support improved use of resources and development of a culture where people choose not to create waste. In Nelson this programme is currently transitioning from Waste Education in Schools delivered by Nelson Environment Centre through to the Enviroschools programme. In Tasman this work is already provided through Enviroschools.
- Community-wide activities to encourage better use of resources, such as Second Hand Sunday and Love Food Hate Waste activities.

-
- Collaboration with community-wide litter reduction programmes such as The Big Beach Clean, and providing support for Keep New Zealand Beautiful week.
 - Support for minimising waste at public and Council events.
 - In-house recycling support to reduce waste at several Council facilities.

The Councils have also delivered a waste minimisation engagement programme through the Nelson Environment Centre, focusing on building waste, food waste reduction and providing information and reactive support to businesses and community groups. This work concluded in early 2017.

3.4 Reuse services

Re-use shops are operated adjacent to the Mariri resource recovery centre (privately) and at the Takaka resource recovery centre (by the operations contractor). Informal reuse activities also occur at the Collingwood and Murchison sites. In Nelson, two re-use shops are situated adjacent to the Pascoe Street transfer station, one operated by contractor under contract from Nelson City Council and the other operated by the Nelson Environmental Centre. The tonnage of material diverted through these sites is currently unknown.

Traditionally the reuse sector has been measured through the activity of “reuse shops” discussed above, where materials which are no longer needed are donated as an alternative to disposal to landfill. In more recent years the use of social media and online trading has seen much of this material move to peer to peer trading or donation.

Existing options for every day reusable items include Recycling Centre shops operated at or near resource recovery centres in both districts. Secondhand dealers, charity op-shops and collection bins run by charities are also available, along with local markets which allow for the sale of secondhand goods. This includes outlets for appliances, musical instruments, furniture, garden tools, house parts and building supplies.

Charities run collection bins that accept clothing, sheets, towels, books and toys. Information on reuse options are available on the Councils’ websites and on the Nelson Environment Centre website. Households in Nelson can advertise reuse items through the Freecycle group.

In addition to the above, there is community interest in finding solutions, which has led to initiatives ranging from ‘fix up cafes’ through to community reusable bag schemes. Social media plays a large part in sharing ideas and momentum, and acting as a community bulletin board for activities such as food recovery through community groups.

The Sunday Market in Montgomery Square, Nelson, includes the sale of secondhand clothing, music, books and appliances. Garage sales are advertised in local papers and with roadside signs. The Second Hand Sunday initiative facilitated by the Councils allows residents to select and take ownership of unwanted inorganic items placed out for collection in a controlled fashion.

The NEC initiated a “food rescue” (Kai Rescue) service from commercial businesses in 2017. The Kai Rescue project has been diverting over a tonne of food per week since it was established.

3.5 Recycling Services and Facilities

3.5.1 Resource Recovery Centres (Tasman District)

There are five resource recovery centres (resource recovery centres) and one materials recovery facility operating in the Tasman District:

- Richmond resource recovery centre, 16 Fittal Street, Richmond
- Mariri resource recovery centre, Robinson Road, Mariri (near Motueka)
- Takaka resource recovery centres, Scott’s Road, Takaka
- Collingwood resource recovery centre, Bainham-Collingwood Road, Collingwood; and
- Murchison resource recovery centre, Matakita West Bank Road, Murchison.

All five of these facilities are owned by the Council, with mobile plant owned by contractors.

These facilities act as collection points where diverted materials are separated out and the remaining material is taken to landfill. Some provision has been made at these facilities to maximise the recovery of commercial construction and demolition materials.

Mixed refuse is transported from the resource recovery centres to landfill, most recyclables are transported to the materials recovery facility at the Richmond resource recovery centre (with the remainder dispatched directly) and the greenwaste from Takaka and Mariri is transported to a processing facility in Waimea West (operated by Azwood Ltd).

Most resource recovery centres and transfer stations offer drop offs for non-commercial used engine oil and gas cylinders, and paint recycling.

In both Nelson and Tasman, the option of dropping off recyclables is available at the transfer stations and the resource recovery centres. The transport of recyclables to the Richmond materials recovery facility (or other recycling operator) is arranged by the transfer station and resource recovery centre operators.

3.5.2 Refuse Transfer Station (Nelson City)

Nelson City owns a transfer station at Vivian Place (off Pascoe Street) in Tahunanui. It houses a recycling/reuse centre and a greenwaste facility, and accepts car, trailer and small truckloads of waste and domestic recycling. The operation of a reuse shop is contracted out by Council.

The greenwaste materials received at the drop off area are transferred to the Council's contractor for processing. There is land set aside to allow the transfer station to be expanded to cope with increased waste volume, including recyclables and greenwaste if required.

There are two hoppers at the transfer station where the public drop off waste. A compactor then compresses this waste for transportation to the landfill or composting service provider.

3.5.3 Materials Recovery Facility

Tasman District Council owns a 1,000 m² building within the Richmond resource recovery centre which houses a materials recovery facility owned by Smart Environmental. This facility processes all non-glass kerbside recycling collected in the Nelson–Tasman region and sorts it into different types (eg. plastics, cardboard, paper, metal) using a mixture of manual and automated methods. When the materials have been sorted they are sent to reprocessors and manufacturers where they are used to create new products.

The materials recovery facility is the main sorting facility in the region and will pass to Tasman District Council ownership in 2023, at the conclusion of Smart Environmental's contract with Tasman District.

3.5.4 Public drop off facilities

There are also several public place recycling bins in the Nelson–Tasman region, in high traffic or tourist-oriented areas. These bins are typically placed in high foot traffic areas for the purpose of promoting recycling. They accept similar recyclables to those collected through the domestic kerbside recycling collection service. Materials from these bins are checked for contamination and recycled where possible.

There are also a number of clothing recycling drop off points run by private organisations.

3.5.5 Construction & demolition facilities

While most of the recovered material market is structured around individual commodities, the construction and demolition (C&D) recovery market is based around collecting and processing all wastes from a single industry. The C&D waste processing industry is relatively new, and has entered the marketplace as a direct response to rises in landfill charges. A C&D processing site is able to divert about 80% (by weight) of all incoming waste by separating cleanfill-type materials for cleanfill disposal from recoverable materials, such as concrete, for processing.

In the Nelson–Tasman region, C&D facilities are often established on a project specific basis, where the quantities justify recovery. A number of commercial operators (including CJ Industries in Motueka) sort material on their premises before disposing of the residual to their cleanfill facility.

3.6 Recovery service and facilities

3.6.1 Organic waste facilities and services

The WMA defines recovery generally as the extraction of materials or energy from waste or diverted material for further use or processing and this includes making waste or 'diverted material' such as greenwaste or putrescible into compost.

The Councils encourage the separation of greenwaste from general rubbish through subsidised charges at greenwaste reception facilities. The cost of landfilling greenwaste provides a further incentive to compost greenwaste.

Nelson City Council receives separated greenwaste at the Pascoe Street transfer station and contracts with commercial composting operators for the processing of the greenwaste in Cargill Place, Richmond. This composting operator also provides services directly to domestic and commercial customers in the Richmond–Hope area.

Tasman District Council contracts with Azwood Ltd for the processing of greenwaste from the Mariri, Takaka and Collingwood resource recovery centres. Azwood also accepts greenwaste through their subsidiary, Wholesale Landscapes, in Stoke. At the Murchison resource recovery centre greenwaste is stockpiled and used locally as a mulch.

Stabilised sludge (biosolids) from the regional wastewater treatment facility at the Bell Island Sewerage Treatment Plant is beneficially applied to forests on Bell and Rabbit Islands. The treatment plant consists of an aeration basin, clarifier, Dissolved Air Flotation System (DAF) and an autothermal thermophilic aerobic digestion (ATAD) plant that treats captured solids to produce biosolids. A system of pumps and pipework transfers biosolids to Rabbit Island.

In recent years disposal of biosolids from other Tasman wastewater treatment plants has been to landfill (Tapawera, Takaka, Upper Takaka and Collingwood) and on-site (Murchison).

3.7 Treatment services and facilities

3.7.1 Hazardous waste facilities and services

The ‘hazardous waste market’ comprises both liquid and solid wastes that, in general, require further treatment before conventional disposal methods can be used. The most common types of hazardous waste include:

- organic liquids, such as those removed from septic tanks and industrial cesspits
- solvents and oils, particularly those containing volatile organic compounds
- wastes containing hydrocarbon, such as inks, glues and greases
- contaminated soils
- chemical wastes, such as pesticides and agricultural chemicals
- medical and quarantine wastes
- wastes containing heavy metals, such as timber preservatives
- contaminated packaging associated with these wastes.

A range of treatment processes are used before disposing of hazardous wastes. Most disposal is either to landfill or through the trade waste system. Some of these treatments result in trans-media effects, with liquid wastes being disposed of as solids after treatment. A very small proportion of hazardous wastes need exporting for treatment. These include polychlorinated byphenyls, pesticides and persistent organic pollutants.

The number of participants in the Nelson–Tasman region’s hazardous waste market is relatively small with services provided by Chemwaste (owned by Envirowaste), JBL Environmental Ltd, ERS, Bens Oil (owned by Envirowaste) and Nelson Marlborough Waste. Surplus paint and containers are recycled through the Resene Paintwise scheme at selected stores and resource recovery centres.

Low hazard waste, such as used oil, paints, gas cylinders and gas refrigerants (within end-of-life fridges and freezers) are accepted at the transfer stations and resource recovery centres around the region.

Domestic quantities of hazardous waste for the region are accepted at the Pascoe Street transfer station. Tasman District Council approves disposal on a “by-application” basis.

Hazardous waste from commercial operations or hazardous waste that is not accepted at the Councils’ facilities is handled by the commercial hazardous waste operators.

The Agrecovery scheme takes agricultural chemicals and containers from farmers and growers. As part of this scheme the Richmond and Mariri resource recovery centres and two independent sites in Murchison and Takaka act as collection sites, taking triple rinsed HDPE plastic agricultural containers from farmers/growers.

An Agrecovery chemical collection service is also available in the region, with Tasman District Council co-funding collections in Tasman.

3.8 Disposal services and facilities

3.8.1 Sanitary landfills

Tasman District Council and Nelson City Council own two different landfills in close proximity to each other. Eves Valley Landfill is approximately 5 km north-west of Brightwater while Nelson City Council operates the York Valley Landfill in Bishopdale, near the city.

The Eves Valley Landfill opened in 1989 and was originally designed to receive solid waste from the Richmond township and surrounding Waimea rural area. Landfill operations commenced on site in 1989 (Stage 1) and 2001 (Stage 2).

During the first five years of operation, Tasman District Council closed many small community landfills or “tips” that had not been subject to engineering design or been through the process of applying for resource consent. As a result of these closures, by June 1995 all Tasman District solid waste (with the exception of that from the Murchison area) was being transported to Eves Valley Landfill. Solid waste from Murchison has also been transported directly to Eves Valley since May 2009.

Stage 2 of the Eves Valley landfill has one year of regional capacity remaining (62,000 tonnes).

The York Valley Landfill is located approximately 4 km south of the city centre, accessed off Market Road, and receives municipal solid waste from the transfer station and approved commercial operators. It is a valley type landfill and occupies approximately 3.5 Ha. The site has been filled in 3m lifts across the site, progressing up the valley sides in a controlled manner.

York Valley Landfill has received an average of less than 30,000 tonnes of municipal waste per annum (32,200 tonnes inclusive of contaminated soil) over the past five years and is expected to receive around 62,000 tonnes of Nelson–Tasman combined waste per annum in 2017/18.

Gully 1 opened in 1987 and is currently in use. Gullies 3 and 4 consist of potential land for future development. Gully 1 has a capacity of 2,700,000m³ and is consented to accept municipal waste until 2034. There is uncertainty around the geological stability of Gullies 3 and 4 as there are geological faults running through both areas.

In 1998 a gas extraction system was installed to reduce methane emissions from the landfill. Energy for Industry, a division of Pioneer Generation Ltd process landfill gas extracted for power generation (run boilers at the Nelson Hospital) by agreement. Landfill gas is collected through a gas extraction system and sold to provide water heating for Nelson Hospital. The landfill has a leachate collection system and strict environmental monitoring conditions and auditing procedures.

The closest neighbouring landfill to the Nelson–Tasman region is the Bluegums Landfill located in the Marlborough region, south of Blenheim on Taylor Pass Road. It accepts in the vicinity of 50,000 tonnes per annum and is expected to serve the Marlborough region for the next thirty years.

3.8.1.1 Regional landfill business unit

Following an extended period of consultation and negotiations, in September 2016 Nelson City Council and Tasman District Council decided to form a joint business unit to manage the York and Eves Valley landfills, managed by a joint committee of the Councils. The joint operations will start on 1 July 2017.

It is expected that the Eves Valley Landfill will be “mothballed” from this date and the York Valley Landfill will operate as a regional facility until 2030.

The plan to mothball Eves Valley (before Stage 2 is full) means that unused airspace will remain, which would be available in an emergency at short notice. In the event of an earthquake, fire or other event closing the York Valley Landfill there will be one year’s capacity available at Eves Valley.

All residual waste within the region will be disposed of at York Valley (subject to landfill acceptance criteria). The business unit will continue to accept residual waste from the Buller District. The remaining airspace at York Valley is expected to last until 2031 if moderate growth in residual waste occurs in the region. A new landfill will be developed well in advance of final closure of the current active landfill at York Valley.

While Nelson–Tasman has its council-owned landfill sites, it is unlikely that the private sector will seek to establish an alternative landfill in competition with these facilities.

3.8.2 Cleanfills and “managed fill”

The ‘Technical Guidelines for Disposal to Land’ were published in April 2016 by the New Zealand Waste Management Institute (WasteMINZ). The guidelines were published to establish good practice requirements for the various types of facilities, based on waste acceptance criteria. ‘Clean fill’ and ‘managed fill’ are defined in these guidelines

A cleanfill is defined as a “Class 4 landfill”, which accepts only clean fill material, including clean excavated natural materials. A “managed fill” is defined as a “Class 3 landfill”, which accepts only clean fill material and “managed fill”.

‘Clean fill material’ is virgin excavated natural materials such as clay, soil and rock that are free of:

- combustible, putrescible, degradable or leachable components;
- hazardous substances or materials (such as municipal solid waste) likely to create leachate by means of biological breakdown;
- products or materials derived from hazardous waste treatment, stabilisation or disposal practices;
- materials such as medical and veterinary waste, asbestos, or radioactive substances that may present a risk to human health if excavated;
- contaminated soil and other contaminated materials; and liquid waste.

When discharged to the environment, clean fill material will not have a detectable effect relative to the background.

‘Managed fill material’ is predominantly clean fill material that may also contain inert construction and demolition materials and soils from sites that may have contaminant concentrations in excess of local background concentrations, but with specified maximum total concentrations. At present there is no clear distinction made in the Nelson–Tasman Region between cleanfills and managed fills, and most are referred to as cleanfills.

The cost of entry into the cleanfill market is substantially lower than into the landfill market. Cleanfills require much lower levels of engineering investment to prevent discharges into the environment and have very low or negligible, compliance costs. Because of these differing cost structures, cleanfill disposal charges are markedly lower than landfill charges.

In 2004 Nelson City Council increased monitoring of private cleanfills to ensure they meet the standards specified in ‘A Guide to the Management of Cleanfills’. With two exceptions, these sites were found to be used to dispose of demolition materials. Environmental Inspections Ltd is engaged by Nelson City Council to carry out random checks to monitor the types of materials being deposited at these sites.

In 2005, Nelson City Council notified a Plan Change to the Nelson Resource Management Plan to enable greater control of what is disposed at private cleanfills.

There are at least three known cleanfill sites in Nelson. The cleanfill sites are located at 306 Wakapuaka Rd, 307 Wakapuaka Rd, and 46 The Glen Rd.

Nelson City Council also improved its control of private cleanfills by requiring bonds to cover monitoring of environmental effects beyond closure date. This has resulted in more of the environmental effects of private cleanfills being included in the disposal costs.

At present cleanfills are not specifically controlled through the Tasman Regional Management Plan (TRMP). Problems have arisen in the past from the lack of provisions for “clean” fill during demolition activities, where demolition material was sent to private landfill in an attempt to avoid paying for Council services, which also had the effect of undercutting other contractor tenders. This matter is likely to be addressed when the land disturbance provisions in the TRMP are updated.

3.8.3 Closed landfills

Tasman District is responsible for 22 closed landfills in the District, some of which are owned by the Council, others are on Crown Land, and a few are on privately owned land.

Most of the closed landfills were operational in the 1950s through to the 1970s and accepted domestic waste, rubble, farm waste and scrap metal at a time when burning of waste was a common practice. Tasman District Council has a record of each of the sites and has collected as much information as possible on their history.

The closed sites are inspected every two years to assess the condition of each site and to ensure contamination is not occurring. Some remedial works have been carried out following these inspections and Tasman District Council will progressively rehabilitate sites, as appropriate.

Resource consents were issued for most of these closed landfill sites in December 2009 and management plans were prepared in 2010. The sites which have buildings or structures are checked for gas accumulation annually.

In Nelson City Council there are four known closed landfills: two in public and two in private ownership. Nelson City Council manages the closed Atawhai Landfill.

Table 3-2: Closed landfill sites within the Nelson–Tasman Region

79 Cable Bay Rd (Private landfill - Nelson)	Ngawatu (Old Hospital - Nelson)
Appleby (Tasman)	Old Wharf Road (Tasman)
Atawhai Landfill (North Road Landfill - Nelson)	Pah Point (Tasman)
Cobb Valley (Ernies Flat - Tasman)	Richmond resource recovery centre (Tasman)
Collingwood (Tasman)	Rototai (Tasman)
Hoult Valley (Tasman)	St Arnaud (Tasman)
Kaiteriteri (Tasman)	Tapawera (Tasman)
Lodders Lane (T Tasman)	Tasman/Kina (Tasman)
Mariri resource recovery centre (Tasman)	Tasman/Highway (Tasman)
Mariri old (Tasman)	Top of York (Private landfill- Nelson)
Murchison resource recovery centre (Tasman)	Upper Moutere (Tasman)
Murchison (Tasman)	Upper Takaka (Tasman)
Ngatimoti (Tasman)	Waiwhero (Tasman)

3.9 Summary of council provided waste services / contracts

The Councils control the key strategic waste infrastructure assets in the region and therefore play a major role in the regional waste market. This role is also due to the magnitude of the waste and recycling contracts controlled by the Councils, the Councils' roles as regulators and the statutory obligations placed upon the Councils by the WMA.

The Councils operate in the role of regulator with respect to managing litter and illegal dumping under the Litter Act 1979, and through trade waste requirements and other nuisance related bylaws. Nelson's Urban Environments Bylaw 2015 includes a provision controlling the materials that can be deposited in public rubbish bins (clause 4.8).

As there are some cases in which a bylaw may support the aims of the JWMMP, bylaw options are considered in the options assessment.

The WMA requires councils to plan and promote effective and efficient waste management and minimisation. This typically requires councils to be directly involved in waste reduction initiatives. Through major initiatives such as kerbside recycling, councils have developed services and infrastructure assets which are otherwise unlikely to be commercially viable or to achieve the economies of scale required for collection to be efficient.

The other main type of initiative for waste reduction undertaken by the Councils is in the education and promotional area. The Councils engage contractors to deliver education and behaviour change programmes.

For a full summary of Councils' current contracted waste and resource recovery related services, refer to Appendix G.

4 FORECASTING FUTURE DEMAND

4.1 Influencing factors

Consideration of current and future demand for waste management and minimisation services is essential to forward planning and service delivery. Effective assessment of the demand for services in the short, medium and long term will ensure the sustainable provision of waste services for a region.

The following section identifies key demand forecasting assumptions and management considerations, and how this can be expected to impact on future service provision. The forecasting of future demand also helps the Councils to scope suitable options for managing the demand for some waste services, such as landfill. The options developed in response to these considerations are outlined in chapter 6.

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

- the cost of landfill disposal and the cost of alternative options
- demographic change (e.g. population and/or household changes)
- change in commercial and industrial activity/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.

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

The rest of this chapter provides an overview of what are considered to be the most relevant primary future demand drivers for the Nelson–Tasman region.

4.1.1 Demographics / population change

The Nelson–Tasman population in June 2016 is estimated as 100,800 (Nelson 50,600 and Tasman 50,200).

From 2005 to 2016, Tasman has seen an average 0.9% increase in population per annum with Nelson experiencing a 1.0% increase.

Statistics NZ in December 2016 estimated growth for the Nelson and Tasman districts.

Table 4-1: Predicted population growth between the years 2018 and 2043

	Medium growth scenario for 2043	High growth scenario for 2043
Tasman District	4,500 people (increasing from 51,300 to 55,800)	11,500 people (increasing from 52,400 to 63,900)
Nelson City	6,200 people (increasing from 51,800 to 58,000)	13,400 people (increasing from 53,000 to 66,400)
Regional population totals	122,200	130,300

In the very short term (to 2018) “medium” and “high” scenarios project regional growth rates of 1.4% and 1.6% per annum. In the following period to 2023, the medium scenario gives growth of 0.9% per annum and the high scenario is for growth of 1.1% per annum.

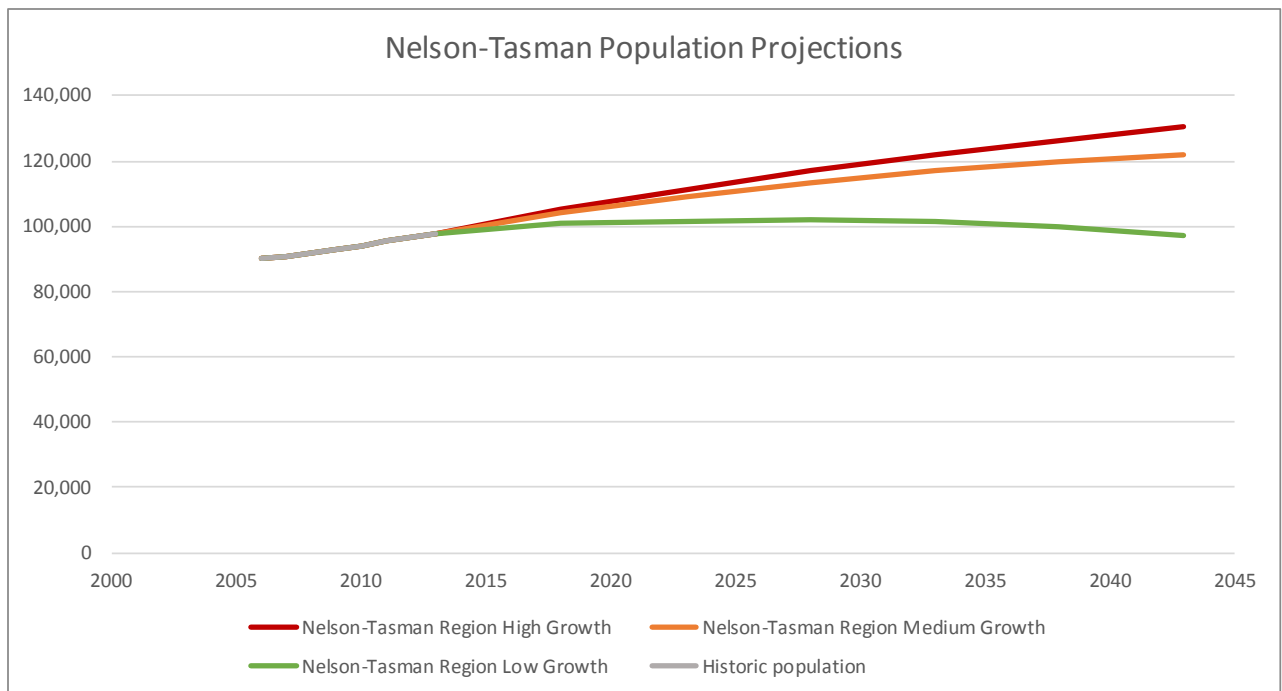


Figure 4-1: Nelson-Tasman Population Projections

With substantial growth in the region we expect to see growth in the amount of waste to landfill unless further intervention occurs. In particular, construction activity is likely to cause an increase in waste to landfill. Diversion of this waste through resource recovery activities could increase the longevity of the current landfill and decrease waste per capita.

Existing collection and disposal services in these areas are expected to be able to cope with the local changes in population, with new development areas being added to the existing collection routes over time.

4.1.2 Commercial and industrial / economic activity

Based on the trends in creation of residual waste in the region, it's unlikely that residual waste will increase a great deal while current policy settings are retained. Decreases in waste per capita are likely to continue along previous trends.

A specific example of a change to commercial and/or industrial activity that impacts the demand for waste services is one-off large scale infrastructure and development projects.

The closure or changes to the designation of any current cleanfills or managed fills could also impact on the future demand for sanitary landfill, if other suitable cleanfill disposal sites cannot be found. Large quarries in the region indicate that there will in future be opportunities for sustainable cleanfill management.

4.1.3 Natural hazards

Flooding, earthquake and landslide activity can create large amounts of waste. Recent earthquakes in Canterbury and Kaikoura have resulted in increased demand for landfill and managed fill capacity.

Localised flooding in Tasman District in April 2013 created a 35% increase in waste to landfill for the following six months.

4.1.4 Waste pricing and waste from other areas

Pricing of landfill disposal is in itself a useful method for managing demand for landfill services. The policy, services and facilities of one district can impact on demand for services in neighbouring districts.

In past years waste flight between the two councils' landfill facilities has occurred, and the issues arising from this, were a key reason for the Councils to establish the regional landfill business unit.

Any increase in gate charges for general refuse at the Councils' landfills may also have a flow-on effect of increased diversion to cleanfills in the region and will encourage improved commercial construction waste management.

Waste from the Buller District is transported into the region for disposal. This is expected to continue until at least 2023.

4.1.5 Consumption behaviour

Consumer behaviour is a key driver for household waste generation. Research by the OECD 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.

Many New Zealand policies and programmes target these issues, both at a local and a national level. Obviously factors such as family size and household income will be difficult to influence. However, the Councils can influence attitudes toward the environment, which has been shown to positively correlate to waste generation. 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. To be effective these programmes normally need to be established on a national or sub-national basis (rather on a local or regional basis).

A number of local 'community based social marketing' programmes have been implemented over the last decade, including several 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.

The Councils are likely to continue with existing initiatives to influence consumption behaviour and demand for waste services, and improve on them over time. These approaches are discussed further in the next sections and have also been considered when scoping options.

4.1.6 National policy, legislation and regulation

Legislation such as the WMA contains several mechanisms aimed at reducing waste to landfill, such as the waste levy and product stewardship provisions. A variety of local regulatory measures can affect demand for services and they are assessed here with respect to their implications on future demand and as demand management strategies.

4.1.6.1 Product stewardship

The WMA provides for regulations to be developed in relation to the priority products identified by the Government. 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 the Councils and other service providers if the management of the products becomes the responsibility of the producer.

The Government has indicated it is working towards stewardship systems, but progress has been slow.

4.1.6.2 Waste levy

The Waste Management Act established a levy on all waste to landfill ("disposal facilities"). The waste levy has the potential to provide a disincentive for wasteful behaviour — through increased disposal costs and through funding of waste minimisation initiatives.

The levy provides funding to promote waste minimisation initiatives: 50% is allocated to territorial authorities (district and city councils) based on population, and the other 50% is available through a contestable fund.

At present the Councils receive approximately \$180,000 each per annum from the waste levy for spending on waste related activities. This funding belongs to the individual councils, but can be pooled

and spent jointly on suitable projects, if agreed and documented in the Councils' Joint Waste Management and Minimisation Plan.

The Government is required to review the effectiveness of the waste levy every three years, and through this process may change the size of the levy. The levy been set at \$10 per tonne of waste since 2009 and will be reviewed in 2017.

4.1.6.3 Cost of Carbon

Since 2013, disposal facility operators have had an obligation to report their emissions and surrender New Zealand Units (NZUs) under the New Zealand Emissions Trading Scheme (ETS).

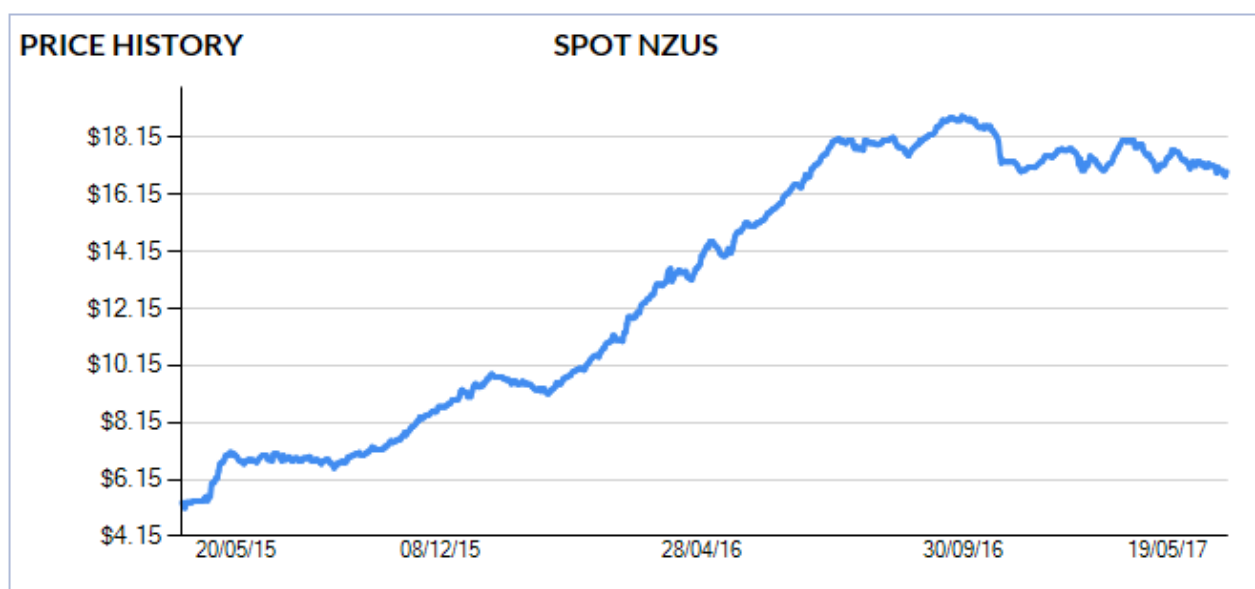
A disposal facility is any facility including a landfill that operates as a business to dispose of waste and whose waste stream contains some element of household waste. This does not include cleanfills, sewage treatment facilities or facilities at which waste is combusted for the purposes of generating electricity or industrial heat.

Disposal facility operators are responsible for methane emitted through the biodegradation of organic waste in their facilities. The Councils, through ownership of their landfills, have emission liabilities for as long as those landfills are accepting waste.

Some landfill gas is captured at York Valley Landfill. In 1998 a gas extraction system was installed to reduce methane emissions from the landfill. Energy for Industry, a division of Pioneer Generation Ltd, process the landfill gas extracted and use it for heating water at Nelson Hospital. Surplus gas is destroyed.

At the Eves Valley landfill, methane gas is collected through vents and risers and vented to the atmosphere.

In recent years central government has made adjustments to the emissions trading scheme and this is increasing the cost of emissions. Over the three year period from 2016 to 2019 liabilities will increase from 50% of emissions in 2016 to 100% in 2019. In addition, the cost of carbon has also increased, from around \$5 in 2015 to just over \$17.00 per tonne of CO₂ in May 2017.



NZU spot price: source: <https://www.comtrade.co.nz/>

These two factors combined mean the Councils' costs of emissions have increased. Further rises in the cost of carbon will result in increased cost of disposal and potentially less waste to landfill.

4.1.6.4 Other national legislation and regulation

Another consideration is the potential for new legislation to affect waste management and minimisation. For example, a national cleanfill standard would have a key impact on the types and quantity of waste disposed to landfill.

The NES on contaminated soil has potential to affect the use of landfill airspace. Developing easy to apply processes would provide guidance to landowners and developers on managing the effects of future development on the landfill airspace.

The Nelson Resource Management Plan includes a landfill rule (RUr.27A). Landfills are a restricted discretionary activity in the Rural Zone if they only accept cleanfill materials, which are defined as solid material such as rock, clay, or soil, or inert building materials such as concrete or brick, but excluding any material which may be combustible, putrescible, degradable, leachable, or hazardous.

4.1.6.5 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, such as in Nelson City.

The success of consent applications or the consent conditions can impact on demand for landfill space. For example, if the renewal of the consent to apply biosolids directly to forestry land on Rabbit Island was denied, this could result in these materials having to be landfilled at a sanitary landfill.

Councils can also use regulation to impose bans on materials to landfill and make other waste bylaw provisions to manage waste, particularly where alternative services exist to deal with the waste stream in question. Although regulation is potentially a powerful tool, it has not been widely introduced in the Nelson–Tasman region. Waste bylaws are discussed in more detail in the options assessment.

4.1.7 Waste minimisation programmes, services and future initiatives

The following programmes are under consideration by the Councils, subject to the setting of strategic priorities for waste minimisation:

- programmes, partnerships and activities which reduce the volumes of organic waste to landfill (examples of these could include new home composting initiatives, support for activities around reducing food waste, and encouraging collaboration amongst organisations providing greenwaste solutions)
- extension of the existing recycling/waste reduction initiatives at some Council facilities to all Council facilities
- increased focus on eliminating waste at Council events through development of environmentally, socially and financially sustainable operations and procedures, and further Council support for commercial events
- other programmes as required to support waste management behaviour which is aligned to the Waste Management and Minimisation Plan.

It is often difficult to directly measure the effect of behaviour change programmes, partnerships and promotions on total waste to landfill. While these activities may create a reduction in the demand for landfill space, there will be a corresponding increase in demand for resource recovery and waste minimisation services and infrastructure to implement these strategies (which are easier to measure).

Increasing services (such as increased greenwaste diversion and composting or a food waste collection) is more likely to lead to a directly quantifiable reduction of waste to landfill.

4.1.8 Community expectation, customer surveys and feedback

Community attitudes towards waste creation and the negative effects of waste on the environment are likely to influence the total waste generated and disposed to landfill. The Councils' Joint Waste Management Minimisation Plan 2012 (the Plan) reflects community feedback and expectations.

The Plan notes key priority waste streams and issues, which include organics, hazardous waste, recyclables/packaging, and inorganic and special wastes (including construction waste).

Data suggests the per capita waste generation has trended downward when averaged over the last 10 year period. This may be due to the Councils' introduction of new initiatives (such as improved kerbside recycling) and other waste minimisation programmes.

If the Councils are to make further reductions to work towards their stated objectives, they are likely to need to introduce further initiatives, expand existing programmes or partner with the commercial and not-for-profit sector to provide these.

The Tasman District Council and Nelson City Council resident surveys indicate that residents support recycling programmes and that the majority use kerbside recycling services if they are offered in their area. Survey responses supported additional materials being recycled and more public education about recycling, as well as information about what happens to recycled materials.

4.1.9 Projected diverted materials/commodities markets

Economic fluctuations also 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 economic conditions as these affect consumption levels. Demand for these materials will be reflected in commodity prices.

If demand for these materials drops and the commodity price drops below the cost of collection and landfilling, it is possible that materials that were once diverted to beneficial reuse or recycling may once again be landfilled, stockpiled, require additional subsidy or in some cases be illegally dumped. That is why it is important to monitor economic trends over time when considering the sustainability and economic viability of recycling and/or recovery operations.

It is generally accepted 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, to name a few.

Other factors are: demand for and supply of substitute resources, product quality, overseas markets and transport costs, centralised processing centres, and other community and waste minimisation programmes. These will all affect the amount of waste that becomes diverted material.

As the price for diverted materials increases, supply can also be expected to increase and more material will be diverted from landfill. The following figure indicates the market fluctuation for some commodities over time.

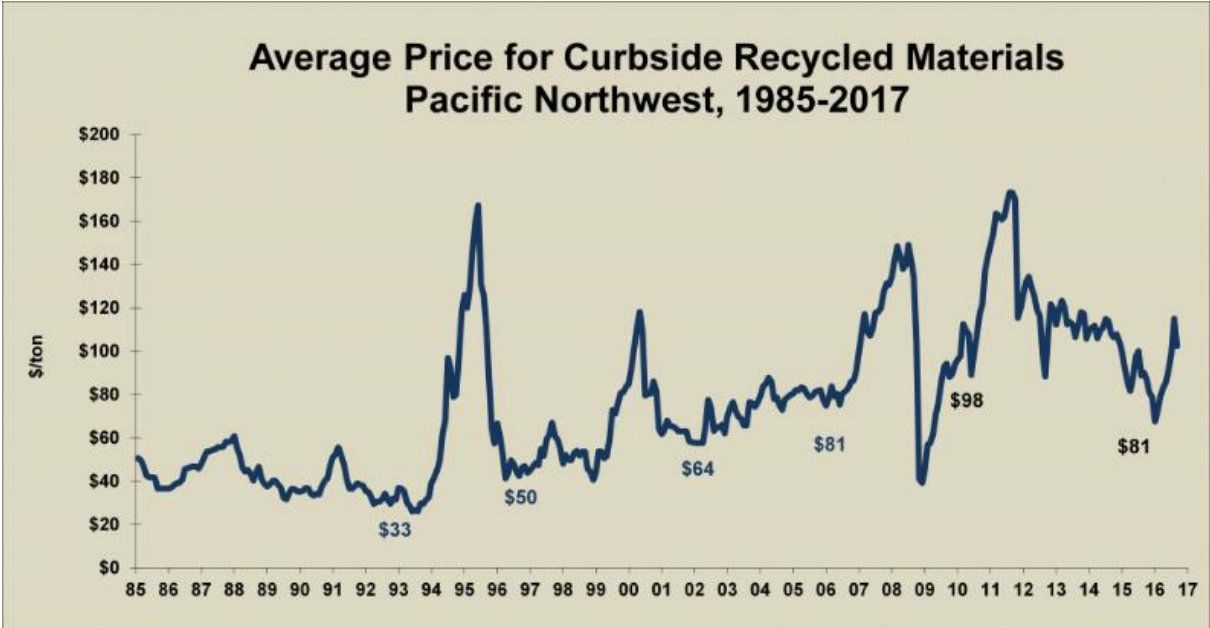


Figure 4-2: Commodity market for diverted materials

The graph indicates that the market for diverted materials is volatile. The large fall in commodity prices that occurred during the 2008-09 period was due to the world-wide financial crisis. Diverted material is financially less viable during recessionary periods with correspondingly low competition for resources and low prices for diverted materials. As boom times occur and resources are more sought after, the demand, and prices paid, for diverted material increases.

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.

4.2 Projected future waste volumes

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

It is not unrealistic to consider a scenario under which the tonnage to landfill will continue to trend downward when one consider historical trends. However, it is apparent that this will require continued intervention by the Councils.

The following figure indicates potential tonnes of waste disposed to landfill in Nelson–Tasman over the next 20 years and presents four scenarios: growth at 1% per annum (in line with long term population projections), 0.5% growth, no growth and a small decrease in waste per annum. These last three scenarios will require interventions and a reduction in waste per capita to be achieved.

Options for minimising waste are discussed in chapter 5.

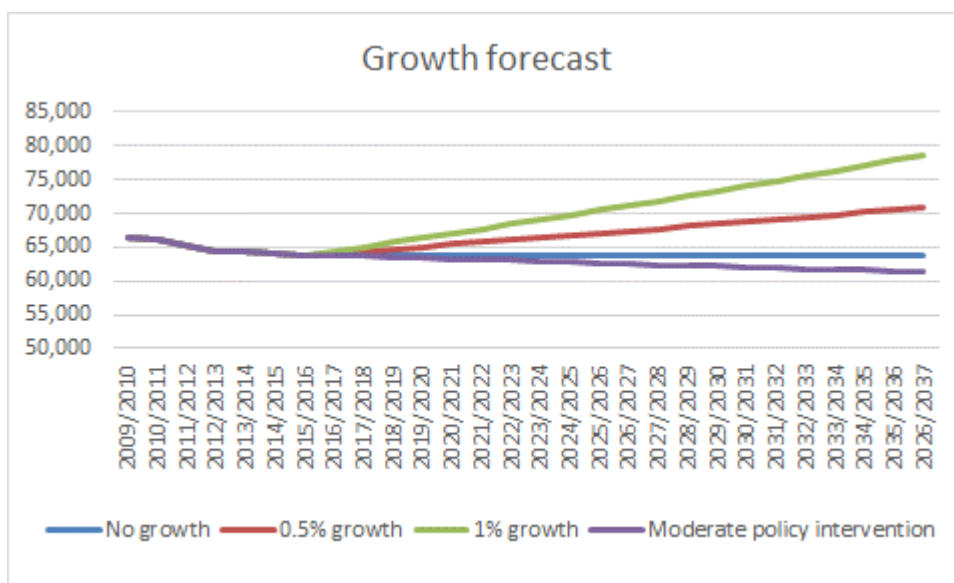


Figure 4-3: Projected waste to landfill

4.3 Future Demand for Diverted Materials and Waste Services

The following section provides estimates on the amount of material that could be potentially diverted in the future if services, facilities and end markets are established to recover each item.

These estimates assume that waste arising will continue to grow in line with estimated population growth rates provided by Statistics New Zealand. They also use the waste data available from each council at the time of this assessment, the 2012 SWAP data and the technically recoverable percentage presented in below to calculate future demand for each material.

Table 4-2: Potential Diverted Material

Category	Percentage Composition in residual waste (Tasman DC)	Percentage Composition in residual waste (Nelson CC)	Technically recoverable, %
Paper/cardboard	18.4%	15.64%	75%
Plastics	15.14%	11.82%	58%
Greenwaste	9.85%	17.14%	85%
Foodwaste	15.35%	12.21%	85%
Ferrous metals	2.76%	2.8%	85%
Non-ferrous metals	0.77%	1.76%	85%
Glass	9.18%	3.6%	85%
Textiles	4.6%	7.09%	80%
Nappies and sanitary	3.51%	1.65%	80%
Rubble	4.60%	7.37%	80%
Timber	11.64%	15.9%	80%

Rubber	2.72%	1.93%	80%
Potentially hazardous	1.74%	1.08%	100%
Total	100.0%	100.0%	

Information source for technically recoverable percentages, Covec 2007

4.3.1 Collections

In the interests of public health protection and in ensuring efficient and effective waste management, the Councils have an obligation to consider options for the collection of residual refuse, particularly from domestic sources.

OECD research also shows a link between waste collection frequency and outputs. Some councils in New Zealand are moving towards '3-stream' systems for refuse, recycling and organics collections. By removing the organics component of the waste stream, this allows for collection frequency to be reduced to fortnightly and further incentivises the diversion of waste to recycling and composting.

4.3.1.1 Kerbside waste collections

Domestic kerbside waste collections are estimated to be the source of 20,000 tonnes of the waste sent to landfill each year. With better classification of waste source at the landfill this figure can be refined more in the future. In addition to this are collections from commercial properties undertaken by private operators. If there are no new initiatives introduced the total amount of waste collected at the kerbside will continue to grow over time.

Existing services are considered adequate to meet current and future demand as there are a variety of council and commercial provided services available within the Nelson–Tasman region to provide the community with a wide range of choices.

The introduction of any additional reuse, recycling or recovery schemes within the region is likely to reduce the future demand for waste collection services over time but may result in an increase in demand for kerbside recyclables and compostable collections instead.

4.3.1.2 Kerbside recyclables collections

In Nelson–Tasman kerbside recyclables collections currently account for approximately 80% of the material processed. This equates to 6,000 – 7,000 tonnes per annum for the Nelson–Tasman region, but does not include any commercial collections that are taken directly to a materials reprocessor (such as paper and cardboard to Oji Fibre Solutions or glass to O-I).

Potential improvements in reuse, recycling or recovery schemes mean the demand for kerbside recyclables collections could increase by between 10,000 – 30,000 tonnes per annum (depending on the amount of commercial recyclables collected through kerbside collections).

Existing services are considered adequate to meet current demand as there are a number of council and commercial services available within the Nelson–Tasman region, and routes are likely to grow over time to service customers.

4.3.1.3 Kerbside organic collections

Councils currently do not provide a kerbside collection service for organic material. However, some commercial operators provide a greenwaste collection services to households, and this activity is expected to expand over time. The collection and recovery of organic materials is discussed further in section 4.3.4.

The commercial sector provides organic (greenwaste) collections in the Nelson–Richmond area, and these appear to be growing. Additional collection services (such as green and food waste) may be required if these materials are targeted by the Councils in the future. However, while these are able to be provided commercially there will be no need for the Councils to provide these.

4.3.1.4 Event Waste

Event waste and waste from markets is a small amount of the total waste stream but provides a large platform to promote and normalise waste minimisation within the community. Waste diversion occurs at Council-run events and from events run by a small number of commercial companies.

A small number of commercial companies provide services on demand, but the Councils may need to support development of waste diversion options.

4.3.2 Reuse

The Councils currently support the Nelson Recycle Centre Reuse Shop (Nelson) and smaller reuse shops at the Takaka and Murchison resource recovery centres (Tasman), which sell reusable materials that are diverted from waste to landfill.

There are also a multitude of individual reuse opportunities for unwanted materials and products from households and businesses. These include online trading, social media and other resale shops. These services are considered adequate to meet current demand, but there is considerable opportunity to expand these services in the future to meet future demand.

Mechanisms to enable this (such as funding or council promotion) may need to be considered in future. There are also opportunities available for food reuse — these are discussed in the recovery section.

4.3.3 Recycling

4.3.3.1 Paper and cardboard

Approximately 3,500 tonnes of paper and cardboard are currently collected within the Nelson–Tasman region through Council controlled services. However, the 2012 SWAP study identifies that paper or cardboard still makes up 16.8% of the material sent to landfill. Theoretically, 13,000 tonnes could be targeted for recycling per annum. This includes both domestic and commercial sourced material. Work completed by the Councils in 2014 indicated that contamination of paper and cardboard will limit the amount able to be recovered, but more diversion is still possible.

There is a well-established network of paper and cardboard collection and processing services in most of the Nelson–Tasman region. Any increase in paper and cardboard recycling may put additional pressure on existing collection and processing services. Further details are required in order to establish if existing services and facilities have the capacity to handle this material or if additional infrastructure would be required.

4.3.3.2 Plastics

Approximately 600 tonnes of plastics are currently collected within the region through council controlled activities. The 2012 SWAP study identified that plastics made up 13.4% of the material sent to landfill. This suggests that approximately 6,500 tonnes could be targeted for recycling in future.

This includes both domestic and commercial sourced material and includes some lower grade plastics which may require new markets to be developed before they can be collected. This would put additional pressure on collection services and the materials recovery facility if collected through the kerbside system (or other reprocessors if sent directly to them).

At present very few soft plastic recycling options are available in the region, although Oji, waste Management and Envirowaste provide some services for large commercial customers. Some of the larger retailers in Nelson accept single use plastic bags from customers for recycling.

4.3.3.3 Glass

Approximately 3,500 tonnes of glass is currently collected within the region. The 2012 SWAP study identified that 6.2% of the material currently sent to landfill is glass (this includes both glass bottles and sheet glass, and both domestic and commercial sourced material). From this estimate, approximately 7,000 tonnes of glass could potentially be recovered from landfill each year.

This would put additional pressure on collection services, storage facilities at the resource recovery centres and reprocessors (such as O-I). 5R has established sheet glass drop off facility in Nelson Tasman and is diverting more than 1,000tonne of glass per annum. Further details are required to establish if existing services and facilities have the capacity to handle this material or if additional infrastructure would be required.

4.3.3.4 Metals

Approximately 600 tonnes of metal (both ferrous and non-ferrous) is currently collected by the Councils within the region. This does not include the metal that is sent directly to commercial companies such as

Sims Pacific Metals. We do not currently have information on the amount of metals recycling through commercial scrap dealers.

The 2012 SWAP study estimated 4.1% of the material currently sent to landfill is metal and therefore approximately 3,300 tonnes of metal could be targeted for recovery in the future.

4.3.3.5 Construction & Demolition (C&D) Waste

Construction and demolition waste accounts for approximately 15,000 tonnes per annum of material currently sent to landfill. The 2012 SWAP study indicates approximately 6.1% of all waste to landfill is rubble, soil and concrete material and 13.9% is timber (although this includes both treated and untreated timber). Combining these two waste materials suggests that approximately 13,000 tonnes of C&D waste could be recovered each year.

Commercial operators and building companies are generally the largest producers of timber material to landfill and this group can potentially be the focus of waste minimisation efforts. However, there are some major challenges in recovery of post-consumer waste wood due to contamination and the presence of treated timber.

Materials such as crushed concrete have existing uses. There are also emerging initiatives for the diversion of clean plasterboard (ex manufacturing and potentially construction offcuts) but these rely on establishing an effective logistics chain from building sites to processors eg. incorporating resource recovery activities at existing resource recovery centre/transfer station operations.

Some C&D material is sent to cleanfill, so efforts to target this material for recovery will in part depend on what controls are in place around cleanfills.

If commercial operators are to drop off C&D materials at the resource recovery centres and transfer stations, there would be a requirement for additional space and facilities at these sites. The scale of material, the number of commercial facilities within the region and the capacity of these to meet future demand if C&D waste is diverted from landfill or cleanfill, is not currently known.

4.3.3.6 Electronic Waste

In accordance with the Ministry for the Environment we generate between 17 and 19 kg per person of e-waste per year in New Zealand. Some e-waste contains substances that can be toxic to the environment and to human health if disposed of or handled inappropriately. Some e-waste also contains valuable and scarce resources that could be considered for recovery and recycled rather than landfilled.

The following are examples of harmful substances that can be found in e-waste:

- lead and arsenic in cathode ray tubes from televisions and computer monitors
- mercury in switches and fluorescent lamps
- brominated flame retardants in the hard plastic casings that house many types of electrical and electronic equipment
- refrigerants such as synthetic greenhouse gases
- cadmium in rechargeable batteries.

E-waste is one of the fastest growing types of waste in the world and therefore demand for the recycling or handling of these material will increase with time. A survey carried out by Nelson Environment Centre (NEC) suggests there is a demand for an e-waste solution.

NEC provides a user-pays e-waste recycling service, which is used by members of the public, schools and businesses throughout the region and has recycled 13.5 tonnes of e-waste for the year ending June 2017. Disposable and rechargeable batteries are also accepted free of charge at Council transfer stations and resource recovery centres. NEC receives and processes all batteries at a charge.

There is likely to be an increasing need and opportunity to divert e-waste from landfill. The Councils' preferred mechanism to manage e-waste is product stewardship programmes, but in the absence of national programmes they may need to consider supporting existing services, providing new services or supporting development of new services.

The Councils recognise there is no point in regulating (and potentially adding costs to products) if collecting the material does not result in a positive outcome, such as avoiding risk at the landfill or being sold for reuse or recycling.

4.3.4 Recovery

4.3.4.1 Food Waste

The 2012 SWAP study estimated 13.7% of the material currently sent to landfill within the region is food waste. This suggests that some of the approximately 9,000 tonnes of food waste could be recovered or diverted from landfill each year, and this should be further investigated.

A co-digestion option at Bell Island was investigated following the 2012 SWAP study and found not to provide a sustainable solution in managing this waste.

Diversion of food waste from landfill can be achieved by reducing waste generated, diverting excess commercial food excess for others to consume, reusing food in the home and composting or treating food waste to recover nutrients.

In 2015-16 the Councils engaged the Nelson Environment Centre to research local food waste statistics, which contributed to the New Zealand Love Food Hate Waste programme. The NEC data closely matched the results from a national audit undertaken by WasteMINZ.

The work identified that:

- families waste on average 3.3 kg of edible food per family per week (171.6 kg per year) or 0.67 kg per person per week (34.32 kg per person per year).
- 60.6 kg of total food waste was unavoidable (e.g. bones, vege/fruit peelings); 48.1 kg was avoidable; and 15 kg was potentially avoidable (bread crusts, potato peel, etc.)
- the total edible food wasted (avoidable plus potentially avoidable waste) was 63.1 kg.
- nearly half of the food waste (23.5 kg) was composted (by 79% of families), with 10.4 kg fed to animals (by 84% of families). Total food waste diverted from landfill was 39 kg (79%).
- only 10.4 kg (average 0.5 kg per family) was landfilled.
- most (83%) items were thrown away because they were disliked/unwanted, i.e. they were leftovers. The next most common reasons were 'looked or smelt off' (14.3%) and 'had been opened too long' (9.2%).

These statistics do not include commercial food waste, which is difficult to estimate as many commercial organisations don't record volumes of food waste. We expect that some of this waste is disposed as animal feed, but do not have records or information for this region.

If a food waste collection was expanded to include waste from the catering and hospitality industry (e.g. post-consumer food waste from cafes and restaurants), this is likely to capture some of the remaining inedible food waste.

4.3.4.2 Greenwaste

Greenwaste separation by the Councils is an important contributor to the diversion of greenwaste tonnages from landfill. The Councils propose to continue with a mixture of Council and commercial options, including collaboration on new programmes, as well as use of pricing incentives where appropriate.

From the data available at the time of this assessment it is estimated that approximately 5,500 tonnes of greenwaste are composted per annum through direct Council greenwaste diversion initiatives. This figure does not include material recovered through home composting.

The 2012 SWAP study suggests 13.8% of the material currently sent to landfill within the Nelson-Tasman Region was greenwaste and that more of the 9,500 tonnes of additional greenwaste could be recovered or diverted in future.

4.3.4.3 Nappies and sanitary products

Nappies and sanitary material account for approximately 2.5% of the waste currently sent to landfill, suggesting approximately 1,500 tonnes of additional material could be potentially recovered through an appropriate facility.

A limited number of facilities in New Zealand accept these products for composting (e.g. the Innovate Waste composting facility in Kaikōura).

4.3.5 Disposal

4.3.5.1 Sanitary Landfills

The following table provides details of the capacity and consent life for the two council-owned landfills in the region. The capacity of each landfill is expressed in terms of total regional waste (at around 62,000 tonnes per annum).

Table 4-3: Landfills capacity and consent life

Landfill	District	Regional Capacity	Consents Expire
Eves Valley (Stage 2 — currently available).	Tasman	Stage 2: 1 year	2015 Applications for renewal of consent with an expiry of 2050 is being processed.
Eves Valley (further stages - yet to be developed)	Tasman	Stage 3: 20 years Stage 4: 10-20 years	Subject to gaining resource consents
York Valley (currently available)	Nelson	15 years	2034
York Valley	Nelson	Three adjacent gullies — potential capacity for many decades	Subject to gaining resource consents

Between the two landfill sites there is sufficient capacity within the Nelson–Tasman region to meet current and future demand for many decades.

4.3.5.2 Hazardous materials treatment and/or disposal and other special waste

Hazardous wastes are those that pose a present or future threat to the environment due to (for example) their explosive, flammable, reactive, toxic, corrosive or infectious nature, and include those that pose an immediate threat to persons who handle them.

Some wastes are inherently hazardous, while others become hazardous if disposed inappropriately (for example by burning, creation of dust, discharge to water or to land).

The 2012 SWAP study indicated 1.4% of the material currently sent to landfill is potentially hazardous waste.

A number of these wastes are already managed by the Councils through their hazardous waste drop off services and through other collection and product stewardship schemes. Other products are the subject of voluntary industry initiatives, but these voluntary schemes generally do not have comprehensive coverage or target a full range of materials or sources.

Privately available hazardous waste facilities and services also provide treatment and disposal mechanisms, but it is not clear to what extent these services are used.

There are likely to be opportunities to enhance the capture and diversion of special wastes from landfill through mandatory and/or further voluntary product stewardship schemes. The Councils are likely to consider providing improved information and services for the recovery of hazardous materials and wastes.

4.3.5.3 Rural waste

Environment Canterbury have recently undertaken a New Zealand Rural Waste Minimisation Project to better understand the nature of waste on farms and to begin to identify alternatives to burning, burial and bulk storage of waste. This work indicates that uncontrolled and inappropriate disposal of rural waste is occurring in New Zealand. It is likely that this is occurring in the Nelson – Tasman region. It also found that, on average, farms were producing nearly 10 tonnes of non-natural rural waste each year in addition to domestic waste and animal remains. The report also confirmed that burning, burial and bulk storage of waste on farms are the prevalent methods chosen to manage waste.

The outcome of this study is further planning and pilot trials of the following:

- Agrecovery / EnviroWaste Rural Waste Services: Plan, promote and execute a small number of pilot Temporary Pop-up Recovery Events including new waste streams and regional coordination with on-farm collections. Look also at providing soft plastics collection services at Territorial Authority Recycling Drop-Off Hubs and other Agrecovery container collection sites.
- Community Organisation On-Farm Collection: Work closely with specific community organisations to support planning for implementation of on-farm collection services and, where feasible, assist with localised service pilots.
- Expanded ROSE Oil Recycling Scheme Drop-Off Hubs: Plan, promote and execute service provision at two Farmlands stores
- Fonterra Sharps Collection: Trial collection of sharps containers via a Temporary Pop-up Recovery event and support with planning for wider option rollout.

The Councils note the findings of this report that local government services are not necessarily the most efficient way to manage farm waste, and are fully supportive of the proposed approach outlined above. The Councils may consider supporting the development of initiatives from this work.

4.3.5.4 Cleanfills

There are a number of private cleanfill or monofill facilities within the Nelson–Tasman region. The type of material disposed of at each site varies and there is limited information on the total tonnage of material disposed. There are also a large number of private properties throughout the region where excavated material from roading or building projects is often placed for ‘recountouring’ paddocks, and there is no data available on these materials.

Further research is needed to establish the scale and type of material being sent to “clean fills” or “monofills” in the Nelson–Tasman region followed by consideration of the need for the provision of additional legislative requirements, services and facilities.

Recent work completed by Landcare Research, with funding from an Envirolink grant, indicated that the Nelson–Tasman region has relatively high background levels of some metals and compounds normally regarded as contaminants. These high background levels may lead to disposal to landfill when disposal to cleanfill or managed fill may be more appropriate.

Further work is required to investigate background levels and set appropriate cleanfill disposal guidelines.

5 HOW ARE WE GOING TO MEET AND MANAGE DEMAND?

In developing options to achieve effective and efficient waste minimisation, the Councils have considered:

- key waste streams for diversion
- future demand issues
- protection of public health
- the effectiveness and efficiency of services to achieve these aims.

Economic conditions and community concerns have also been considered as part of this assessment.

At this stage the options are broadly strategic in nature and do not include a detailed operational review of service delivery models or provide full details on option feasibility. Some operational considerations are highlighted, where relevant.

The assessment is to be used as a starting point for considering practical methods for meeting demand for waste management and minimisation services.

5.1 Options assessment

The options assessment includes:

- identifying reasonably practicable options to be considered
- a summary of each option
- a summary review and discussion of the economic, environmental, social and cultural costs and benefits in relation to these options
- an assessment of the suitability of each option, and
- the anticipated outcome and how these options will impact on future demand, such as infrastructure capacity issues.

A common set of categories for comparing options has been used in this assessment. It provides a broad comparison of the sustainability of the various options by including the social-cultural, environmental and economic costs and benefits.

Costs per tonne have not been modelled but have been based on available information. For some options these are broad estimates only.

5.2 Summary of Options

Waste Hierarchy	Option	Suitability
Measure and Monitoring (Better Data Collection)	Maintain existing waste data collection within the region.	Suitable
	Improve waste data collection using existing systems within the region.	Suitable
	Improve waste data collection by implementing new systems within the region.	Further work required
Reduce – Communication and Education	Continuing existing education programmes.	Suitable
	Councils leading behaviour change through their own activities.	Further work required
	Councils supporting behaviour change initiatives in the community.	Suitable
	Councils supporting a hierarchy of diverting resources to people, animals, compost and landfill within our community.	Suitable
	Councils leading behaviour change through regulation.	Further work required
Reuse – Encouraging Community Engagement	Councils fund reuse opportunities.	Further work required
	Councils promote reuse opportunities but providing limited funding.	Suitable
Recycling	Councils continuing current levels of collecting and sorting recyclable materials, with upgrades and improvements to accommodate user numbers.	Suitable
	Encourage others to provide additional capacity within the region for collecting and sorting recyclable materials.	Suitable
	Councils provide additional capacity within the region for collecting and sorting recyclables.	Further work required
	Investigate and develop new markets for recyclables, e.g., glass, C&D materials, and plastic bags.	Further work required
Recovery (organics)	Councils continue to provide the existing capacity within the region for the diversion of organic materials, with upgrades and improvements to accommodate growth.	Suitable
	Rely on commercial services for organic waste collection and processing.	Further work required
	Councils provide additional capacity within the region for a combined green waste and/or food waste processing facility and develop markets for the product.	Further work required
	Encourage the diversion of organic materials through regulation.	Further work required
Disposal	Promote diversion of recoverable materials from landfill through regulatory controls at the point of disposal.	Further work required
	Improve regulation of alternative disposal options to minimise environmental harm.	Further work required
	Increase landfill capacity within the region to meet future demands.	Further work required
	Reduce the potential for environmental harm from special waste within the region.	Further work required
	Provide additional hazardous waste services and facilities to manage hazardous or semi-hazardous wastes.	Further work required
Collection options	Maintain existing kerbside collection arrangements.	Suitable
	Councils opt out of the business of refuse collection but still provide kerbside recycling and organic waste collections – refuse collection provided by the commercial sector.	Further work required
	Councils opt out of the business of all kerbside collections – leave this to commercial collectors.	Further work required
	Councils operate or facilitate all kerbside collection services, refuse, recyclables and organics.	Not suitable

5.3 Options

5.3.1 Measure and Monitoring – (Better Data Collection)

“The Councils plan to monitor and measure progress on the efficiency of resource use and the effectiveness of services.” (JWMMP)

Option No Data 1.	Maintain existing waste data collection within the region.
Summary	This includes considering: <ul style="list-style-type: none"> maintaining existing service arrangements making changes to align with the National Waste Data Framework.
Social/cultural costs and benefits	<ul style="list-style-type: none"> Existing waste data collection systems do not collect a lot of information on waste management practices and material under commercial control where very little data is available. There are currently differences between the way data is collected by each Council which limits the ability to compare data between each council.
Environmental costs/benefits	<ul style="list-style-type: none"> Continues to monitor waste quantities disposed of to landfill within the region and manage environmental effects. The potential for material not under Council control to be recovered or disposed of inappropriately.
Economic costs/benefits	<ul style="list-style-type: none"> Currently funded. No change to existing services.
Operational (as relevant)	<ul style="list-style-type: none"> Minor changes to reporting procedures in order to align with the National Waste Data Framework.
Anticipated outcome	No change to existing services. This would not impact directly on the status quo prediction of demand.
Hierarchy position	Reduce, Reuse, Recycling, Recovery, Treatment, Disposal
Suitability of option	<u>Suitable</u> / Further work required / Not suitable

Option No Data 2.	Improve waste data collection using existing systems within the region.
Summary	<p>Analysis of available data has shown there are gaps in knowledge and understanding of certain waste streams within the region.</p> <p>Collecting waste data is imperative to planning how to increase waste minimisation across waste streams. Increase monitoring to provide more information in certain areas, such as commercial waste composition, waste management in rural areas, cleanfill, and construction and demolition waste.</p> <p>This includes considering:</p> <ul style="list-style-type: none"> developing a Joint Council Waste Database (including commercial data) improving data collection regarding sources of waste at existing sites reviewing NZ data guidelines, and incorporating these requirements into existing data collection systems combining both Councils' historical and future data in one location.
Social/cultural costs and benefits	<ul style="list-style-type: none"> Raises awareness of quantities and waste management practices in areas where very little is currently known. Enables greater monitoring of providers to ensure no adverse health effects occur. Identifies material streams for recovery which could lead to economic benefit.
Environmental costs/benefits	<ul style="list-style-type: none"> Potential to increase diversion of waste from landfill. Minimises harm to the environment by ensuring best waste management practices across all sectors.
Economic costs/benefits	<ul style="list-style-type: none"> There may be additional costs to establish new programmes. The ability to identify materials and waste streams for potential recovery and reduction could give rise to new business opportunities and reduce disposal costs.

Operational (as relevant)	Establish a consistent data management approach for both Councils.
Anticipated outcome	Availability of more data, and tailoring of services accordingly, could increase demand for recycling services and reduce waste to landfill.
Hierarchy position	Reduce, Reuse, Recycling, Recovery, Treatment, Disposal
Suitability of option	<u>Suitable</u> / Further work required / Not suitable

Option No Data 3.	Improve waste data collection by implementing new systems within the region.
Summary	<p>This includes considering:</p> <ul style="list-style-type: none"> • updating electronic data collection systems and software at York Valley and each of the resource recovery centres/transfer stations • providing weighbridges at all sites • undertaking further research to establish the number of commercial facilities (collectors, recyclers, reprocessors and landfills) within the region and the capacity of these to meet future demand • adopting bylaws to obtain waste data from commercial operators • developing an electronic system for all operators to provide data on a monthly basis.
Social/cultural costs and benefits	<ul style="list-style-type: none"> • Raises awareness of quantities and waste management. • Enables greater monitoring of providers to ensure no adverse health effects occur. • Identifies material streams for recovery which could create an economic benefit.
Environmental costs/benefits	<ul style="list-style-type: none"> • Provides evidence to support further diversion away for landfill and reduced harm to the environment.
Economic costs/benefits	<ul style="list-style-type: none"> • Additional software and infrastructure required at some sites. • Additional resources would be required to fully monitor and enforce a regulatory system. • The ability to identify materials and waste streams for potential recovery and reduction could give rise to new business opportunities and reduce disposal costs.
Operational (as relevant)	<ul style="list-style-type: none"> • Improved data management system across both the Councils and commercial and private sectors.
Anticipated outcome	Improved data collection to include material under the control of the Councils and commercial services. Consistencies across public and private schemes. Evidence to support future initiatives.
Hierarchy position	Reduce, Reuse, Recycling, Recovery, Treatment, Disposal
Suitability of option	Suitable / <u>Further work required</u> / Not suitable

5.3.2 Reduce – Communication and Education

“The Councils plan to assist our community to develop a culture whose values make waste avoidance and reduction the behaviour of choice and ensure our community has opportunities for avoiding or reducing waste at source and minimising the unnecessary consumption of natural resources.” (JWMMP)

Option No Reduce 1.	Continue existing education programmes.
Summary	Maintain existing waste minimisation education and behaviour change programmes in the region. This includes considering: <ul style="list-style-type: none"> • maintaining or expanding the Councils' support for community-led waste minimisation initiatives • engaging with schools (existing activity in partnership with Environmental Programmes through Enviroschools) • providing home composting subsidies.
Social/cultural costs and benefits	<ul style="list-style-type: none"> • Empowers schools, communities and individuals to improve use of resources. • Community will be aware of options, engaged in the waste management process, and take a level of ownership for waste issues. • Embeds a culture of personal responsibility through action learning. • Strengthens development of activities which support better use of resources and waste avoidance. • Provides information regarding health risks of waste materials and appropriate disposal pathways.
Environmental costs/benefits	<ul style="list-style-type: none"> • Education programmes aim to establish and support positive behaviours that reduce environmental impact. • Provides an integrated approach to resource use and climate change. • Equips schools and the wider community to create measurable environmental change. • Diversion of waste from landfill.
Economic costs/benefits	<ul style="list-style-type: none"> • Currently funded. • No directly attributable economic benefits but the long term implications are that these programmes support activities which improve use of resources and reduction of waste to landfill.
Operational (as relevant)	<ul style="list-style-type: none"> • Managed in partnership with Environmental Programmes and suppliers. • Needs to build on current programmes.
Anticipated outcome	Continues to empower schools, communities and individuals to improve use of resources.
Hierarchy position	Reduce, Reuse, Recycling
Suitability of option	<u>Suitable</u> / Further work required/ Not suitable

Option No Reduce 2.	Councils lead behaviour change through their own activities.
Summary	This includes implementing some or all of the following: <ul style="list-style-type: none"> • maintaining or improving waste minimisation education and behaviour change programmes in the region • investigating the employment of a joint Council waste minimisation/pollution prevention/efficiency officer for businesses, appointed to research, design, deliver and evaluate behaviour change programmes • improving waste reduction and avoidance at Council facilities — including those used by the public • standardising waste reduction at Council events (which currently takes place on an adhoc basis) • incorporating waste reduction requirements into Council procurement processes, particularly for RFP and tenders for capital works (possibly starting with those relating to Council facilities).
Social/cultural costs and benefits	<ul style="list-style-type: none"> • Builds community trust in Council policies and delivers strong environmental messages. • Reassures public that Council cares about waste reduction/avoidance. • Builds up consumer responsibility amongst staff and organisations.

	<ul style="list-style-type: none"> • Opportunity to change the way organisations think when planning projects which generate waste, and encourages organisations to change their internal practices in order to meet Council requirements.
Environmental costs/benefits	<ul style="list-style-type: none"> • Indirect diversion of waste from landfill as other organisations follow suit. • Motivates waste providers to provide a more consistent and cost effective service.
Economic costs/benefits	<ul style="list-style-type: none"> • Cost varies across the various activities but often there is low economic benefit versus cost as the diverted waste stream is small and the implementation cost is considerably higher than simply sending waste to landfill. This cost has to be weighed against the benefits of motivating other organisations to follow suit through modelling behaviours, and the associated changes they will make in other processes which lead to waste minimisation/avoidance. • Some cost implications for facility management contracts.
Operational (as relevant)	<ul style="list-style-type: none"> • Scope and design a minimum level of service for recycling at Council facilities and events • Collaboratively scope a minimum level of service for recycling at Council facilities and identify the cost for each facility. • Collaborate with Council officers to implement a facility waste reduction programme. • Provide training on waste minimisation/avoidance to Council facility officers. • Consider revising contracts for venue management. • Collaborate with waste service providers to establish consistent services for Council events. • Evaluate for effectiveness.
Anticipated outcome	Social diffusion is about inspiring confidence in an activity by 'walking the talk'. This means increasing the visibility of programmes and activities which reduce/avoid waste at Council facilities.
Hierarchy position	Reduce, Reuse, Recycling
Suitability of option	Suitable / <u>Further work required</u> / Not suitable

Option No Reduce 3.	Councils support behaviour change initiatives in the community.
Summary	<p>Projects in the community demonstrate energy, enthusiasm, skills and access to community-sourced funding. Where these projects support Council outcomes, the opportunity could exist to support them through matched funding.</p> <p>This includes considering:</p> <ul style="list-style-type: none"> • improving waste minimisation education and behaviour change programmes in the region. • matching funding for community projects • promoting waste reduction at public events • re-launching activities such as the sustainable living programme • promoting Better Build programmes to the C&D sector (waste plans, source separation, design plans, and promoting reduction of materials at source).
Social/cultural costs and benefits	<ul style="list-style-type: none"> • Provides strong message of community/consumer ownership of issues. • Provides employment and high levels of volunteer engagement. • Reassures the public that Council cares about waste reduction/avoidance and a clear message of Council support for community. • Builds consumer responsibility amongst event organisers, event visitors and waste service providers. • Promotes long term upskilling. • Strengthens opportunities for partnership and collaboration.
Environmental costs/benefits	<ul style="list-style-type: none"> • Reduces waste to landfill at source. • Quantifiable reduction benefits are difficult to measure at a household scale but could include reduced food bills through improving shopping and re-use activities, as well as links with growing food at home. Potential low level savings in reducing waste going into the refuse collection.

Economic costs/benefits	<ul style="list-style-type: none"> • Opportunities to collect data within a sector that is not currently measured. • Comparison required between promotional investment and outcomes of promotions. • Some options rely on new infrastructure and markets being developed. • Provides employment and high levels of volunteer engagement, and therefore economic benefit to the community.
Operational (as relevant)	<ul style="list-style-type: none"> • Criteria to be developed on how funding will be allocated. • Collaboration with the community and waste service operators is needed to identify new initiatives. • Councils need to design and test programmes before investing in updated resources, programmes and incentives. • Agree media for distribution. • Evaluate programme effectiveness on an ongoing basis.
Anticipated outcome	Provides strong message of community/consumer ownership of issues as opposed to an expectation that only the Councils can provide solutions. It strengthens a culture where people actively choose not to create waste.
Hierarchy position	Reduce, Reuse, Recycling
Suitability of option	<u>Suitable</u> / Further work required/ Not suitable

Option No Reduce 4.	<p>Councils support a hierarchy of diverting resources to people, animals, compost and landfill within our community.</p> <p>This option includes considering:</p> <ul style="list-style-type: none"> • promoting home composting and reduction of green and food waste • increasing home composting subsidies • supporting food diversion programmes for commercial food waste, as well as reuse of food waste through Love Food Hate Waste.
Summary	In other regions diversion of organic materials and food rescue programmes have proved to be viable.
Social/cultural costs and benefits	<ul style="list-style-type: none"> • Potential to increase uptake through the re-launch of activities. • Programmes can be delivered by the Councils or through community groups. • Enables waste food and greenwaste to be seen as an opportunity rather than a problem. • Provides support for organisations providing food for those in need and enables them to expand their programmes. • Provides employment and high levels of volunteer engagement. • Creates a norm where wasting food is seen as negative. • Builds community ownership of solutions. • Shows the Councils are engaged in supporting solutions. • Quantifies the scale of the food being wasted to the community and the food retail/production industries. • Supports collaboration, networking and sharing of resources.
Environmental costs/benefits	<ul style="list-style-type: none"> • Diverts organic waste from landfill. • Reduces greenhouse gas emissions. • Reduces the costs to the support organisations providing food to those in need.
Economic costs/benefits	<ul style="list-style-type: none"> • There may be a reduction in landfill disposal costs for companies and individuals – costs to be assessed. • Relatively low cost opportunity to effect significant change. • May qualify for waste levy funding. • May reduce landfill operational costs. • Reduces ETS liability and payments.
Operational (as relevant)	<ul style="list-style-type: none"> • Promote networking between sources of food diversion, eg. food rescue schemes, charities, pig farmers and waste companies. • Need to build on current programmes and increase promotion of reduction. • Agree media for distribution of any subsidies. • Ongoing evaluation of programme effectiveness.

Anticipated outcome	Reduction of green and food waste going to landfill. Increase in food diversion programmes for commercial food waste, as well as reuse of food waste through Love Food Hate Waste. Collaboration with organic waste solution service providers. Local investment and job opportunities.
Hierarchy position	Reduce, Recovery
Suitability of option	<u>Suitable</u> / Further work required/ Not suitable

Option No Reduce 5.	Councils lead behaviour change through regulation. This includes considering: <ul style="list-style-type: none"> investigating a ban on the use of plastic bags investigating a ban on certain materials being disposed to landfill introducing a waste bylaw
Summary	Fully implemented bylaws would, as a minimum, require reporting of waste material quantities. A bylaw or other regulation could also be used to require minimum performance standards. This could be a key mechanism for addressing waste streams currently controlled by the private sector and how they provide their collection services.
Social/cultural costs and benefits	<ul style="list-style-type: none"> Strong Council leadership. Encourages community to take action or be involved. Encourages alternative options to be developed for certain materials. Risks alienating retailers, companies, builders etc. Allows for quantities of specific materials to be measured, resulting in better understanding of the waste flows in the region.
Environmental costs/benefits	<ul style="list-style-type: none"> Reduces harm to the environment. Reduces waste to landfill.
Economic costs/benefits	<ul style="list-style-type: none"> Variation in cost. Some alternatives to disposal to landfill are expensive to implement. Additional resources would be required to fully monitor and enforce a regulatory system.
Operational (as relevant)	<ul style="list-style-type: none"> Extensive investigation with concerned parties required.
Anticipated outcome	Reduces waste to landfill, encourages the development of new markets for certain materials and potentially reduces harm to the environment.
Hierarchy position	Reduce, Reuse, Recycling
Suitability of option	Suitable / <u>Further work required</u> / Not suitable

5.3.3 Reuse

“The Councils recognise the benefit of collaborating with each other, iwi and other parties throughout the community in avoiding and reducing waste.” (JWMMP)

Option No: Reuse 1	The Councils fund reuse opportunities. Programmes to consider include: <ul style="list-style-type: none"> continuing to promote Second-hand Sunday (existing project). Social or bike tours of op shops Op shop fashion challenges supporting initiatives such as Fix It Cafes community-made reusable bags online platforms.
Summary	There is a growing framework of organisations and platforms which enable the community to pass on resources. These range from Op Shops and organisations such as the Koha Shed, through to online platforms.
Social/cultural costs and benefits	<ul style="list-style-type: none"> Provides strong message of community/consumer ownership of issues.

	<ul style="list-style-type: none"> • Encourages community to view unwanted items as an opportunity to come up with innovative solutions rather than being a problem. • Could create new resources of benefit to the community. • Opportunities for collaboration with community sector to match needs with available resources. • Reassures public that Council cares about waste reuse/avoidance and a clear message of Council support for community. • Too much Council involvement in community initiatives can have a negative impact.
Environmental costs/benefits	<ul style="list-style-type: none"> • Diverts a small waste stream from landfill. • Quantifiable reduction benefits are often difficult to measure but creates opportunities to collect data in return for funding within a sector that is not currently measured. • Indirect waste diversion occurs through participants subsequently making decisions not to send items to landfill. • May increase kerbside littering.
Economic costs/benefits	<ul style="list-style-type: none"> • Relatively low cost to the Councils for good public visibility. • Some activities may fit under a fund matching programme but many will not, and a coordinated approach to this aspect of waste reduction is worth considering. • Ongoing evaluation of programme effectiveness.
Operational (as relevant)	<ul style="list-style-type: none"> • Networking and relationship building. • Criteria to be developed on how funding will be allocated. • Regular monitoring for participation required.
Anticipated outcome	Funding available for social enterprise/charitable community groups to develop initiatives that suit the local community and environment, and providing funding to help establish these initiatives.
Hierarchy position	Reuse
Suitability of option	Suitable / <u>Further work required</u> / Not suitable

Option No. Reuse 2	The Councils promote reuse opportunities but provide limited funding.
Summary	This includes considering: <ul style="list-style-type: none"> • promoting reuse initiatives through Council publications • promoting innovation and new ideas.
Social/cultural costs and benefits	<ul style="list-style-type: none"> • Provides strong message of community/consumer ownership of issues. • Could create new resources of benefit to the community. • Community allowed to develop initiative that suit the local community and environment without interference from Council. • Reassures public that Council cares about waste reuse/avoidance and a clear message of Council support for community.
Environmental costs/benefits	<ul style="list-style-type: none"> • Diverts a small waste stream from landfill. • Indirect waste diversion occurs through participants subsequently making decisions not to send items to landfill. • May increase kerbside littering.
Economic costs/benefits	<ul style="list-style-type: none"> • Low cost to the Councils for good public visibility. • Provides employment and high levels of volunteer engagement and therefore economic benefit to the community.
Operational (as relevant)	<ul style="list-style-type: none"> • Networking and relationship building. • Communications — requires high level promotional support from both councils' communications teams.
Anticipated outcome	Councils' public support for community initiatives.
Hierarchy position	Reuse
Suitability of option	<u>Suitable</u> / Further work required/ Not suitable

5.3.4 Recycling

“The Councils plan to ensure that waste minimisation services are provided and that the proportion of the total waste and the range of material diverted will be improved and the quality of diverted material enhanced.” (JWMMP)

Option No. Recycle 1	The Councils continue current levels of collecting and sorting recyclable materials, with upgrades and improvements to accommodate user numbers.
Summary	This includes considering: <ul style="list-style-type: none"> continuing to operate recovery centres and transfer stations at Richmond, Nelson, Mariri, Murchison, Takaka and possibly Collingwood continuing to provide public place recycling and drop off facilities investigating joint management and operation of council-owned recycling facilities.
Social/cultural costs and benefits	<ul style="list-style-type: none"> Current services allow for the separation of recyclable materials as well as diversion of some hazardous materials from the landfill. Public acceptance and participation exists.
Environmental costs/benefits	<ul style="list-style-type: none"> Continues to divert a portion of recyclable materials from landfill. Some improvement to waste recovery if expanded/additional services are introduced. Recyclable materials still ending up in the landfill.
Economic costs/benefits	<ul style="list-style-type: none"> Currently funded. There may be a need to upgrade existing facilities to cope with demand.
Operational (as relevant)	<ul style="list-style-type: none"> Current operation arrangement would continue with a review at the end of each contract period.
Anticipated outcome	Does not impact on the demand for landfill, but would accommodate the predicted future demand for recovery centres, transfer stations and drop-off facilities as a result of growth in the area.
Hierarchy position	Recycling
Suitability of option	<u>Suitable</u> / Further work required/ Not suitable

Option No. Recycle 2	Encourage others to provide additional capacity within the region for collecting and sorting recyclable materials. This includes considering: <ul style="list-style-type: none"> investigating whether existing commercial services and facilities have the capacity to handle more materials (plastics, glass and C&D materials etc) meeting with individual operators to discuss the capacity of existing facilities encouraging the private sector to develop additional facilities introducing a waste bylaw to obtain data from the private sector promoting the development of product stewardship schemes for specific types of waste, eg C&D products such as timber and plasterboard, E-waste and tyres investigating support for the expansion of E-waste recycling and recovery services throughout the region supporting the rural waste initiatives identified in the New Zealand Rural Waste Minimisation Project.
Summary	Councils recognise the importance of diversity in the mix of economies of scale and localised solutions. Councils could use contractors/social enterprise/charitable community groups to provide a range of cost effective waste management services for the region.
Social/cultural costs and benefits	<ul style="list-style-type: none"> Potential for job creation. Having council/contractors/social enterprise/charitable community groups all working together can provide mutual benefits for all. Product take back will require behaviour change within commercial companies and households.
Environmental costs/benefits	<ul style="list-style-type: none"> Improved resource efficiency. Potential for better management of hazardous materials.

Economic costs/benefits	<ul style="list-style-type: none"> • Opportunities for shared costs between the public and private sectors. • Potential for producer pays schemes. • Economies of scale. • Limited upfront capital investment for ratepayers. • Could result in benefits for the local economy.
Operational (as relevant)	<ul style="list-style-type: none"> • Current operation arrangement would continue with a review at the end of each contract period. • New contracts and collection facilities may be required to divert certain materials to new schemes as they become available. • Lobby Central Government for enhanced product stewardship schemes.
Anticipated outcome	Councils would support a mix of economic models to target best fit solutions depending on the situation.
Hierarchy position	Recycling
Suitability of option	<u>Suitable</u> / Further work required/ Not suitable

Option No: Recycle 3	Councils provide additional capacity within the region for collecting and sorting recyclables.
Summary	<p>Requires further investigation to determine tonnage, markets and costs but includes considering:</p> <ul style="list-style-type: none"> • developing a large transfer station or materials recovery facility at York Valley or in Nelson • purchasing/expanding the Richmond materials recovery facility (2023 or earlier) • investigating expanding the range of recyclables collected through kerbside, resource recovery centres and refuse transfer stations or community initiatives • continuing with existing services • improving facilities for C&D recovery at transfer stations and resource recovery centres and consider other options for cleanfill material prior to cleanfilling (reuse, recycling) • maintaining and/or expanding Council-run E-waste collection services • encouraging good recycling practices. Reducing contamination and growing the total percentage of waste diverted.
Social/cultural costs and benefits	<ul style="list-style-type: none"> • Allows for the increased separation of recyclable materials. • Separation of additional materials such as hazardous waste would facilitate appropriate disposal and reduce health impacts. • Potential for job creation.
Environmental costs/benefits	<ul style="list-style-type: none"> • Reduces harm to the environment. • Reduces waste to landfill. • Improves waste recovery, depending on exactly which expanded/additional services are introduced.
Economic costs/benefits	<ul style="list-style-type: none"> • Councils will need to fund improvements to existing facilities and extension of the network. • A larger scale resource recovery facility could cost in the region of ~\$1.4m. • A material recovery facility could cost in the region of ~\$2.4m. • More council control over where materials are sent, or how they are processed.
Operational (as relevant)	<ul style="list-style-type: none"> • May require partnership with commercial waste industry to be economically feasible. • May require additional funding such as through the Waste Minimisation Fund. • Will be most effective with market development projects. • Will be most effective if combined with other incentives (eg. bylaw ban of certain materials to landfill and/or collection system pricing and design). • Complete an options study if required.
Anticipated outcome	Would reduce the demand for landfill and would increase demand for recycling/recovery services and processing facilities.

Hierarchy position	Recycling
Suitability of option	Suitable / <u>Further work required</u> / Not suitable

Option No. Recycle 4	Investigate and develop new markets for recyclables, eg, glass, C&D materials, and plastic bags.
Summary	This includes considering: <ul style="list-style-type: none"> enhancing packaging design controls and extended producer responsibility for packaging materials. investigating and developing markets for glass recycling investigating whether existing services and facilities have the capacity to handle more plastics, glass and C&D materials (including waste exchanges) analysing more specifically the types and sources of paper and packaging waste going to landfill.
Social/cultural costs and benefits	<ul style="list-style-type: none"> Partnership with private enterprise and community organisations. Partnership with central government and other territorial authorities.
Environmental costs/benefits	<ul style="list-style-type: none"> Has potential to divert additional tonnes from landfill. Recycled glass does not attract the same ETS costs as virgin glass. Reduces windblown litter at landfill if less plastic is present.
Economic costs/benefits	<ul style="list-style-type: none"> Councils' time and resources required to support market development projects. Economic benefit in the recovery of materials — this could be to either the Councils or businesses. Waste levy funding available to support these projects. May help the Councils and businesses to save on disposal costs over the longer term.
Operational (as relevant)	<ul style="list-style-type: none"> Requires suitable market development projects to investigate. Requires specialist skills. May work best in a partnership with industry.
Anticipated outcome	New markets for recyclables developed and increased diversion from landfill.
Hierarchy position	Recycling, Recovery, Treatment, Disposal
Suitability of option	Suitable / <u>Further work required</u> / Not suitable

5.3.5 Recovery

“The Councils plan to ensure that our community has access to comprehensive services for the management of diverted material. The Councils plan to improve the range of materials diverted taking into consideration the whole life cost and product stewardship.” (JWMMP)

Option No. Recovery 1	Councils continue to provide the existing capacity within the region for the diversion of organic materials, with upgrades and improvements to accommodate growth.
Summary	This includes: <ul style="list-style-type: none"> maintaining green waste drop off services at Nelson, Mariri, Murchison, and Takaka resource recovery centres and transfer stations maintaining joint contract for the processing of organic material encouraging commercial and community schemes for the diversion of organic material investigating joint management and operation of council owned recycling facilities.
Social/cultural costs and benefits	<ul style="list-style-type: none"> Current services allows for the separation of organic materials. Public acceptance and participation already exists.
Environmental costs/benefits	<ul style="list-style-type: none"> Continues to divert a portion of recyclable materials from landfill.

	<ul style="list-style-type: none"> • Some improvement to waste recovery if expanded/additional services are introduced. • Recyclable materials still end up in the landfill.
Economic costs/benefits	<ul style="list-style-type: none"> • Currently funded. • May be a need to upgrade existing facilities to cope with demand, particularly in Nelson.
Operational (as relevant)	<ul style="list-style-type: none"> • Current operation arrangement would continue with a review at the end of each contract period.
Anticipated outcome	This is an continuation / slight modification of an existing service
Hierarchy position	Recovery
Suitability of option	<u>Suitable</u> / Further work required / Not suitable

Option No. Recovery 2	Rely on commercial services for organic waste collection and processing.
Summary	<p>This includes considering:</p> <ul style="list-style-type: none"> • expanding food waste collection to include waste from the catering and hospitality industry • providing support to existing food waste diversion schemes • encouraging development of processing capacity for nappies and sanitary products • encouraging the Government and/or industries to develop compost standards.
Social/cultural costs and benefits	<ul style="list-style-type: none"> • Potential for job creation. • Having council/contractors/social enterprise/charitable community groups all working together can provide mutual benefits for all. • Public interest. • User friendly.
Environmental costs/benefits	<ul style="list-style-type: none"> • Diverts a high volume waste stream from landfill — 5000 tonnes currently with additional potential (max of 9000 tonnes total) if combined with other options (eg. ban). • Reduces organic waste to landfill and associated methane emissions (note: it is internationally recognised that not all methane emissions are captured in landfills, even for landfills with gas collection systems). • Returns nutrients to the soil.
Economic costs/benefits	<ul style="list-style-type: none"> • Opportunities for shared costs between the public and private sectors. • Economies of scale. • Limited upfront capital investment for ratepayers. • Could result in benefits for the local economy.
Operational (as relevant)	<ul style="list-style-type: none"> • New contracts and collection facilities may be required to divert organic materials to new schemes as they become available. • Review procurement procedures to promote the use of compost as an alternative to virgin material. • Discuss with potential industry and community partners (if any). • Apply for Waste Minimisation Fund funding — more likely to be successful if in partnership with industry. • RFP and implement agreement. • Already have source separation.
Anticipated outcome	Councils would support a mix of economic models to target best fit solutions depending on the situation. Would reduce the demand for landfill and would increase demand for organic waste collection and processing facilities.
Hierarchy position	Recovery, Treatment
Suitability of option	<u>Suitable</u> / <u>Further work required</u> / Not suitable

Option No. Recovery 3	Councils provide additional capacity within the region for a combined green waste and/or food waste processing facility and develop markets for the product.
Summary	This includes considering: <ul style="list-style-type: none"> • promoting market development for the processed organics (compost) industry • implementing a kerbside food waste/greenwaste collection service to supply the processing facility.
Social/cultural costs and benefits	<ul style="list-style-type: none"> • Public interest. • User friendly. • Partnership with private enterprise or joint council project. • There is already source separation facilities in place at the resource recovery centres and transfer stations.
Environmental costs/benefits	<ul style="list-style-type: none"> • Diverts a high volume waste stream from landfill — 5000 tonnes currently with additional potential (max of 9000 tonnes total) if combined with other options (eg. ban). • Reduces organic waste to landfill and associated methane emissions.
Economic costs/benefits	<ul style="list-style-type: none"> • Landfill disposal is cheaper as there is no diversion cost. • Waste levy funds available for waste minimisation projects. • Will assist in avoiding levy and has potential for reducing ETS liability and costs in future. • There is a minor cost to the Councils associated with the 'loss of revenue' related to gas generation, though this is relatively nominal as there will still be considerable organics in landfills.
Operational (as relevant)	<ul style="list-style-type: none"> • Discuss with potential industry and community partners (if any). • Apply for funding from the Waste Minimisation Fund — more likely to be successful if in partnership with industry. • RFP and implement agreement. • Already have source separation.
Anticipated outcome	Additional capacity within the region for green waste and/or food waste.
Hierarchy position	Recovery, Treatment
Suitability of option	Suitable / <u>Further work required</u> / Not suitable

Option No. Recovery 4	Encourage the diversion of organic materials through regulation.
Summary	This includes considering: <ul style="list-style-type: none"> differential charging for mixed waste loads vs separated (alternative to a ban) eg. a localised waste levy. increasing the differential charging for green waste to encourage separation.
Social/cultural costs and benefits	<ul style="list-style-type: none"> There is already some source separation. Encourages better separation of materials. User friendly — public interest in separation. Would be unpopular where it is difficult to sort loads at source.
Environmental costs/benefits	<ul style="list-style-type: none"> Has potential to divert additional tonnes as it will promote source separation through economic incentives. Reduces organic waste to landfill and associated methane emissions.
Economic costs/benefits	<ul style="list-style-type: none"> Would require higher gate fees at landfill and the transfer station Funds would be used toward further waste minimisation. Will assist in avoiding waste levy and ETS costs into the future. Preserves landfill space into the future. Increases costs for many waste generators. There is a minor cost associated with the 'loss of revenue' related to gas generation.
Operational (as relevant)	<ul style="list-style-type: none"> Implement differential charging at the gate. There may be some difficulty in administering and enforcing the charging regime. Requires governance to be established.
Anticipated outcome	Changes in community and commercial behaviour, reduces waste to landfill, encourages the development of new markets for certain materials and potentially reduces harm to environment.
Hierarchy position	Reduce, Recovery
Suitability of option	Suitable / <u>Further work required</u> / Not suitable

5.3.6 Disposal

"The Councils plan to continue to maintain ownership of their waste infrastructure and provide leadership in the provision of waste management services. The Councils plan to manage our waste management services to avoid or mitigate any adverse public health, cultural and environmental effects." (JWMMP)

Option No. Disposal 1	Councils promote diversion of recoverable materials from landfill through regulation at the point of disposal.
Summary	This includes considering: <ul style="list-style-type: none"> investigating a ban on specific types of waste to landfill, implemented through regulation/bylaw (eg. requiring source-separated loads) charging less for greenwaste than for mixed waste, to encourage its separation investigating a ban of certain materials from the landfill introducing a waste bylaw that requires all recyclable material to be separated rather than landfilled.
Social/cultural costs and benefits	<ul style="list-style-type: none"> Strong Council leadership. Encourages alternative options to be developed for certain materials. Risks alienating retailers, companies, builders. Allows for quantities of specific materials to be measured and for better understanding of the waste flows in the district.
Environmental costs/benefits	<ul style="list-style-type: none"> Reduces harm to the environment. Reduces waste to landfill. Potential to increase illegal disposal.

Economic costs/benefits	<ul style="list-style-type: none"> • Makes some alternatives more competitive. • Less income for the landfill. • Additional resources will be required to fully monitor and enforce the regulatory system.
Operational (as relevant)	<ul style="list-style-type: none"> • Extensive investigation with concerned parties required.
Anticipated outcome	Reduces waste to landfill, encourages the development of new markets for certain materials and potentially reduces harm to the environment.
Hierarchy position	Recycling, Recovery, Treatment, Disposal
Suitability of option	Suitable / <u>Further work required</u> / Not suitable

Option No. Disposal 2	Improve the regulation of alternative disposal options to minimise environmental harm.
Summary	<p>This includes considering:</p> <ul style="list-style-type: none"> • regulating the disposal of certain materials to landfill and cleanfill through a solid waste bylaw • reviewing consenting requirements and monitoring for private cleanfills/landfills • obtaining better data on material disposed of to cleanfills and monofills, and used for land improvements • developing contaminated soil guidance for landowners to manage the effects of future development on the landfill airspace.
Social/cultural costs and benefits	<ul style="list-style-type: none"> • Public concern addressed. • Level playing field for commercial operators across the region.
Environmental costs/benefits	<ul style="list-style-type: none"> • Reduction of environmental harm through better controls on the type of material disposed to cleanfills and landfills. • Reduces the potential for unsuitable material to be used for land improvements. • More of the environmental effects of private cleanfills included in the disposal costs.
Economic costs/benefits	<ul style="list-style-type: none"> • Users responsible for full cost of disposal. • Increase in disposal costs for cleanfill users.
Operational (as relevant)	<ul style="list-style-type: none"> • Requires resources to complete monitoring and administer bonds system.
Anticipated outcome	Clear guidelines, environmental controls and resource consent requirements developed for all cleanfills, monofills and land improvements within the region. Consistency across both councils.
Hierarchy position	Disposal
Suitability of option	Suitable / <u>Further work required</u> / Not suitable

Option No. Disposal 3	Increase landfill capacity within the region to meet future demands.
Summary	<p>This includes considering:</p> <ul style="list-style-type: none"> • extending Eves Valley Landfill • developing future stages of York Valley landfill • obtaining resource consent for future landfill development • potentially providing further diversion on site through the development of a 'dirty materials recovery facility' as a pre-treatment for disposal.
Social/cultural costs and benefits	<ul style="list-style-type: none"> • Public concern addressed. • Health issues addressed. • Future capacity required.

Environmental costs/benefits	<ul style="list-style-type: none"> • Some environmental harm but reduced by modern landfill disposal techniques and technology. • Potentially harmful material managed in a controlled manner. • Gas extraction and utilisation possible.
Economic costs/benefits	<ul style="list-style-type: none"> • Provides increased capacity for the future, irrespective of what alternatives are developed. • Capital expenditure required for the development of new landfill cells. • Land currently under the Councils' control available for future landfill development. • Potential to discourage commercial landfill development and investment in the region.
Operational (as relevant)	<ul style="list-style-type: none"> • Site investigations, preliminary design and preparation of discharge consent applications required.
Anticipated outcome	Capacity to meet all future disposal requirements within the region which is within the Councils' control.
Hierarchy position	Disposal
Suitability of option	Suitable / <u>Further work required</u> / Not suitable

Option No. Disposal 4	Reduce the potential for environmental harm from special/hazardous waste within the region.
Summary	This includes considering: <ul style="list-style-type: none"> • enhancing the capture and diversion of hazardous and other special wastes • investigating a site for HAIL material
Social/cultural costs and benefits	<ul style="list-style-type: none"> • Public concern addressed. • Health issues addressed.
Environmental costs/benefits	<ul style="list-style-type: none"> • Some environmental harm but reduced by modern landfill disposal techniques. • Potentially harmful material managed in a controlled manner.
Economic costs/benefits	<ul style="list-style-type: none"> • Provides increased capacity for the future irrespective of what alternatives are developed. • Capital expenditure required for the development of new landfill cells. • Land currently under Council control available for future landfill development. • Potential to discourage commercial landfill development and investment in the region.
Operational (as relevant)	<ul style="list-style-type: none"> • Site investigations, preliminary design and preparation of discharge consent applications required.
Anticipated outcome	Council control over the appropriate disposal or treatment of special/hazardous waste arising within the region.
Hierarchy position	Disposal
Suitability of option	Suitable / <u>Further work required</u> / Not suitable

Option No. Disposal 5	Provide additional hazardous waste services and facilities to manage hazardous or semi-hazardous wastes.
Summary	This includes considering: <ul style="list-style-type: none"> • additional infrastructure at resource recovery centres or transfer stations • additional services on site or off-site (such as collections or one-off events) • supporting existing commercial services or expansion of existing services • support of rural recycling options
Social/cultural costs and benefits	<ul style="list-style-type: none"> • Public concern addressed. • Health issues addressed.

Environmental costs/benefits	<ul style="list-style-type: none"> • Potentially harmful material managed in a controlled manner. • Reduced risk at source, in collections, transfer station and landfill
Economic costs/benefits	<ul style="list-style-type: none"> • Reduced cost of managing hazardous wastes on Council sites • Potential for reduced disposal cost due to economy of scale • Reduced cost to the community from discharges
Operational (as relevant)	<ul style="list-style-type: none"> • Cost modelling, site investigations and preliminary design required
Anticipated outcome	Council control over the appropriate disposal or treatment of hazardous and semi-hazardous wastes arising within the region.
Hierarchy position	Disposal
Suitability of option	Suitable / <u>Further work required</u> / Not suitable

5.3.7 Collection options

“The Councils plan to continually review kerbside collection of waste, organics and recyclables and recognise the benefits of collaborating with other parties in the provision of waste minimisation services and meeting future demands. The Councils plan to maintain a user-pays charge system for waste collection and disposal that provides cost recovery as well as incentives and disincentives to promote waste minimisation.” (JWMMP)

Option No. Collect 1	Maintain existing kerbside collection arrangements.
Summary	<p>This includes:</p> <ul style="list-style-type: none"> • the commercial sector providing kerbside refuse collections through bags or wheelie bins to households and commercial properties • the Councils providing kerbside recyclables collection services to householders through contract with the private sector • the commercial sector providing kerbside recyclables collections to commercial properties on an open-market system • the commercial sector providing greenwaste collections to householders and commercial properties on an as requested basis • both Councils and commercial operators considering expansion of the range of recyclables or organics collected through existing services.
Social/cultural costs and benefits	<ul style="list-style-type: none"> • Current services allow for the separation of recyclable materials and diversion from the landfill. • Well-tested system currently in place. • User-friendly as customers have options. • Public acceptance and participation exists.
Environmental costs/benefits	<ul style="list-style-type: none"> • Continues to divert a portion of recyclable materials from landfill. • Can promote waste minimisation as users can ‘pay as they throw’. • Litter and animal strike problems. • User pays sometimes linked to illegal dumping.
Economic costs/benefits	<ul style="list-style-type: none"> • Currently funded. • There may be a need to expand existing services to cope with growth. • Market competition and ‘undercutting’ can weaken the cost efficiency if the Councils’ contracts are poorly structured.
Operational (as relevant)	<ul style="list-style-type: none"> • Current system, so no operational changes required. • Current operation arrangement would continue with a review at the end of each contract period. • Relatively easy to administer the service depending on contract structure etc.
Anticipated outcome	Does not impact on the demand for landfill, but would accommodate the predicted future demand for collection services as a result of growth in the area.
Hierarchy position	Recycling, Recovery, Disposal
Suitability of option	<u>Suitable</u> / Further work required / Not suitable

Option No. Collect 2	Councils opt out of the business of refuse collection and councils provide kerbside recycling and organic waste collections — refuse collection provided by the commercial sector.
Summary	This includes considering: <ul style="list-style-type: none"> operating an open-market system for all kerbside refuse collection services regulating or negotiating a contractual arrangement to ensure that all residential properties have access to a refuse collection service Councils providing kerbside recyclables collection services to householders through contracts with the private sector Councils providing greenwaste collections to householders as appropriate the commercial sector providing kerbside recyclables and organics collections to commercial properties on an open-market system.
Social/cultural costs and benefits	<ul style="list-style-type: none"> Community see recycling collection as the Councils' service. Would encourage diversion of organic material if organics collection service is funded through rates. Could reduce home composting if an organics collection service is funded through rates rather than user pays. Competition between Council and local waste collection industries.
Environmental costs/benefits	<ul style="list-style-type: none"> There may be an increase in the amount of waste arising in the region as this approach potentially diverts currently home composted material to kerbside collection options. Increases the tonnage of materials diverted and reduces the amount sent to landfill.
Economic costs/benefits	<ul style="list-style-type: none"> User-pays system for refuse. Increased costs for provision of an organics collection service. Would limit commercial access to organics material if service provided by Council. Requires infrastructure and markets to be developed for organic materials especially the processing of food waste. These facilities are not currently available in the region.
Operational (as relevant)	<ul style="list-style-type: none"> Regulation or some contractual arrangement to ensure that all residential properties have access to at least a refuse collection service.
Anticipated outcome	Increased diversion of material from landfill.
Hierarchy position	Recycling, Recovery, Disposal
Suitability of option	Suitable / <u>Further work required</u> / Not suitable

Option No. Collect 3	Councils opt out of the business of all kerbside collections — leave this to commercial collectors.
Summary	This includes considering: <ul style="list-style-type: none"> operating an open-market system for all kerbside collection services ensuring that all residential properties have access to at least a refuse collection service through regulation or some contractual arrangement adopting a bylaw to require waste data to be provided and potentially direct where materials are sent.
Social/cultural costs and benefits	<ul style="list-style-type: none"> Change in the current level of service in some areas of the region. Some public concern. Some may seek less desirable methods of disposal. The two councils' policy differences would require resolution.
Environmental costs/benefits	<ul style="list-style-type: none"> May be an increase in waste disposed to landfill/larger receptacles promoted by commercial collectors. There may be increased illegal dumping, creating environmental harm, litter etc. if prices go too high.

Economic costs/benefits	<ul style="list-style-type: none"> Fully user-pays system. Ratepayer responsibility but costs may increase to some users especially in rural areas, depending on market circumstances. There may be increased illegal dumping with associated removal costs. Risk that commercial collectors may collect only in urban areas with gaps in the rural areas that the Councils would be called on to service. Councils' subsidy to commercial collectors may be required to incentivise rural area collections.
Operational (as relevant)	<ul style="list-style-type: none"> May require regulation to ensure that the Councils continue to meet their legislative requirements related to management of waste in their districts. Councils still need to manage residents' expectation that the refuse collection is provided by the Councils.
Anticipated outcome	Limited control on what materials are collected from the kerbside and where the materials are processed.
Hierarchy position	Recycling, Recovery, Disposal
Suitability of option	Suitable / <u>Further work required</u> / Not suitable

Option No. Collect 4	Councils operate or facilitate all kerbside collection services, refuse, recyclables and organics.
Summary	<p>This would require a policy change by the Councils for services not currently operated by the Councils.</p> <p>This includes considering:</p> <ul style="list-style-type: none"> the Councils providing a multi bin or bag collection service to householders and commercial properties through contract with the private sector. kerbside collection service to include provisions for the collection of recyclables, greenwaste and refuse.
Social/cultural costs and benefits	<ul style="list-style-type: none"> Existing commercial collection companies would have to compete against the Councils for business, if they did not win the Council contract, and this could result in loss of businesses and jobs. Public and commercial opposition likely.
Environmental costs/benefits	<ul style="list-style-type: none"> Increased diversion of recyclable materials and organics from landfill. The Councils would have more control on how materials are collected and where they are recycled/recovered in order to minimise impact on the environment Can promote waste minimisation through different sized receptacles and collection frequencies.
Economic costs/benefits	<ul style="list-style-type: none"> Relatively easy to change fees and charges to accommodate changes in collection and disposal costs. The Councils would have more control on how materials are collected and where they are recycled/recovered. Revenue can be managed across both Councils allowing for efficiencies and economies of scale. Revenue can be used to support other waste minimisation activities.
Operational (as relevant)	<ul style="list-style-type: none"> New contractual arrangements required.
Anticipated outcome	Full control on what materials are collected from the kerbside and where the materials are processed. This is likely to be unpopular and would require a policy change by the Councils for services not currently operated by the Councils.
Hierarchy position	Recycling, Recovery, Disposal
Suitability of option	Suitable / Further work required / <u>Not suitable</u>

6 THE COUNCILS' ROLE IN MEETING FUTURE DEMAND

There are a range of approaches available to councils to achieve waste minimisation objectives. Once desired outcomes have been strategically identified the appropriate approach can be implemented — and successful programmes often require a combination of approaches.

The most commonly used approaches to change behaviour and achieve waste minimisation objectives are outlined below.

6.1 Behaviour change programmes using tools such as social marketing and education

A key principle of programme delivery is to identify who, why and what, and then establish activities to help achieve identified outcomes. For example, the JWMMMP goal of supporting a culture where people choose not to create waste is supported by the delivery of the Enviroschools programme, working with teachers, students and the wider school whānau to create an environmentally friendly and resource-aware community. Behaviour change programmes require someone to champion and a specific waste minimisation role within Council will assist this delivery.

Community social marketing tools are another example. This is the term given to methods which draw on marketing and social psychology theory and go well beyond simply creating public awareness of issues by enabling people to try new behaviours.

Examples of activities carried out in this area range from school engagement through to working with the building industry to reduce waste, involvement in the Love Food Hate Waste programme, and longer term home composting programmes. These tools are also used to engage the community in services such as kerbside recycling.

6.2 Leveraging, empowering and supporting community initiatives

This section includes industry/business initiatives.

Future needs are often identified by community impetus and enthusiasm for specific waste minimisation outcomes. Examples are programmes to reduce use of plastic bags and to recover food. These community initiatives harness valuable energy and community resources, and more often than not are more successful as activities outside of councils. Councils can play a valuable role in identifying ways to enable these activities. Examples are the new food rescue programme being run by Nelson Environment Centre, and Tahunanui Community Centre's new programmes, including the "Fix It Cafes". Mechanisms the Councils can use to provide background support include subsidies, grants, fund-matching programmes, promotion through the Councils' channels and officer support and advice.

The Councils can develop an investment approach to assist community groups and other agencies to develop waste management solutions that are considered to meet the objectives of the JWMMMP. This creates a more integrated approach which is both top down (council driven) and bottom up (community driven). This approach can effectively engage the community and businesses in the process of identifying and creatively responding to local waste issues.

6.3 Regulation

This involves using legal mechanisms such as bylaws or district and regional plan rules to require behaviour change to achieve waste minimisation and the beneficial use of resources.

A number of regulatory options could be introduced to support the success of other priority waste stream options and incentivise waste minimisation.

Some councils have used local bylaws to prohibit the disposal of certain materials in refuse collections, landfills or cleanfills. Others have imposed licensing systems to assist in the management and identification of people who are generating, transporting and disposing of various waste materials to landfills or cleanfills.

The advantage of using regulation at a local level is that it can be an effective means to limit certain materials being disposed of to landfill, particularly where there are suitable alternatives available to enable the recovery of the banned materials.

Regulatory tools can be challenging to develop, costly to administer and difficult to enforce. However, used strategically, they can be a very powerful way to create change — it's important to learn from LGNZ best practice and the experience of other councils.

The Councils' support for the Government adopting regulations for extended producer responsibility schemes for packaging materials could contribute to waste minimisation and reduction in costs to ratepayers by moving costs to producers and consumers.

6.4 Direct Action

This only involves actions by the Councils and Council partners.

An effective and quantifiable method for diverting waste from landfill can be direct action. These methods generally involve providing council services that divert waste away from disposal, eg, kerbside recycling, kerbside organics collection and composting, resource recovery facilities, resale shops and waste sorting facilities. Ownership of key waste infrastructure combined with the provision of major kerbside services enables direct action.

An example is the introduction of three bin systems combined with ownership of resource recovery facilities and transfer stations, such as occurs in Christchurch and Timaru, leading to high levels of municipal waste reduction. In some cases this approach has resulted in up to 70% diversion of domestic waste from landfill to beneficial reuse.

6.5 Pricing incentives

As the Councils own and operate their waste infrastructure they have the advantage of readily using economic incentives and disincentives (fees) at their facilities and using the funds generated to further advance waste minimisation in accordance with their JWMMP.

However there is a risk that once price incentives are removed, people will revert to their old behaviours. Therefore it is sometimes advisable to combine pricing incentives with other methods.

6.6 Jointly or individually delivered waste services

When the Councils are assessing service delivery options there are a number of factors which may impact on whether a service is considered to be best provided jointly by the Councils or on an individual basis.

Some of these factors are outlined below.

- **Economy of scale** — this may include consideration of factors such as whether:
 - cost savings can be made
 - increased size of contracts could attract new collectors to this market — potentially increasing competition
 - competition in the market could mean other players in the market may compete against the Councils for customers which would influence the Councils' market share
 - opportunities are available jointly to procure better technology/plant for delivery of the services.
- **Innovation** — when the size and scope of services increase it may allow for additional investment and other businesses to enter the market.
- **Efficiencies for the Councils** — the number of people and budget resources required to manage waste services and develop waste policies. This is most likely to occur when the Councils work jointly and share resources.
- **Levels of service** — when there is consistency in the marketplace there is less confusion for residents. In order for the Councils to provide similar levels of service, their current policy differences need to be reviewed and joint policy developed, taking into account all the issues facing both of the councils.
- **Contract efficiencies** — if the Councils procure services jointly there is the opportunity for more efficient contracted services e.g. a contractor may only require one depot instead of one for each district, and require only one back-up truck to service both districts. Contract management costs to the Councils could also reduce if the Councils procure services jointly.

The Councils will consider each of these methods (or a combination of a number of methods) as part of the development of objectives, policies and methods in the JWMMP.

7 STATEMENT OF EXTENT

7.1 Public Health Protection

The Health Act 1956 imposes a duty on the Councils to promote and conserve public health within its district and to provide 'sanitary works' which includes the 'collection and disposal of refuse'.

From a public health perspective, it is important that the following waste management issues are addressed.

- Contamination of land and water by unsafe disposal of hazardous substances and from leakages of accumulated waste.
- Infectious diseases from animal and insect vectors attracted by waste (rodents, flies) and from direct exposure to faecal material in waste.
- Physical hazards such as waste accumulation and fire risk.
- Nuisance associated with dust and odour.
- Poor waste management processes leading to health hazards e.g. Legionellosis from compost.
- Reduction of greenhouse gas emissions.

Modern waste strategies and methods such as reduction in waste volumes (reuse, recycle, recycle), performance requirements, management control of open and closed landfills, and strict controls on hazardous substances ensure public health risks are adequately mitigated and well managed.

Ongoing monitoring and reporting on performance requirements linked to the delivery of the Waste Management and Minimisation Plan will ensure the Councils' duty to promote and conserve public health is achieved.

The wide range of waste services available in the Nelson–Tasman areas, as provided by the Councils or by private industry (see chapter 3), will ensure that public health is adequately protected. The Nelson–Tasman region has at least 20 years' access to council-owned sanitary landfills that meet national legislative requirements.

Services for achieving waste minimisation will be improved, and alternatives to landfill will be considered, and will be incorporated into the Waste Management and Minimisation Plan(s) for the Councils.

There is adequate access to Council and private hazardous waste disposal services. Illegal dumping is managed by the Councils. Further waste minimisation is achievable.

[Note: Insert comment here following review by Medical Officer of Health, via the District Health Board, that advises that they have reviewed this waste assessment prior to notification, and all comments have been incorporated etc. In addition you could include a copy of any written response as an appendix if desired].

Appendices

Appendix A Legislative and Strategic Context

LEGISLATIVE AND STRATEGIC CONTEXT

Both legislation and a national strategy provide the basic framework for waste management and minimisation in New Zealand. This chapter contains a brief summary of the national policy context and key legislation that the Councils must consider in the development of their waste assessment and the subsequent Joint Waste Management and Minimisation Plan. It also discusses specific issues related to the Nelson–Tasman waste market and implications for future planning.

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

The Councils adopted the current Joint Nelson City Council and Tasman District Council Waste Management and Minimisation Plan in 2012.

Key legislation

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

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

Taken together, they set the requirements and provide tools to support progress toward the strategic vision outlined in the NZWS.

Careful attention to this legislation is needed when developing a waste assessment. The following section provides a brief summary of these Acts, and identifies their relevance or implications for Nelson–Tasman.

Waste Minimisation Act (WMA) 2008

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

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

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

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

Another key provision of the WMA is the imposition of a levy on each tonne of waste to landfill, to be paid by landfill operators. The levy is used to fund waste minimisation projects. Some of it is

distributed directly to councils, and the remainder goes into a contestable Waste Minimisation Fund. Internationally, levies have tended to increase steadily over time once they are introduced.

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

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

Implications and recommendations:

At just \$10 per tonne, the waste levy does not provide a large economic disincentive to dispose of waste, so it doesn’t promote major behavioural shift. However, as the levy increases — and when combined with the impact of the Emissions Trading Scheme (ETS) on waste to landfill — there is an increasing economic incentive for waste generation to be avoided, and for councils to divert waste to beneficial uses.

Over the longer term, the Nelson–Tasman region and its ratepayers will benefit financially if they can find more sustainable methods of diverting materials from landfill to beneficial use, therefore avoiding the increasing costs of waste disposal. Increasing costs of landfilling over time will also improve the economic viability of alternatives to landfill such as waste minimisation services. These options are discussed in more detail in chapter 6 of this Assessment.

Councils need to ensure the targets and objectives they set in their JWMMPs are measurable and achievable, and that resources are set aside to implement them adequately. Councils are now required to report on their progress toward their JWMMPs, so they need to be transparent in their approach to ensure accountability and to avoid potential repercussions.

Climate Change (Emissions Trading) Amendment Act 2008

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

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

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

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

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

Local Government Act 2002 (LGA 2002)

The LGA 2002 contains various provisions that may apply to councils when they are preparing their JWMMPs, including consultation and bylaw provisions. Sections 145–146 provide councils with broad bylaw powers, including the power to make solid waste and waste management bylaws. Section 158 outlines provisions for the review of these bylaws. The procedure for making a bylaw and the requirement for completing a special consultative procedure when making a bylaw are outlined in sections 155 and 156.

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

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

Resource Management Act 1991 (RMA)

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

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

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

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

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

Other legislation

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

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

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

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

Hazardous substances commonly managed by councils include used oil, asbestos, agrichemicals, LPG and batteries.

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

The Health Act 1956

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

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

The Health Act enables councils to raise loans for certain sanitary works and/or to receive government grants and subsidies, where available.

The Litter Act 1979 (and Amendment Act 2006)

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

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

The Health and Safety at Work Act 2015

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

Employers must take all practicable steps to ensure the safety of employees while at work, and in particular must take all practicable steps to ensure employees are not exposed to hazards arising out of the arrangement, disposal, organisation, processing, storage, transport or use of things in their place of work.

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

What does this mean for the Councils?

The Government has clearly outlined its objectives and goals for minimising waste to landfill and reducing greenhouse emissions, and has provided several new legislative tools provided to enable the implementation of the New Zealand Waste Strategy.

**Appendix B Section 51 of the Waste Minimisation
Act 2008**

Waste Minimisation Act 2008, s51 — *waste assessment* requirements

The following is an excerpt from “Waste Management and Minimisation Planning -Guidance for Territorial Authorities” as published by the Ministry for the Environment, May 2009.

“The *waste assessment* as prescribed in the WMA 2008 s51 plays a key role in determining the content of a JWMMP, and councils are required to conduct a *waste assessment* prior to reviewing their JWMMP (WMA s50) and *have regard to it* in the preparation of the document (WMA s44). The WMA does not require that the *waste assessment* be specifically consulted on individually, but it is recommended that the council review and ‘adopt’ the waste assessment prior to drafting the JWMMP, as s44 requires that the waste assessment is notified with the statement of proposal for the JWMMP.

The purpose of the *waste assessment* is to provide the necessary background information regarding the waste and diverted materials streams that will enable a council to determine a logical set of priorities and inform its activities. The *waste assessment* incorporates the situation and options review steps in assessing waste information and selecting the specific methods for addressing the various waste and diverted material streams as well as future demand for services, programmes and infrastructure.

The WMA (s51) states:

1. A waste assessment must contain –
 - (a) a description of the collection, recycling, recovery, treatment, and disposal services provided within the territorial authority’s district (whether by the territorial authority or otherwise)
 - (b) a forecast of future demands for collection, recycling, recovery, treatment, and disposal services within the district
 - (c) a statement of options available to meet the forecast demands of the district with an assessment of the suitability of each option
 - (d) a statement of the territorial authority’s intended role in meeting the forecast demands
 - (e) a statement of the territorial authority’s proposals for meeting the forecast demands, including proposals for new or replacement infrastructure
 - (f) a statement about the extent to which the proposals will -
 - i. ensure that public health is adequately protected:
 - ii. promote effective and efficient waste management and minimisation.
2. An assessment is not required to contain any assessment in relation to individual properties.
3. Information is required for an assessment to the extent that the territorial authority considers appropriate, having regard to -
 - (a) the significance of the information
 - (b) the costs of, and difficulty in, obtaining the information
 - (c) the extent of the territorial authority’s resources
 - (d) the possibility that the territorial authority may be directed under the Health Act 1956 to provide the services referred to in that Act.
4. However, an assessment must indicate whether and, if so, to what extent, the matters referred to in subsection (3)(b) and (c) have impacted materially on the completeness of the assessment.
5. In making an assessment, the territorial authority must -
 - (a) use its best endeavours to make a full and balanced assessment
 - (b) consult the Medical Officer of Health.

It is noted that the description of the *waste assessment* within the WMA encapsulates most of the former sanitary assessment provisions of the LGA for solid waste that have been repealed by the WMA. The waste assessment provisions go further in expanding the assessment to all waste and waste minimisation activities within the whole of the district, not just waste for disposal or those materials under council’s direct control as was previously required.

There are various ways to interpret the requirements implied by the waste assessment clause and there is flexibility in terms of the information gathered for the assessment. This flexibility acknowledges the differences in ease of obtaining information from district to district. While again there is clearly no single correct method in terms of how a *waste assessment* should be carried out, this clause is considered further in Chapter 4 of this guidance as it relates directly to the JWMMP process.”

Appendix C MFE SWAP Baseline

MfE Baseline 2007-8 - Assumed waste composition

		Kerbside Collection
Paper	Recyclable	13.5%
	Multimaterial/other	0.9%
	Subtotal	14.4%
Plastics	Recyclable	1.9%
	Multimaterial/other	12.5%
	Subtotal	14.4%
Putrescibles	Kitchen waste	38.3%
	Greenwaste	5.3%
	Multimaterial/other	5.1%
	Subtotal	48.7%
Ferrous Metals	Primarily ferrous	2.3%
	Multimaterial/other	0.4%
	Subtotal	2.7%
Non ferrous Metals		0.6%
Glass	Recyclable	3.4%
	Multimaterial/Other	0.8%
	Subtotal	4.2%
Textiles	Clothing/textiles	1.4%
	Multimaterial/other	0.7%
	Subtotal	2.1%
Nappies and Sanitary		9.8%
Rubble	Concrete	0.4%
	Other	1.5%
	Subtotal	1.9%
Timber	Unpainted & untreated	0.2%
	Fabricated	0.2%
	Multimaterial/other	0.2%
	Subtotal	0.6%
Rubber		0.1%
Potentially hazardous		0.8%
Total		100%

Appendix D Review by Medical Officer of Health

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Johan Thiart
Nelson City Council
PO Box 645 Nelson 7040

29 August 2017

Dear Johan

JOINT WASTE ASSESSMENT: TASMAN DISTRICT COUNCIL AND NELSON CITY COUNCIL

Thank you for the opportunity to comment on the Joint Waste Assessment: Tasman District Council and Nelson City Council 2017. I am pleased to see both Councils are continuing to work jointly to address the issue of waste minimisation across the Nelson and Tasman district.

In reviewing the assessment I have taken the opportunity to look at the Nelson City Council and Tasman District Council Joint Waste Management and Minimisation Plan (April 2012), and note the Councils developed a set of performance indicators (section 11) in the Plan.

It is recommended that a section on the progress that has been made in meeting these indicators is included in the Joint Waste Assessment.

The Joint Waste Assessment states in regard to car bodies, batteries, steel and tyres that “at present the councils do not have information on the amount of material processed through these recyclers.”

It is recommended more detail on the volumes of these types of waste and how they are currently handled and ultimately disposed of is included in the Joint Waste Assessment. I am particularly interested in what becomes of tyres (potential mosquito breeding habitat) and batteries (hazardous substances).

With regards to rural waste it is recommended that the Councils take a more active role in determining the nature of this waste and how it is currently handled and disposed of in the Joint Waste Assessment.

Finally, a minor point in relation to section 7.1 which requires consultation with the Medical Officer of Health on the Joint Waste Assessment: This section links to Appendix D which is incorrectly headed as the District Health Board Letter when it should refer to the Medical Officer of Health Letter.

Thank you once again for the opportunity to comment.

Yours sincerely

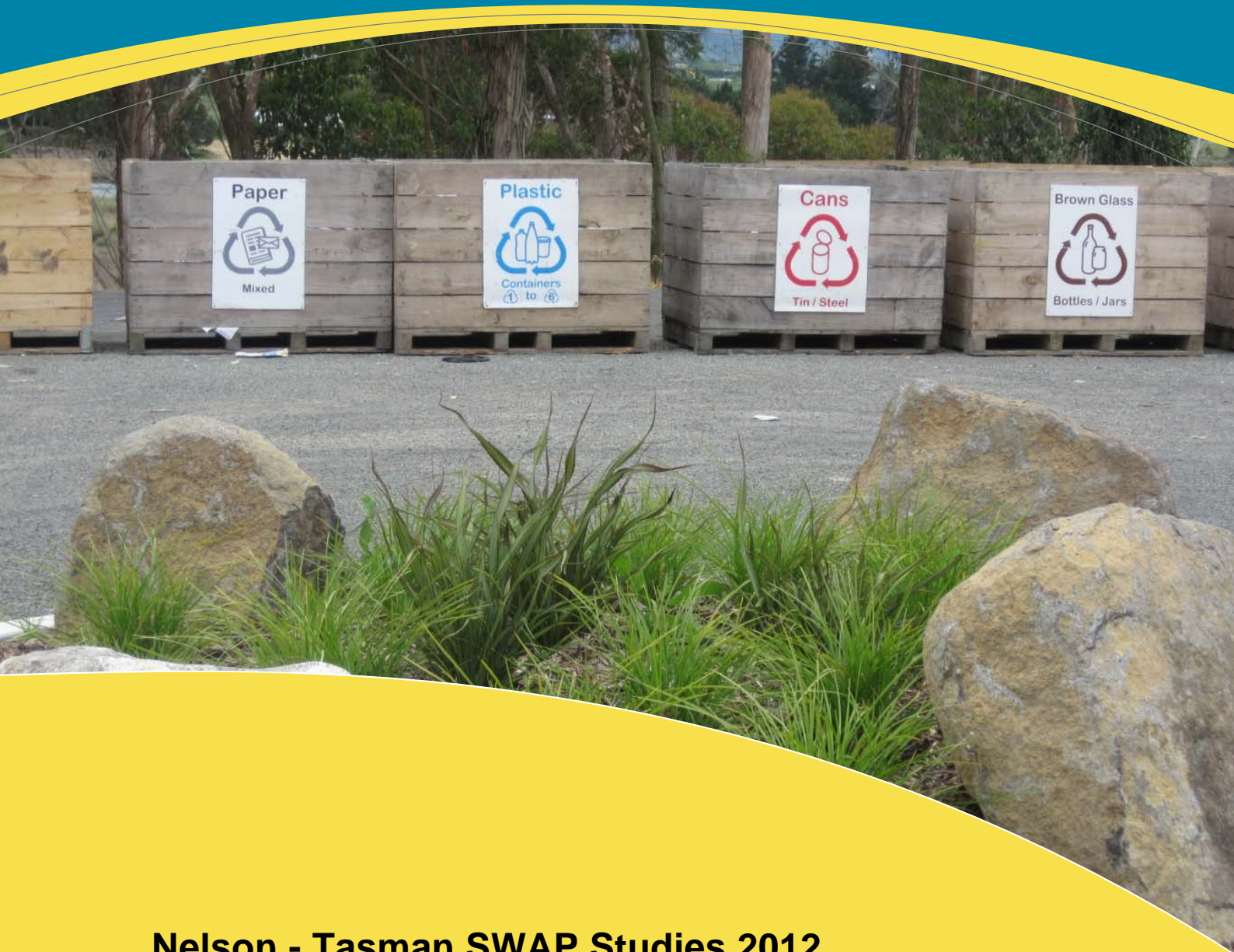
A handwritten signature in black ink, appearing to read 'A Lindsay', written in a cursive style.

Dr Andrew Lindsay

Medical Officer of Health

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Appendix E Waste Composition Data



Nelson - Tasman SWAP Studies 2012

Prepared for Nelson City Council and Tasman District Council
February 2013

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Nelson - Tasman SWAP Studies 2012

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APPENDICES

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1 Introduction

In September 2011 Nelson City Council secured funding from the Ministry for the Environment (MfE) to undertake waste composition surveys for Nelson City Council and Tasman District Council as part of the Councils' on-going investigations to assess the potential use of anaerobic digestion technology for the recovery and recycling of organic waste within the district.

As stated in the deed of funding, the purpose of the project is to "inform and empower joint waste planning for increased and improved recycling and recovering activity through common and consistent data on waste composition in two adjoining Council areas"¹.

The project consists of the following five key stages (as agreed by MfE):

1. Solid waste analysis protocol (SWAP) survey design for three locations feeding two landfill sites.
2. Execution and reporting of two rounds of surveys.
3. Determining the economic feasibility and environmental impact of anaerobic digestion.
4. Development of joint procurement plans for new waste collection, separation and disposal systems.
5. Sharing information and experience gained through this project with other Councils.

In October 2011 the first stage was completed by MWH and the report 'Waste Composition Survey Stage 1 Survey Design' was submitted to MfE by Johan Thiart (Nelson City Council).

In March 2012 the second stage commenced with the first round of SWAP surveys undertaken between 12 March and 4 April. The second round of SWAP surveys was undertaken between 4 November and 28 November.

In addition to providing data for this project, the SWAP surveys will also allow Nelson City Council and Tasman District Council to assess current waste practices and assist with the following:

- implementation of the joint Council Waste Management and Minimisation Plan
- introduction of waste minimisation initiatives
- procurement of new waste collection/ separation and disposal systems
- applying for permission to use a unique emission factor (UEF) under the new NZ Emissions trading scheme (ETS).

The SWAP surveys undertaken as part of this project are in accordance with the NZ ETS requirements and the MfE Solid Waste Analysis Protocol publication².

2 Scope

This report is to satisfy Stage 2 of the MfE deed of funding.

The scope of this report is to:

- provide a summary of the data recorded during the SWAP studies in 2012
- assess the precision achieved by the studies, and
- compare the results between sites, council areas, overtime and with the National Indicator Sites.

¹ Ministry for the Environment (2011), Deed of Funding, MfE, NZ

² Ministry for the Environment (2002), Solid Waste Analysis Protocol, MfE, NZ

3 Survey Design

In determining the best way to standardise the survey methodology for Nelson City Council and Tasman District Council, the patterns of waste flow were considered, and in particular, the differences between the areas assessed.

In Tasman district:

- only special waste goes directly to landfill (7%)
- 60% of waste goes to Richmond Resource Recovery Centre (RRC)
- 24% of waste goes to Mariri RRC
- 7% of waste goes to Takaka RRC
- the remaining balance of waste is to Collingwood RRC and Murchison RRC.

Richmond RRC and Mariri RRC have weighbridges and the tonnage of all commercial loads is recorded at these RRCs. Waste and material deposited at Takaka RRC, Collingwood RRC and Murchison RRC is generally recorded by volume. The total amount of waste deposited at the Eves Valley Landfill from each site is weighed and the tonnage recorded.

In Nelson City:

- 22% of waste goes to the Pascoe Street Transfer Station – this is generally in small vehicles
- 78% of waste goes directly to the York Valley Landfill- this is derived from 30% domestic collection and 48% commercial waste.

York Valley Landfill has a weighbridge, but there is no weighbridge at the Pascoe Street Transfer Station.

To ensure that specific waste sources were analysed as part of the 2012 survey, then it was important that flow of waste was understood and that the SWAP studies were undertaken at each of the main sites so that a representative sample of what is being disposed of is achieved.

The total tonnage of waste disposed of since July 2001 to the York Valley Landfill (Nelson City) and the Eves Valley Landfill (Tasman district) is shown in Figure 3-1.

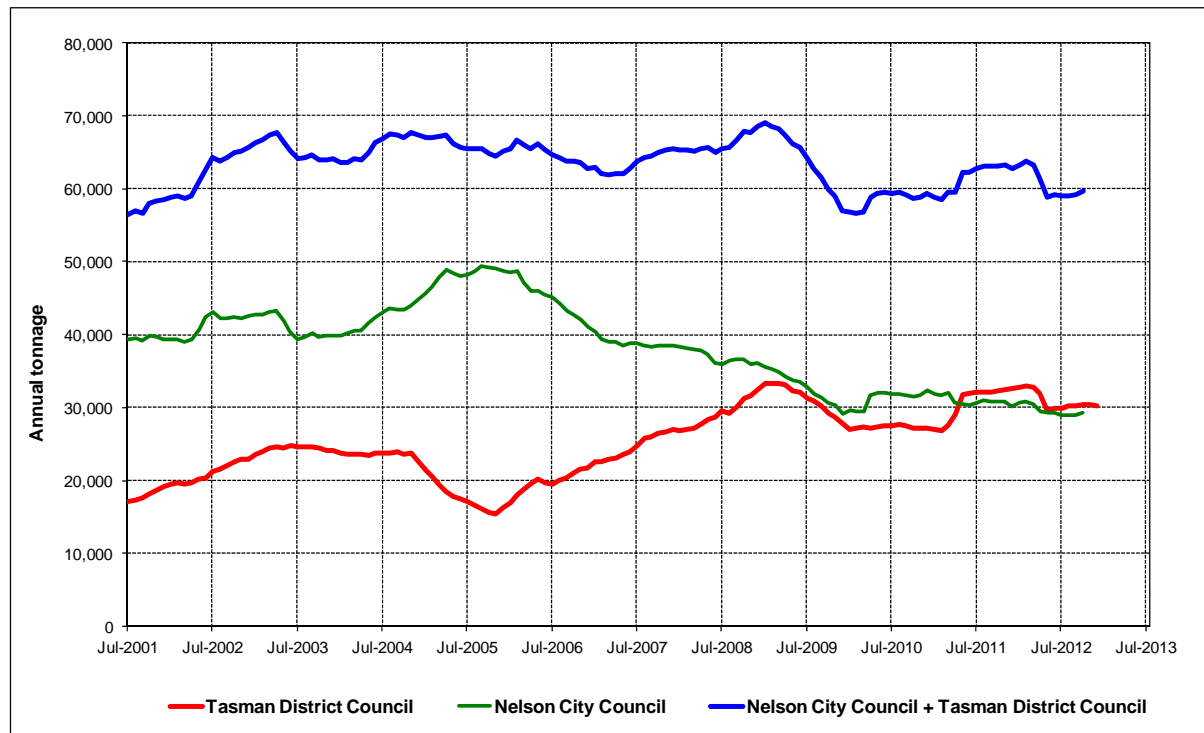


Figure 3-1: Waste to Landfill

During the 2011/12 financial year a total of 59,200 tonnes of waste was disposed of at York Valley and Eves Valley landfills with approximately 50% of material deposited at each site.

For Tasman District Council it would be difficult for waste received at Eves Valley to be analysed for each waste source. This is due to the fact that waste is bulked up and mixed at the RRC before being sent to the landfill. The analysis of waste at Richmond RRC only, would not result in waste from other areas of the district being taken into consideration and therefore waste was also analysed at the Mariri RRC to cover the majority of the waste produced in the Tasman District.

For Nelson City Council, as waste can be delivered directly to the landfill site and would not be taken into account if the SWAP studies were undertaken only at the Pascoe Street Transfer Station, the survey was undertaken at York Valley Landfill.

In summary, SWAP surveys were carried out at the following sites:

- York Valley landfill in Nelson City
- Richmond Resource Recovery Centre (RRC) in Tasman District
- Mariri Resource Recovery Centre (RRC) in Tasman District

These sites were selected as the best locations to sample and assess the waste streams in the two council areas. The following sections provide a summary of the methodology that was undertaken by MWH and highlights some of the site specific procedures adopted.

4 Survey Execution

For waste planning purposes it is important that the approaches to waste composition analysis are standardised between Councils so that results recorded can be compared. To ensure this, the sampling and sorting procedures described in procedure 2 of the MfE Solid Waste Analysis Protocol publication and included in the 'Waste Composition Survey Stage 1 Survey Design' report have been used at all sites as part of the surveys.

4.1 Survey Periods

The first round of SWAP surveys were undertaken between 12 March and 4 April 2012 and the second round of SWAP surveys were undertaken between 5 November and 28 November 2012. The following table shows the survey period at each site.

Table 4-1: Survey Periods in 2012

Site	First Round	Second Round
York Valley Landfill	12 – 17 March	5 – 10 November
Richmond RRC	21 – 27 March	13 – 19 November
Mariri RRC	29 March – 4 April	22 – 28 November

The surveys were carried out during site operational hours, shown in Table 4-2 below.

Table 4-2: Site Operational Hours

Site	Opening Hours
York Valley Landfill	8.00am - 4.30pm Monday to Friday, and 12noon - 4.00pm on Saturday. This site is closed on Sunday.
Richmond RRC	8.00am to 5.00pm, Monday to Sunday inclusive
Mariri RRC	9.00 am to 4.00pm, Monday to Saturday and 1.00pm to 4.00pm on Sunday

4.2 Staffing

In addition to one MWH staff member being on site at all times, the surveys were undertaken by three other staff who were familiar with waste having previously worked on the sorting lines were provided by Allied Work Force through a local waste operator, Nelmac. These staff received onsite training in the following areas, prior to the surveys commencing:

- purpose and objectives of the survey
- survey procedures
- waste classifications and categorisation of common and multi-material wastes
- familiarisation with site and equipment
- dealing with the users of the landfill site or RRCs, including confidentiality issues
- emergency procedures.

The previous experience of the Allied Work Force staff was beneficial in ensuring that correct sorting procedures were followed and in being able to categorise materials into their different categories. It also meant that staff had an awareness of why they were involved in the project. The same staff were used for both rounds of surveys, with an addition staff member provided by Allied Work Force staff on a standby basis in case needed.

4.3 Health and Safety

To ensure health and safety was maintained throughout the project, all staff were also required to complete a health and safety induction from the site operators prior to commencing work on site. All waste samplers were required to have up to date relevant inoculations. A first aid kit was available to the survey team, along with antiseptic soap and water for washing.

Care had to be taken around site machinery as the sampling procedure involved working closely with the excavator or loader. Everyone looked out for each other well and no major incidents occurred during either survey period.

4.4 Equipment

The following equipment was used to undertake the survey:

- electronic weigh bars scale (accurate to 0.1kg)
- gazebo for weather protection
- heavy duty plastic sheeting
- vehicle for transport and running the scales
- brush and shovels for sorting through waste and cleaning the sorting area at the end of the day
- waste containers / recycling bins to place material in after it has been sorted
- appropriate personal protective equipment, including gloves, safety clothing, dust masks, glasses, high visibility vests, safety footwear etc.
- hand wipes and other cleaning products
- first aid kit.

Shovels were borrowed from the site operators and a loader / excavator used by the site operator to provide assistance in moving large items and sampling loads.

4.5 Sampling Regimes and Data Collected

The number of vehicles intended to be surveyed at each site was determined prior to the surveys commencing. A copy of the sampling regimes designed for York Valley Landfill, Richmond RRC, and Mariri RRC are included in Appendix A. These sampling regimes detailed the number of cars, domestic rubbish bag trucks, skips and 'other trucks' to be sampled at each site and the frequency of selection of vehicles.

The sampling regimes were reviewed between the first and second rounds of survey but were not altered as sufficient numbers of each vehicle type were being surveyed.

Data was recorded by filling out pre-prepared data sheets which requested the following information:

- vehicle ID number (given by the site operator)
- time
- day
- type of vehicle
- the source of the waste (municipal solid waste / commercial and industrial / building and demolition / other sources)
- the weight of each of the subcategories of waste.

The site sheets were modified from those provided in the 'Waste Composition Survey Stage 1 Survey Design' report to allow for all the main categories and sub categories highlighted in section 4.7 to be recorded separately. The site sheets were also modified slightly between surveys to make it easier for the survey team to record vehicle details. Specific regular vehicle types and customers recorded during the first round were pre-loaded into the form and could be 'ticked' rather than entering the data separately every time.

These changes worked well and allowed the data collected on site to be easily matched with the weighbridge data. Examples of the revised forms that were used are provided in Appendix B.

The following information was provided by Nelson City Council and Tasman District Council from the weighbridge records for each vehicle:

- the total weight of the vehicle
- tare weight
- net weight of the vehicle.

4.6 Sampling

Details of the sampling procedures used at each site are provided in sections 4.6.1 – 4.6.3 below.

4.6.1 York Valley Landfill

The first York Valley Landfill SWAP survey was undertaken from Monday 12 March to Saturday 17 March 2012 inclusive and the second was undertaken from Monday 5 November to Saturday 10 November 2012 inclusive.

The waste was sorted within a designated area close to the active tipping face but away from daily operations. The location had to be moved between the first and second surveys due to the fact that landfill operations had progressed to a different part of the landfill. Figures 4-1 and 4-2 show the location and setup at York Valley Landfill during each survey period.



Figure 4-1: SWAP sampling location at York Valley Landfill



Figure 4-2: Sampling at York Valley Landfill

The sorting area was close to the tipping face so that material could be placed in a pile after analysis and disposed of into the landfill on an on-going basis by the site operator. The surveys impacted slightly on the daily operations of the site but the site operator worked well with the survey team to ensure a 'representative' sample was obtained from sampled vehicles.

York Valley Landfill is not open to the general public and therefore the types of vehicles using the site were limited to truck and trailer units, compactor trucks, open trucks or skip trucks. In general, material from the Nelson City Council Pascoe Street Transfer Station arrived in a compactor bin, municipal and light commercial waste arrived in compactor trucks, and industrial and building material arrived in skips. Figure 4-3 shows examples of some of the vehicle types sampled.



Figure 4-3: A typical compactor bin and compactor truck arriving at York Valley Landfill

To limit the impact on daily operations, customers using the site deposited their waste as normal. A member of the survey team approached the selected vehicle and obtained the driver's weighbridge tag details so the data collected could be compared to the weighbridge data at a later stage.

A representative sample of the waste deposited was then collected by the site operator using the excavator bucket and taken to the sorting area for analysis.



Figure 4-4: Excavator and compactor used at York Valley Landfill

At the sorting area, the load was tipped onto a plastic sheet and from here was moved onto the table where it was sorted and weighed. The use of the plastic sheet allowed the fines to be brushed up at the end of each sampling and sorted into their appropriate categories.



Figure 4-5: Sample placed on plastic sheet to allow fines to be collected

To ensure that sufficient numbers of vehicles were sampled, up to four separate loads were stored at the sorting area at any one time. This approach worked well and ensured there was always material available for sorting. The sampling location meant that the survey team could work closely with the site operator and ensure the survey worked as efficiently as possible.

4.6.2 Richmond RRC

The first Richmond RRC SWAP survey was undertaken from Wednesday 21 March to Tuesday 27 March 2012 inclusive and the second was undertaken from Tuesday 13 November to Monday 19 November 2012 inclusive.

Waste was sorted on the concrete pad on the southern side of the tipping pit. This area is not open to the public and commercial trucks.



Figure 4-6: Sampling location at Richmond RRC

At the Richmond RRC, large vehicles entering the site are required to be weighed or produce a weighbridge docket before disposing of any material. The vehicle registration number of any sampled vehicles was recorded so that the data collected could be compared to the weighbridge records.

Generally domestic vehicles are not weighed at the Richmond RRC and therefore during the first round of surveys 100% of the load from selected domestic vehicles was analysed. Temporary changes to the traffic layout at the Richmond RRC were made during the second round of surveys to require all vehicles to be weighed in and out of the site. This allowed for representative samples to be taken from domestic vehicles as well as commercial vehicles.



Figure 4-7: Vehicles arriving at Richmond RRC

The types of large vehicles using the site were similar to those seen at the York Valley Landfill with some vehicles using both the York Valley Landfill and the Richmond RRC sites. In general, the large vehicles were either compactor trucks, open trucks or skip trucks. Municipal and light commercial waste typically arrived in compactor trucks, and industrial and building material arrived in open trucks or skips. Domestic vehicles included cars, vans, utes and trailers.

To limit the impact on daily operations, customers using the site deposited their waste as normal into the tipping pit as shown in Figure 4-8.



Figure 4-8: Material deposited in the pit at Richmond RRC

Once the waste was in the tipping pit a 'representative' sample was taken by the site operator using the loader bucket and brought over to the sorting area for analysis. The location of the sorting area allowed for the easy disposal of waste back into the tipping pit after analysis.



Figure 4-9: Examples of samples taken at Richmond RRC

Initially at the sorting area, the load sample was tipped onto a plastic sheet and then moved onto the table where it was sorted and weighed. A number of seagulls visit the Richmond RRC site and so the procedure had to be changed and the sample deposited directly onto the concrete pad and covered with the plastic sheet to keep the gulls away. Covering the material with the sheet also helped to limit the amount of litter generated on windy days. The fines were still easily brushed up from the concrete pad at the end of each sampling and sorted into their appropriate categories.

Up to three separate loads were stored at the sorting area to ensure that sufficient numbers of vehicles were sampled and that there was always materials available for sorting. This approach worked well and the sampling location meant that the survey team could work closely with the site operator. The need for the loader to be used for other tasks around the site meant that the site operator was not always available to take samples. When this situation arose, the sampling team would need to enter the tipping pit to collect a sample as shown in Figure 4-10. This was not always possible due to the nature of the material deposited or other vehicles arriving. If a sample could not be taken prior to other material being deposited on top, this vehicle was not sampled. The pit was cleared as soon as was practicable and the next available vehicle was then sampled. This generally affected domestic vehicle sampling rather than the commercial trucks as the pit was often cleared ahead of a large load arriving.



Figure 4-10: Sampling by survey team at Richmond RRC

While the gazebo provided good protection from the sun it had to be weighted down during windy days and did not stop material from the sorting area being blown away. A number of litter collections had to be undertaken during windy days to ensure the area remained tidy.

4.6.3 Mariri RRC

The first Mariri RRC SWAP survey was undertaken from Thursday 29 March to Wednesday 4 April 2012 inclusive and the second was undertaken from Thursday 22 November to Wednesday 28 November 2012 inclusive.

The waste was sorted on a concrete pad on the western side of the tipping pit and this area was closed off to the public during the survey. This area also allowed easy disposal of waste back into the pit after analysis.

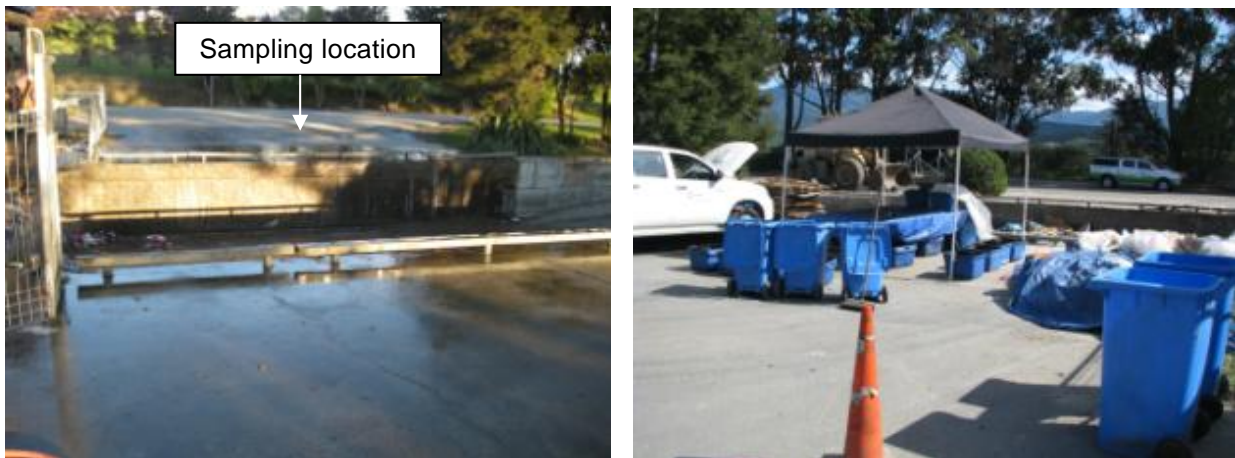


Figure 4-11: SWAP sampling location at Mariri RRC

Like Richmond, large vehicles entering the Mariri RRC are required to be weighed or produce a weighbridge docket before disposing of any material. The vehicle registration number of any sampled vehicles was recorded so that the data collected could be compared to the weighbridge records at a later stage. Domestic vehicles are not currently weighed at the Mariri RRC and it was not practical to change the traffic layout at this site to weigh all vehicles in and out. 100% of the load from selected domestic vehicles was therefore analysed during both surveys.

The types of large vehicles using the site were similar to those seen at the York Valley Landfill and Richmond RRC site, although there are generally more transactions of smaller loads at Mariri RRC. Figure 4-12 shows some of the commercial vehicles using the site.



Figure 4-12: Commercial vehicles arriving at Mariri RRC

To limit the impact on daily operations, customers using the site deposited their waste as normal into the tipping pit as shown in Figure 4-13.



Figure 4-13: Material deposited in the pit at Mariri RRC

Once the waste was in the tipping pit a 'representative' sample, or the entire load for selected domestic vehicles, was taken by the site operator using the excavator and brought over to the sorting area for analysis.



Figure 4-14: Examples of samples taken at Mariri RRC

To ensure that sufficient numbers of vehicles were sampled and that there was always material available for sorting, up to four separate loads could be stored at the sorting area. Loads were covered with plastic sheeting to minimise the amount of flies and bees attracted to the material. This approach worked well and the sampling location meant that the survey team could work closely with the site operator.

The need for the operator to undertake other tasks around the site meant that the site operator was not always available to take samples. When this situation arose the sampling team would need to enter the tipping pit to collect a sample. This was not always possible due to nature of material deposited and the fact that Mariri is a busy site so other vehicles would soon arrive and cover over the load to be sampled. As at Richmond RRC, if a sample could not be taken prior to other material being deposited on top, this vehicle was not sampled. The pit was cleared as soon as was practicable and the next available vehicle was then sampled.

4.7 Classifications

Once a representative sample had been taken by the site operator, the samples were sorted into designated crates or wheelie bins, lifted onto the digital scales and the weight recorded at the end of the sample, or when full.



Figure 4-15: Material being separated into its individual categories

To ensure that the data collected can be used for as many applications as possible in the future, the samples were sorted into the following 20 categories and then combined back into the 14 main categories for reporting purposes here.

Table 4-3: Waste Categories

Main Categories	Subcategories
Cardboard	
Ferrous metals	Steel cans Other ferrous metals
Putrescibles - Food waste	
Putrescibles - Garden waste	
Glass	
Nappies and sanitary	
Non-ferrous metals	Aluminium cans Other non-ferrous metals
Paper	Newsprint, Office paper Other paper
Plastics	Type 1 plastics Type 2 plastics Other plastics
Potentially hazardous	
Rubber	
Rubble / concrete / soil / polystyrene	
Textiles	
Timber	

Any waste identified as potentially hazardous was only handled if it was safe to do so (such as batteries, paint, chemical containers etc.). Bags received from medical facilities or nursing homes containing drips and colostomy bags were not sorted and the whole bag was classified as 'potentially hazardous'.

5 Results

5.1 Sample Size

As part of the autumn round of SWAP surveys (March/April) there were 217 vehicles sampled out of the 221 intended to be sampled as set out in the sampling regimes in Appendix A. The number of vehicles sampled at each site is set out in Table 5-1 below. The average amount of material analysed during the autumn survey round was 168kg per vehicle.

Table 5-1: Summary of Sampling during Autumn Surveys

Site	Number of Vehicles Sampled	Intended Number of Vehicles to be Sampled	Total Sample Weight
York Valley Landfill	81	91	16,074
Richmond RRC	78	70	14,037
Mariri RRC	58	60	6,430

As part of the spring round of SWAP surveys (November) there were 360 vehicles sampled. The number of vehicles sampled at each site is set out in Table 5-2 below. The average amount of material analysed during the spring survey round was 118kg per vehicle.

Table 5-2: Summary of Sampling during Spring Surveys

Site	Number of Vehicles Sampled	Intended Number of Vehicles to be Sampled	Total Sample Weight
York Valley Landfill	94	91	17,620
Richmond RRC	130	70	12,848
Mariri RRC	136	60	11,914

The number of each vehicle type using each site and the total number sampled at each site is shown in Table 5-3 and Table 5-4. So that the survey data can be easily compared with the gate records the vehicle descriptions used in this report are those used in the weighbridge software at each site, therefore the vehicle types recorded vary slightly between Nelson City and Tasman District.

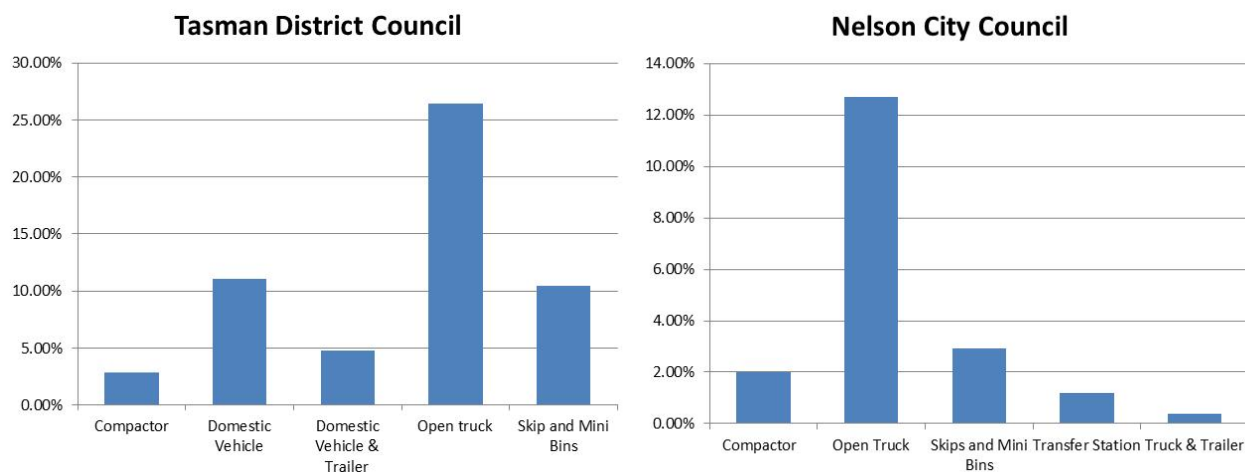
Table 5-3: Summary of Vehicles during Survey – Nelson City

		Nelson City (York Valley Landfill)	
		No. of Vehicles using the Site	No. of Vehicles Sampled
Autumn Survey Period	Compactor	83	29
	Open Truck	32	8
	Skips and Mini Bins	78	31
	Transfer Station	15	12
	Truck and Trailer	3	1
Spring Survey Period	Compactor	95	42
	Open Truck	30	21
	Skips and Mini Bins	72	20
	Transfer Station	13	7
	Truck and Trailer	4	4
Combined Survey Period	Compactor	178	71
	Open Truck	62	29
	Skips and Mini Bins	150	51
	Transfer Station	28	19
	Truck and Trailer	7	5

Table 5-4: Summary of Vehicles during Survey - Tasman District

		Richmond RRC		Mariri RRC		Tasman District Total	
		No. of Vehicles using the Site	No. of Vehicles Sampled	No. Vehicles using the Site	No. of Vehicles Sampled	No. of Vehicles using the Sites	No. of Vehicles Sampled
Autumn Survey Period	Compactor	55	31	30	8	85	39
	Domestic Vehicle	162	22	176	17	338	39
	Domestic Vehicle and Trailer	166	5	132	4	298	9
	Open truck	18	4	20	7	38	11
	Skip and Mini Bins	40	16	36	22	76	38
Spring Survey Period	Compactor	62	49	47	27	109	76
	Domestic Vehicle	177	31	246	65	423	96
	Domestic Vehicle and Trailer	142	21	182	8	324	29
	Open truck	27	8	17	18	44	26
	Skip and Mini Bins	73	21	85	18	158	39
Combined Survey Period	Compactor	117	80	77	35	194	115
	Domestic Vehicle	339	53	422	82	761	135
	Domestic Vehicle and Trailer	308	26	314	12	622	38
	Open truck	45	12	37	25	82	37
	Skip and Mini Bins	113	37	121	40	234	77

The overall amount of each vehicle type sampled as a percentage of the total amount of waste disposed of during the sample period is shown in Figure 5-1.


Figure 5-1: Percentage of Vehicle Type sampled

5.2 Uniform Loads

A number of uniform loads were observed at each of the sites during the sample period. At York Valley landfill this included one load of red sand from a restoration project, screenings from the WWTP which were decomposed and not possible to separate, a number of loads of rejected salmon, one load of unwanted books, and a number of loads of single sheets of glass from a local glass manufacturer. Figure 5-2 shows examples of the types of single loads observed.



Figure 5-2: Examples of uniform loads observed at York Valley Landfill

At Richmond RRC, single loads of glass from a local glass manufacturer were also observed along with skips full of timber. These are shown in Figure 5-3.



Figure 5-3: Examples of uniform loads observed at Richmond RRC

As well as uniform loads, a number of loads contained a high proportion of a single category. This included large volumes of cardboard, plastic bottles, packaged meats, plastic wrapping and vegetables such as tomatoes and apples. Figure 5-4 shows examples of the types of single categories observed.





Figure 5-4: Examples of single categories observed

Observations during the second round of surveys also noted an increase in the amount of televisions and electronic materials being disposed of as shown in Figure 5-5.



Figure 5-5: E-Waste observed

5.3 Waste Composition data

Table 5-5 shows the combined waste composition for 2012 for each of the sites surveyed, Council areas and the combined region. Tables showing the waste composition for the spring and autumn surveys are provided in Appendix C.

Table 5-5: 2012 Waste Composition

Category	Tasman District			Nelson City	Nelson - Tasman
	Mariri RRC	Richmond RRC	Mariri – Richmond Combined	York Valley Landfill	
Paper	13.0%	8.0%	9.6%	9.8%	9.7%
Cardboard	6.3%	9.6%	8.6%	5.9%	7.1%
Plastics	15.0%	15.2%	15.1%	11.8%	13.4%
Food waste	12.8%	16.5%	15.4%	12.2%	13.7%
Garden Waste	12.6%	8.6%	9.8%	17.1%	13.8%
Ferrous Metals	4.6%	1.9%	2.8%	2.8%	2.9%
Non Ferrous Metals	0.7%	0.8%	0.8%	1.8%	1.3%
Glass	3.2%	11.9%	9.2%	3.6%	6.2%
Textiles	5.7%	4.1%	4.6%	7.1%	5.9%
Nappies and Sanitary	3.5%	3.5%	3.5%	1.7%	2.5%
Rubble/concrete/soil	7.0%	3.6%	4.6%	7.4%	6.1%
Timber	10.8%	12.0%	11.6%	15.9%	13.9%
Rubber	4.0%	2.2%	2.7%	1.9%	2.3%
Potentially Hazardous	0.9%	2.1%	1.7%	1.1%	1.4%

The overall Nelson - Tasman waste composition recorded during the 2012 surveys is shown in Figure 5-6. Graphs showing the waste composition for individual sites are provided in Appendix C.

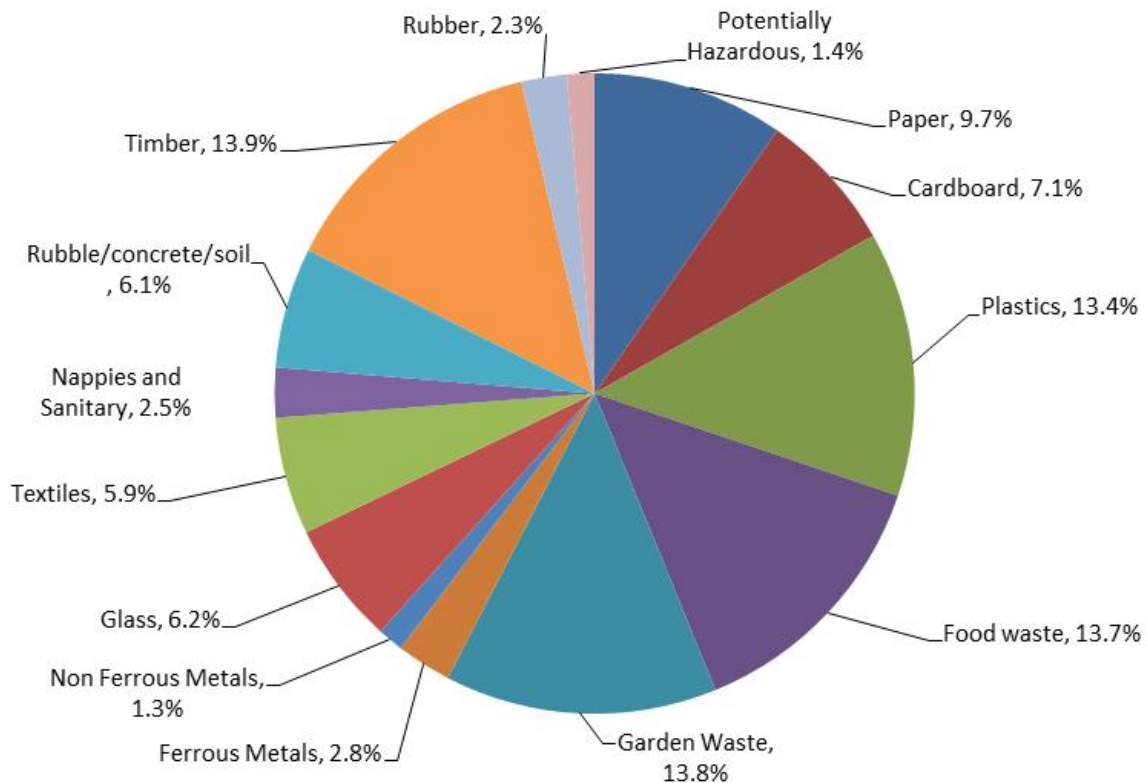


Figure 5-6: Nelson - Tasman Waste Composition 2012

5.4 Precision

Understanding the difference between accuracy and precision is important. The accuracy of a measurement as set out in the SWAP protocol refers to “how close the estimated value is to the true value; that is, how much ‘bias’ there is in the reported result”. The precision of a measurement system as set out in the SWAP protocol is “a measure of the variability of estimates of a measure. For instance, a very large sample could yield an estimated annual paper component of $26.2 \pm 0.2\%$ (95% confidence interval). This would be very precise”³.

To understand the likelihood that the results would be repeated if the survey was undertaken again, the precision achieved by each of the surveys and overall was calculated. Table 5-6 provides a summary of the precision achieved for the overall Tasman District data, the Nelson City data and the combined Nelson-Tasman data.

Table 5-6: Precision Achieved

Category	Tasman Composition	95% Confidence Interval	Nelson Composition	95% Confidence Interval	Nelson-Tasman Composition	95% Confidence Interval
Paper	9.6%	± 1.7%	9.8%	± 4.0%	9.7%	± 1.7%
Cardboard	8.6%	± 1.7%	5.9%	± 3.0%	7.1%	± 1.2%
Plastics	15.1%	± 2.2%	11.8%	± 1.9%	13.4%	± 2.0%
Food waste	15.4%	± 2.7%	12.2%	± 3.1%	13.7%	± 2.5%
Garden Waste	9.8%	± 2.7%	17.1%	± 4.8%	13.8%	± 2.8%
Ferrous Metals	2.8%	± 1.3%	2.8%	± 1.0%	2.8%	± 0.7%
Non Ferrous Metals	0.8%	± 0.3%	1.8%	± 0.9%	1.3%	± 0.6%
Glass	9.2%	± 3.4%	3.6%	± 2.4%	6.2%	± 1.7%
Textiles	4.6%	± 1.1%	7.1%	± 3.0%	5.9%	± 1.6%
Nappies and Sanitary	3.5%	± 0.9%	1.7%	± 0.6%	2.5%	± 0.6%
Rubble/concrete/soil	4.6%	± 1.6%	7.4%	± 2.6%	6.1%	± 1.9%
Timber	11.6%	± 3.3%	15.9%	± 4.0%	13.9%	± 3.2%
Rubber	2.7%	± 1.4%	1.9%	± 0.9%	2.3%	± 0.9%
Potentially Hazardous	1.7%	± 0.7%	1.1%	± 0.5%	1.4%	± 0.5%

The waste composition and 95% confidence intervals achieved during the 2012 surveys is shown in graphical form in Figure 5-7 below. Any significant variations recorded for each of the sites is discussed in more detail in Section 5.

³ Ministry for the Environment (2002), Solid Waste Analysis Protocol, MfE, NZ

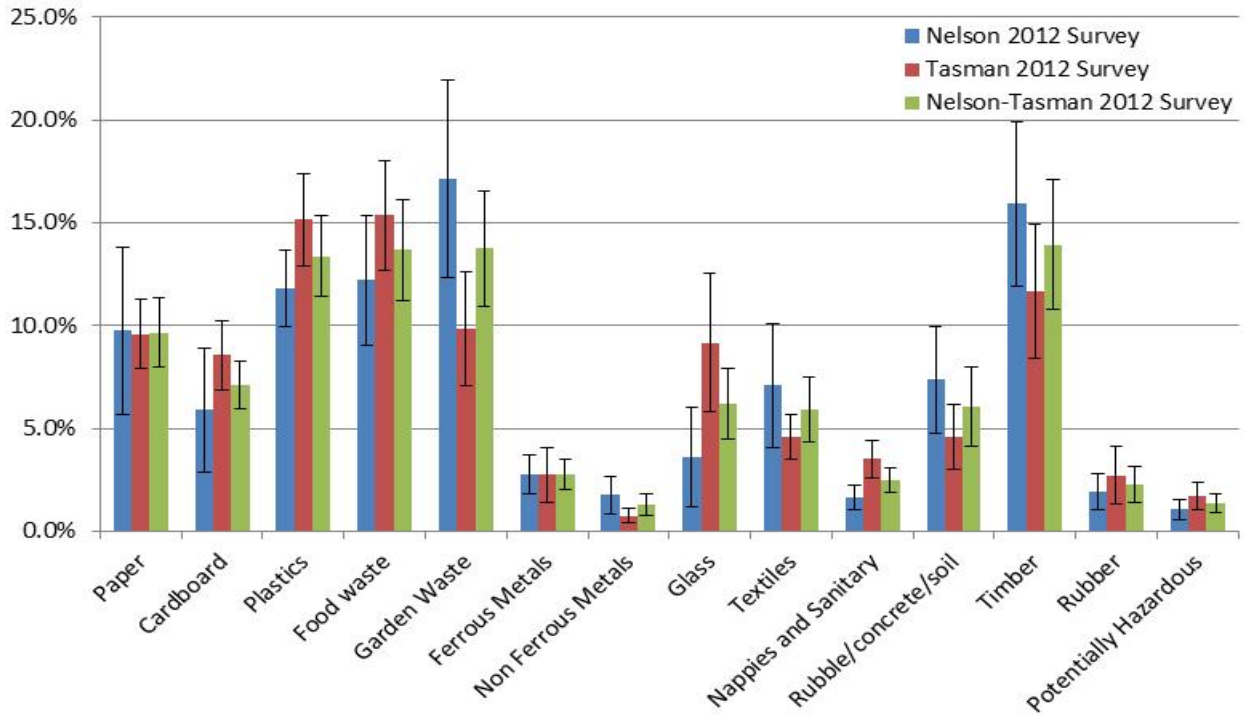


Figure 5-7: Nelson - Tasman Waste Composition 2012

6 Discussion and Analysis

6.1 Tasman District waste over time

Waste composition surveys have been previously undertaken in Tasman District in 2004 and 2007. In that period since 2004 there have been notable changes to waste management practices in the District. In 2004, Tasman District Council introduced a recycling bin scheme to the district, starting in Richmond and spreading out over a large percentage of the district by 2005. All of those customers who previously had access to a domestic waste collection service were provided with a recycling bin and the domestic waste and recycling bins are collected and emptied once a week.

Before this initiative was introduced, no domestic recycling collection services were available. The Tasman District Council bag size also reduced in size from 60 to 45 litres at this time (max weight of 14kg reduced to 12kg). This reduction in size coincided with the gradual introduction of the private domestic wheelie bin services in the district (although this service does not cover all rural areas).

In June 2011 the Tasman District Council reintroduced the larger 60 litre yellow bags. Upgrades to the Richmond RRC and Mariri RRC to encourage recycling have also been made and waste disposal rates have risen from \$22.50 per tonne in 2004 to \$117 - \$134 per tonne in 2012.

Figure 6-1 shows the changes in the assessed waste composition for Tasman District since 2004. It should be noted that both the 2004 survey and the 2007 survey were carried out over a single week. The 2004 survey was conducted in September (spring) and the 2007 survey was conducted in June (winter). The 2007 survey also included a combination of weight and visual assessments, with visual inspections being made of all skips entering the site. The 2004 and 2007 waste compositions are for the sampled vehicles only and have not been scaled to reflect the overall proportions and numbers of different vehicle types using the site. Comparison of the results of the 2012 survey to the earlier surveys therefore cannot be done with any certainty. However, for the purposes of this report, it is assumed that the sample taken during these surveys is representative of all vehicles using the site.

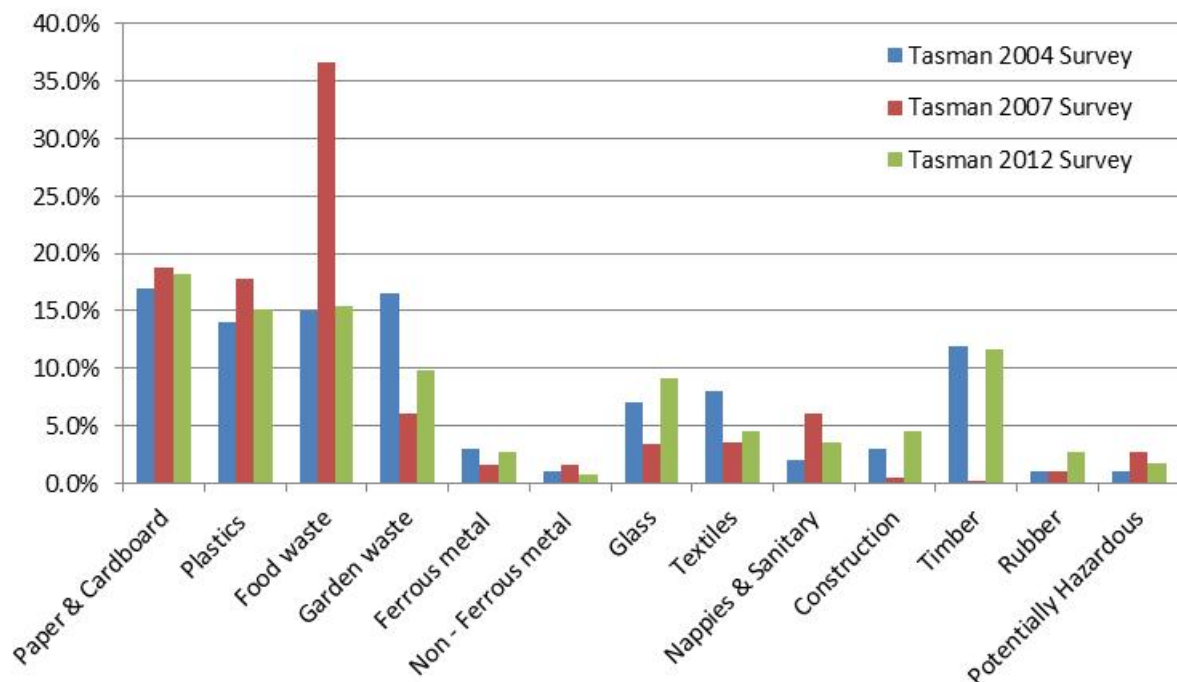


Figure 6-1: Tasman District Council Waste Composition over time

There is considerable variability in the surveyed proportions of putrescibles (food and garden waste) however, the 2012 SWAP results show an overall decrease of putrescibles in the waste stream from 31% in 2004 and 43% in 2007 to 25% in 2012.

The percentages for paper and cardboard and for plastics are relatively consistent across the surveys however, there is greater variability in the proportion of the minor constituents.

Construction material and timber in 2012 (5% and 12% respectively) is similar to the 2004 (3% and 12% respectively). The equivalent materials included in the 2007 data (0.5% and 0.2% respectively) only include the waste that was sampled by weight. The visual inspection data of skips included more construction waste and therefore is likely to increase this percentage considerably if included.

6.2 Nelson City Waste Over Time

In Nelson City residents have access to a weekly council-facilitated domestic refuse collection and disposal service. This service is a user pays service and customers can purchase:

- blue plastic 65 litre bags that are available for purchase at most supermarkets and from Council, or
- bins that can be rented or purchased from the Nelmac that require prepaid liners.

There are also a number of private collectors offering a range of services and bins both in Nelson City and Tasman District which customers can choose to purchase instead.

In November 2004 Nelson City Council introduced a weekly kerbside 55 litre crate-based recycling collection service to almost all properties. This recycling collection service alternates between glass and “the rest” fortnightly.

A previous survey of waste composition in Nelson was undertaken in 2006. Figure 6-2 shows the changes in waste composition data for Nelson city since 2006.

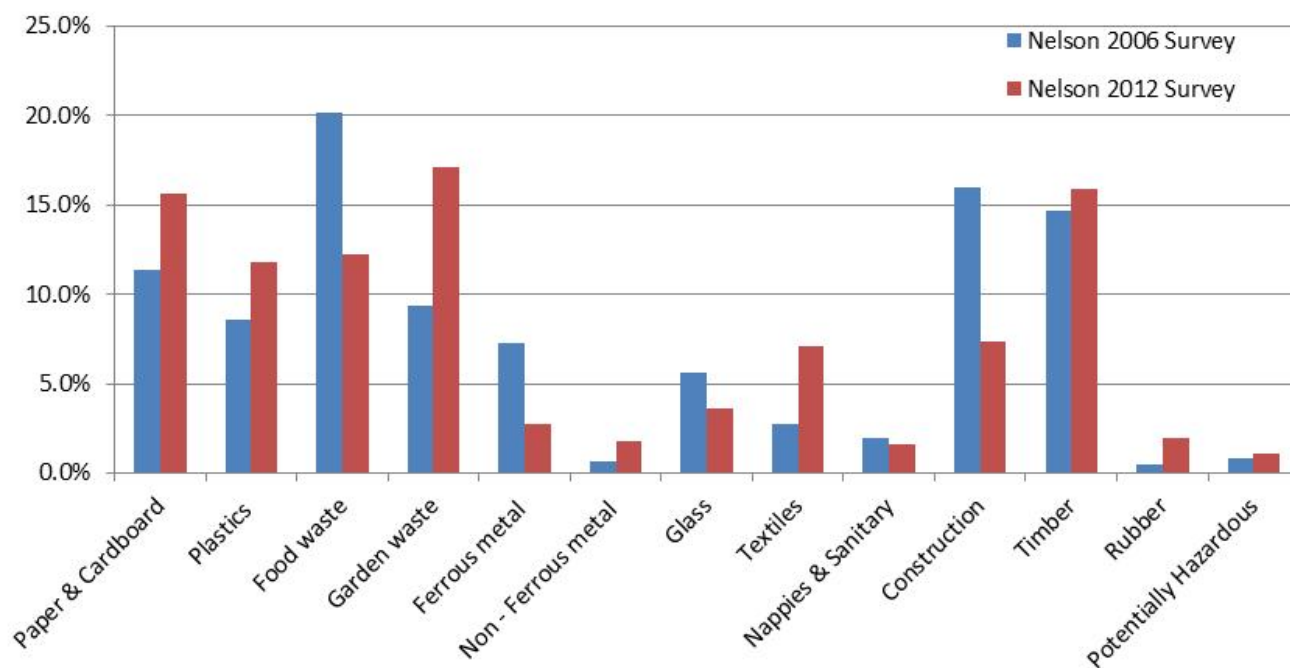


Figure 6-2: Nelson City Council Waste Composition over time

It should be noted that the 2006 survey was carried out over a single week and was based on visual assessments using tonnage conversion factors. The 2006 survey has not been scaled to reflect the total amount and vehicle types using the site. Like in Tasman District comparison of the results of the 2012 survey to the earlier surveys cannot be done with any certainty. However, for the purposes of this report, it is assumed that the sample taken during the 2006 survey is representative of all vehicles using the site.

The 2012 SWAP results show an increase in paper and cardboard and plastics (16% and 12% respectively) from the 2006 percentages of 11% and 9% respectively. Textiles have increased from 3% in 2006 to 7% in 2012. The total amount of putrescibles (food and garden waste) has remained around 29% and timber around 15%. Construction material percentages have reduced from 16% to 7%, ferrous metal from 7% to 3% and glass from 6% to 4%.

6.3 Comparison between Sites

Mariri and Richmond RRC's provide recycling facilities on site to encourage the recovery of material prior to waste entering the pit and being sent to Eves Valley Landfill. The York Valley Landfill is the final disposal point and any recycling happens offsite.

Figure 6-3 shows the differences in waste composition data between each site.

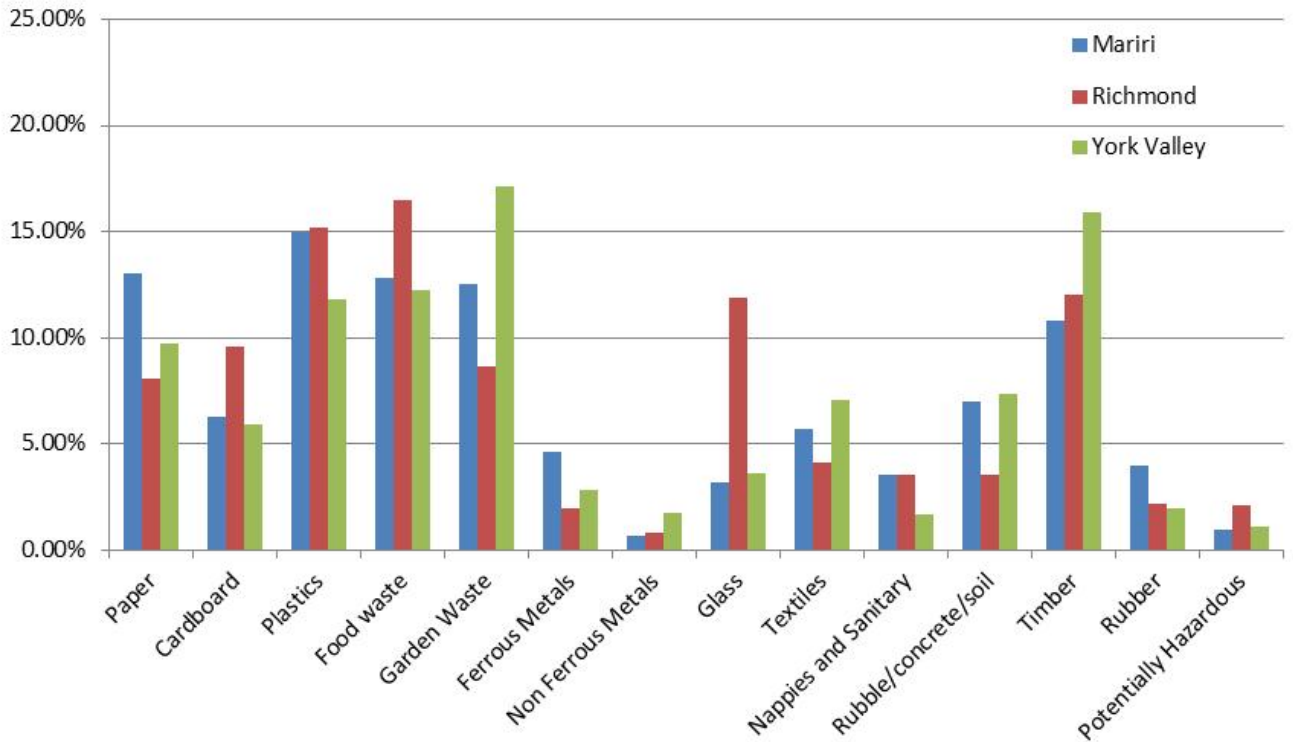


Figure 6-3: Comparison between sites 2012

From the 2012 SWAP results higher percentages of garden waste and timber (17% and 16% respectively) were observed at the York Valley Landfill rather than at the RRC's (average 10% and 12% respectively). The higher timber percentages may be due to the fact that a number of the saw mills in the Tasman District bring their timber offcuts directly to the landfill as 'Special Waste' and therefore it will not have been captured through the RRC surveys. The Richmond RRC showed higher percentages of cardboard (10%), food waste (17%) and glass (12%) than either the Mariri RRC or the York Valley Landfill which had approximate 6 % cardboard, 12% food waste and 3% glass each.

A large amount of the glass observed were from glass manufactures with entire skip loads of sheet glass being disposed of as shown in Figure 6-4.



Figure 6-4: Sheet glass disposed of at Richmond RRC

At Richmond RRC ten skip loads were sampled during the survey period in which more than 90% of the load was sheet glass. This equated to approximately 56% of the total weight of glass recorded in the sampled vehicles.

Figure 6-5 shows the differences in waste composition data between Tasman District and Nelson City.

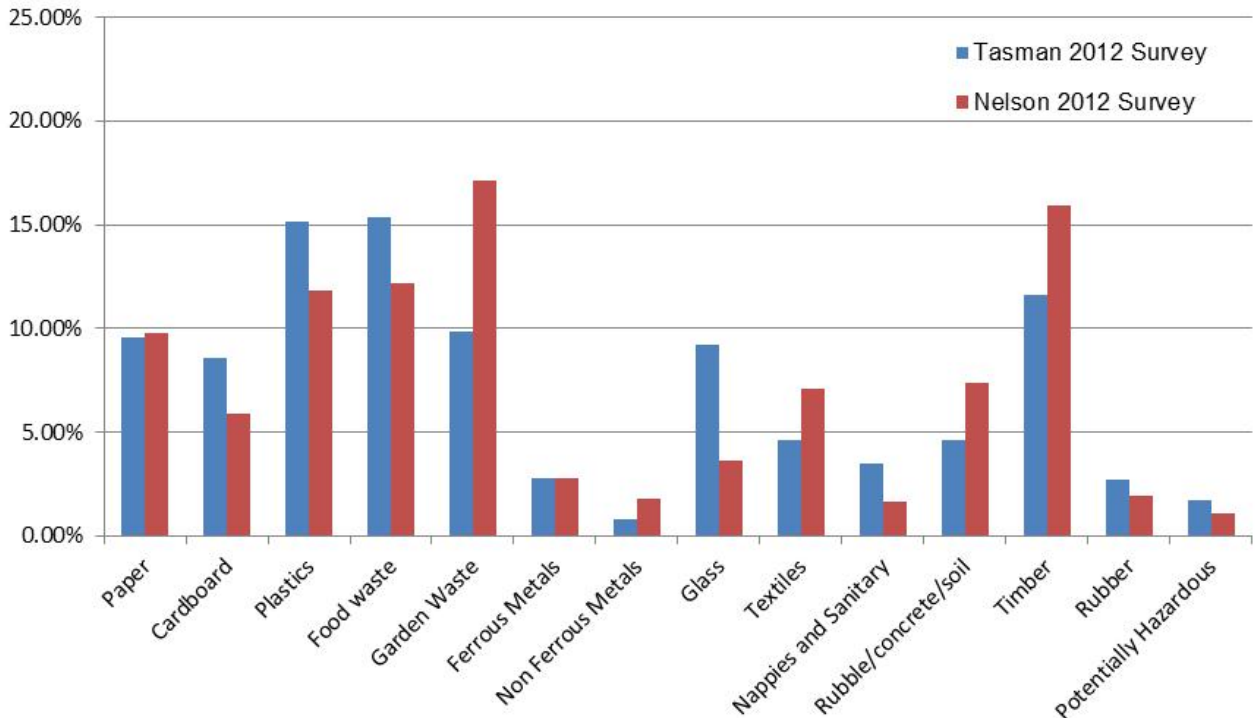


Figure 6-5: Comparison between Councils 2012

The 2012 SWAP results show a higher amount of construction material being disposed of in Nelson City than in Tasman District with 7% of rubble/concrete/soil and 16% of timber being observed in Nelson City compared to 5% of rubble/concrete/soil and 12% of timber being observed in Tasman District. Garden waste was higher in Nelson City at 17% compared to Tasman District at 10%, but the percentage of food waste (15%) in Tasman District was higher than that observed in Nelson (12%).

Tasman District shows higher percentages of recyclable such as cardboard (9%), plastics (15%) and glass (9%) compared with Nelson City Council with compositions of 6% cardboard, 12% plastics and 4% glass.

A higher percentage of textiles were observed in Nelson while a higher percentage of nappies were observed in Tasman District. Other minor components were comparable between the two Council areas.

Figure 6-6 shows the differences in waste composition data between Tasman District, Nelson City and the National Indicator sites.

The SWAP data for the National Indicator Sites was collected by the Ministry for the Environment (MfE) in 2007-2008 in order to establish baseline waste composition data for New Zealand and detect any trends over time. The National Indicator Sites include provincial and major urban sites.

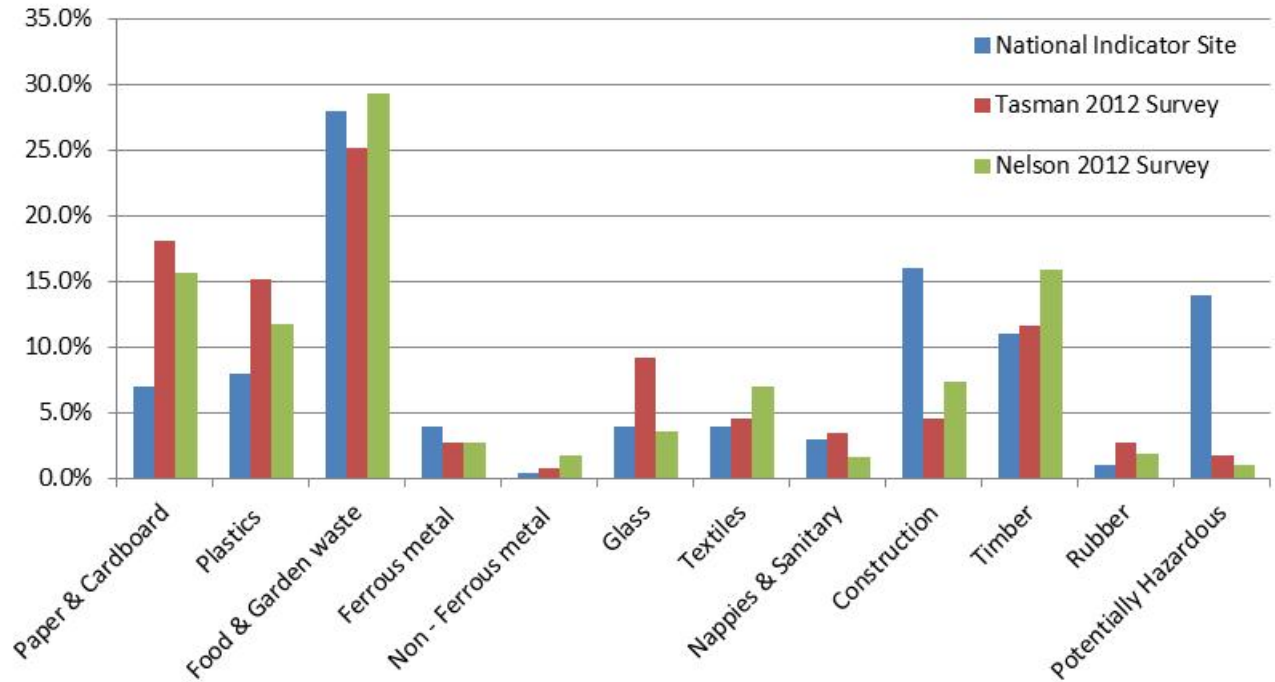


Figure 6-6: Nelson and Tasman Waste Composition Compared with MfE National Indicator Sites

The results show that a higher percentage of recyclable materials such as paper, cardboard and plastics in the Nelson-Tasman region than was recorded for the indicator sites. Putrescibles (food and garden waste) are comparable between the Nelson-Tasman region and the indicator sites at approximately 28%. Glass shows higher percentages in Tasman District however the Nelson City results are comparable with the indicator sites. Construction material is higher at the indicator sites (16%) than the Nelson Tasman Region (6%) although timber is higher for the Nelson Tasman Region (14%) than recorded at the indicator sites (11%). The percentage of potentially hazardous material is significantly higher at the indicator sites (14%) than recorded for the Nelson Tasman Region (1%). This may relate to differences in the types of materials being classified as potentially hazardous at each site.

7 Summary

This Nelson - Tasman SWAP Studies 2012 report provides a summary of the composition of waste being disposed of within the Nelson-Tasman region during the following two survey periods:

- 12 March and 4 April 2012, and
- 5 November and 28 November 2012.

These surveys were undertaken in accordance with procedure 2 of the MfE Solid Waste Analysis Protocol publication and the results provide a representative picture of the Nelson – Tasman Region.

The report also sets out the precision achieved by the surveys and compares the results between sites and surveys. This report will help to inform the remaining stages of the project and empower joint waste planning for increased and improved recycling and recovery activities in the Nelson Tasman region.

For future planning purposes however, it should be noted that an increase in the percentage of a particular waste component over time may not mean an overall increase in the total amount of that waste component and therefore further work would be required to be able to assess any changes in the overall quantities being disposed of in the Nelson Tasman Region over time.

Appendix A Intended Sampling Regimes

York Valley Sampling Plan

Number of staff	3.50
Number of days	6
Hours per day	7.5
Person Hours	158

		General Rubbish	Transfer Station	Skips and Mini Bins	Demolition	Street Litter	Buller District Council
	Calculations	bag trucks	compactor bins	skips and mini bins	skips and open tops	compactor trucks	truck and trailer
Number of Vehicles / week	A (assumed)	67	13	89	7	7	3
Mean Load Weight (kg)	B (assumed)	2343	7815	2211	2451	1616	19730
Time to sort (minutes)	C (assumed)	90	90	90	60	90	90
Total Weight (kg)	D = A x B	156,596	100,626	196,434	16,946	11,385	56,739
	E = D x sqrtC	1,485,597	954,621	1,863,536	131,260	108,010	538,276
Distribution of Effort	F = E/Total(E)	0.29	0.19	0.37	0.03	0.02	0.11
Person-hours	G = F x Person Hrs	46	30	58	4	3	17
Vehicles to Sample	H = G x 60/C	31	13	39	4	2	3
Sampling Interval	I = A/H	3	1	3	2	4	1
Average Vehicles/Day	J = H/6	6	3	7	1	1	1

Total number of vehicles intended to be sampled at York Valley = 91

Richmond RRC Sampling Plan

Number of staff	3.50
Number of days	6
Hours per day	8
Person Hours	168

	Calculations	bag trucks	compactors	loose rubbish	cars
Number of Vehicles / week	A (assumed)	12	32	59	38
Mean Load Weight (kg)	B (assumed)	1500	1326	1200	802
Time to sort (minutes)	C (assumed)	180	180	180	60
Total Weight (kg)	D = A x B	18,000	42,432	70,800	30,476
	E = D x sqrtC	241,495	569,285	949,882	236,066
Distribution of Effort	F = E/Total(E)	0.12	0.29	0.48	0.12
Person-hours	G = F x Person Hrs	20	48	80	20
Vehicles to Sample	H = G x 60/C	7	16	27	20
Sampling Interval	I = A/H	2	3	3	2
Average Vehicles/Day	J = H/7	1	3	4	3

Total number of vehicles intended to be sampled at Richmond RRC = 70

Mariri RRC Sampling Plan

Number of staff	3.50
Number of days	6
Hours per day	8
Person Hours	168

	Calculations	bag trucks	compactors	loose rubbish	cars
Number of Vehicles / week	A (assumed)	2	33	77	133
Mean Load Weight (kg)	B (assumed)	1425	2410	631	117
Time to sort (minutes)	C (assumed)	180	180	180	90
Total Weight (kg)	D = A x B	2,850	79,530	48,587	15,561
	E = D x sqrtC	38,237	1,067,007	651,863	147,625
Distribution of Effort	F = E/Total(E)	0.02	0.56	0.34	0.08
Person-hours	G = F x Person Hrs	3	94	57	13
Vehicles to Sample	H = G x 60/C	1	31	19	9
Sampling Interval	I = A/H	2	2	5	16
Average Vehicles/Day	J = H/7	1	5	3	2

Total number of vehicles intended to be sampled at Mariri RRC = 60

Appendix B Data Sheets

York Valley Landfill - Site Data Sheets

SWAP Survey November 2012				MWHref Z18827	
Date:	<input type="text" value="Nov-12"/>	Total weight	<input type="text"/>		
Time :	<input type="text"/>	Tare weight -	<input type="text"/>		
		Net weight :	<input type="text"/>		
Vehicle Reg :	<input type="text"/>				
York Valley Tag No:	<input type="text"/>				
Vehicle Details					
Company:					
	Buller DC	<input type="text"/>			
	Can Plan	<input type="text"/>			
	Duane Whiting	<input type="text"/>			
	Envirowaste	<input type="text"/>			
	Fitzgerald Construction	<input type="text"/>			
	Fulton Hogan (Transfer station)	<input type="text"/>			
	Graeme Marshall	<input type="text"/>			
	Nelmac	<input type="text"/>			
	Talleys	<input type="text"/>			
	Waste Management	<input type="text"/>			
	Other	_____			
Source:					
	Municipal	<input type="text"/>			
	Commercial and industrial	<input type="text"/>			
	Building and demolition	<input type="text"/>			
	Greenwaste	<input type="text"/>			
	Other	_____			
Description					

Vehicle type:					
	Compactor	<input type="text"/>			
	Small Compactor	<input type="text"/>			
	Mini Bin	<input type="text"/>			
	Skip bin	<input type="text"/>			
	Transfer Station	<input type="text"/>			
	Truck & Trailer	<input type="text"/>			
	Other	_____			
Comments:					

Category	Load #	Weight	(record weight to 2dp, e.g. 4.65 kg)				Tare weight
1. News Paper	1	2	3				
	4	5	6			sub-total (kg)	
2. Office Paper	1	2	3				
	4	5	6			sub-total (kg)	
3. Other Paper	1	2	3				
	4	5	6			sub-total (kg)	
4. Cardboard (boxes, cartons)	1	2	3				
	4	5	6			sub-total (kg)	
5. Other Plastics (packaging)	1	2	3				
	4	5	6			sub-total (kg)	
6. Type 1 Plastics (drink bottles)	1	2	3				
	4	5	6			sub-total (kg)	
7. Type 2 Plastics (Milk bottles)	1	2	3				
	4	5	6			sub-total (kg)	
8. Food scraps / other organic (putrescibles, non-garden only)	1	2	3				
	4	5	6			sub-total (kg)	
9. Steel Cans (magnetic cans)	1	2	3				
	4	5	6			sub-total (kg)	
10. Other Steel (Ferrous metals)	1	2	3				
	4	5	6			sub-total (kg)	
11. Aluminium/ copper etc (Non-ferrous metals)	1	2	3				
	4	5	6			sub-total (kg)	
12. Aluminium Cans	1	2	3				
	4	5	6			sub-total (kg)	
13. Glass (bottles, jars)	1	2	3				
	4	5	6			sub-total (kg)	
14. Textiles (clothing, carpet)	1	2	3				
	4	5	6			sub-total (kg)	
15. Nappies & sanitary	1	2	3				
	4	5	6			sub-total (kg)	
16. Rubble / concrete / soil (concrete, gib, sand etc)	1	2	3				
	4	5	6			sub-total (kg)	
17. Timber (framing, plywood, pallets)	1	2	3				
	4	5	6			sub-total (kg)	
18. Rubber (tyres)	1	2	3				
	4	5	6			sub-total (kg)	
19. Potentially hazardous	1	2	3				
	4	5	6			sub-total (kg)	
20. Garden Waste (grass, tree cuttings)	1	2	3				
	4	5	6			sub-total (kg)	
Comments:						TOTAL (kg)	

Appendix C Waste Composition Data

Waste Composition Data

From the weights recorded during the first round of SWAP surveys, the following waste composition has been determined for each of the sites, Council areas and the combined region. This is presented in Table C-1 below.

Table C-1: Waste Composition analysed during Autumn Surveys

Category	Tasman District			Nelson City	Nelson - Tasman
	Mariri RRC	Richmond RRC	Mariri – Richmond Combined	York Valley Landfill	
Paper	12.3%	8.4%	9.6%	9.7%	9.7%
Cardboard	4.4%	9.2%	7.7%	5.8%	6.6%
Plastics	12.4%	15.1%	14.3%	10.5%	12.2%
Food waste	16.6%	22.3%	20.5%	12.2%	15.8%
Garden Waste	14.0%	10.7%	11.7%	20.6%	16.7%
Ferrous Metals	3.2%	1.5%	2.0%	2.8%	2.5%
Non Ferrous Metals	0.8%	1.0%	1.0%	1.3%	1.2%
Glass	4.1%	8.5%	7.2%	5.5%	6.2%
Textiles	5.8%	3.6%	4.3%	5.7%	5.1%
Nappies and Sanitary	3.8%	4.8%	4.5%	1.7%	2.9%
Rubble/concrete/soil	6.0%	4.7%	5.1%	8.6%	7.1%
Timber	8.6%	6.8%	7.4%	13.5%	10.8%
Rubber	7.3%	1.7%	3.4%	0.7%	1.9%
Potentially Hazardous	0.8%	1.7%	1.4%	1.2%	1.3%

From the weights recorded during the second round of SWAP surveys, the following waste compositions have been determined for each of the sites, Council areas and the combined region. This is presented in Table C-2 below.

Table C-2: Waste Composition analysed during Spring Surveys

Category	Tasman District			Nelson City	Nelson - Tasman
	Mariri RRC	Richmond RRC	Mariri – Richmond Combined	York Valley Landfill	
Paper	13.6%	7.8%	9.6%	9.8%	9.7%
Cardboard	7.8%	9.9%	9.2%	6.0%	7.6%
Plastics	17.1%	15.3%	15.8%	13.1%	14.4%
Food waste	9.8%	11.9%	11.3%	12.2%	11.8%
Garden Waste	11.4%	7.0%	8.3%	13.7%	11.1%
Ferrous Metals	5.7%	2.3%	3.4%	2.8%	3.1%
Non Ferrous Metals	0.6%	0.7%	0.6%	2.2%	1.4%
Glass	2.4%	14.5%	10.8%	1.7%	6.2%
Textiles	5.6%	4.5%	4.8%	8.4%	6.7%
Nappies and Sanitary	3.3%	2.5%	2.8%	1.6%	2.2%
Rubble/concrete/soil	7.8%	2.6%	4.2%	6.20%	5.2%
Timber	12.6%	16.1%	15.1%	18.3%	16.7%
Rubber	1.4%	2.6%	2.2%	3.1%	2.7%
Potentially Hazardous	1.0%	2.4%	2.0%	0.9%	1.5%

Table C-3 shows the combined waste composition for 2012 for each of the sites surveyed, Council areas and the combined region.

Table C-3: 2012 Waste Composition

Category	Tasman District			Nelson City	Nelson - Tasman
	Mariri RRC	Richmond RRC	Mariri – Richmond Combined	York Valley Landfill	
Paper	13.0%	8.0%	9.6%	9.8%	9.7%
Cardboard	6.3%	9.6%	8.6%	5.9%	7.1%
Plastics	15.0%	15.2%	15.1%	11.8%	13.4%
Food waste	12.8%	16.5%	15.4%	12.2%	13.7%
Garden Waste	12.6%	8.6%	9.8%	17.1%	13.8%
Ferrous Metals	4.6%	1.9%	2.8%	2.8%	2.9%
Non Ferrous Metals	0.7%	0.8%	0.8%	1.8%	1.3%
Glass	3.2%	11.9%	9.2%	3.6%	6.2%
Textiles	5.7%	4.1%	4.6%	7.1%	5.9%
Nappies and Sanitary	3.5%	3.5%	3.5%	1.7%	2.5%
Rubble/concrete/soil	7.0%	3.6%	4.6%	7.4%	6.1%
Timber	10.8%	12.0%	11.6%	15.9%	13.9%
Rubber	4.0%	2.2%	2.7%	1.9%	2.3%
Potentially Hazardous	0.9%	2.1%	1.7%	1.1%	1.4%

Figures C-1 to C-5 show each of the compositions in graphical form.

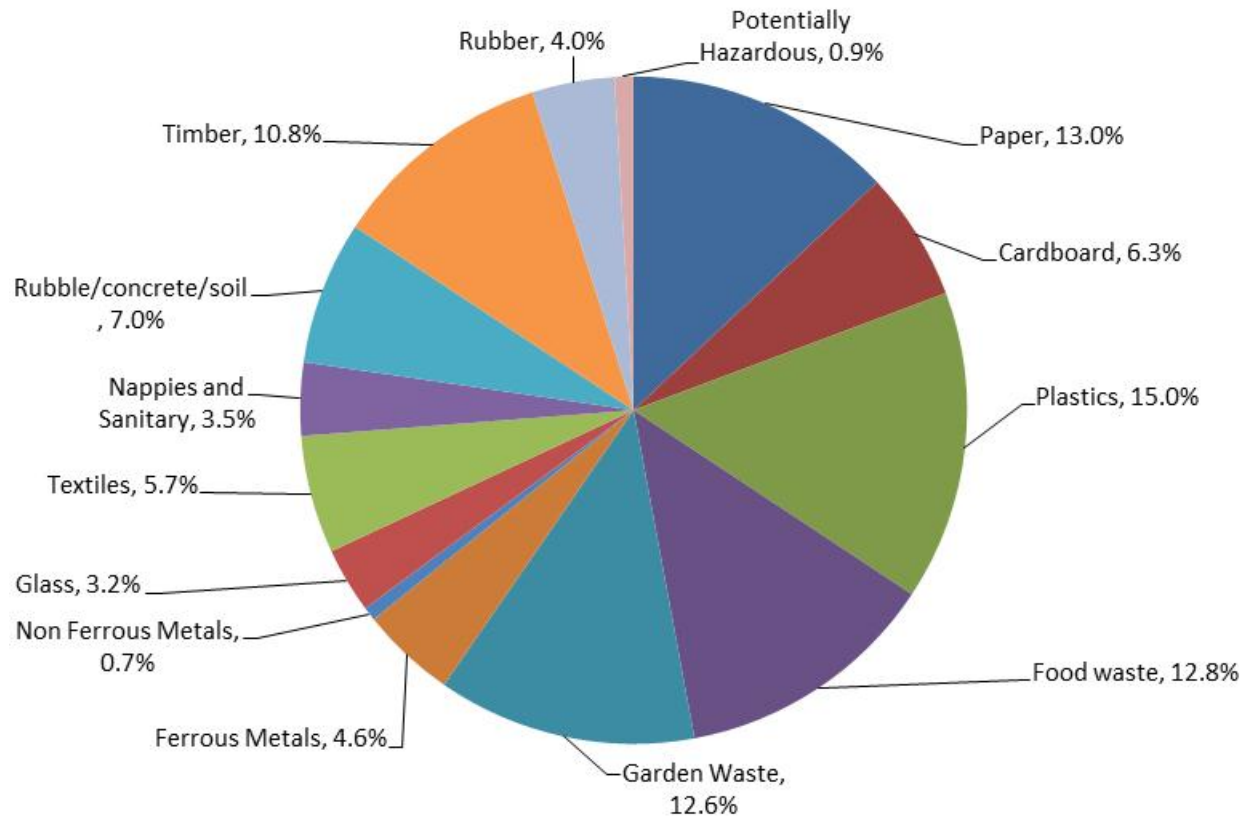


Figure C-1: Mariri RRC Waste Composition

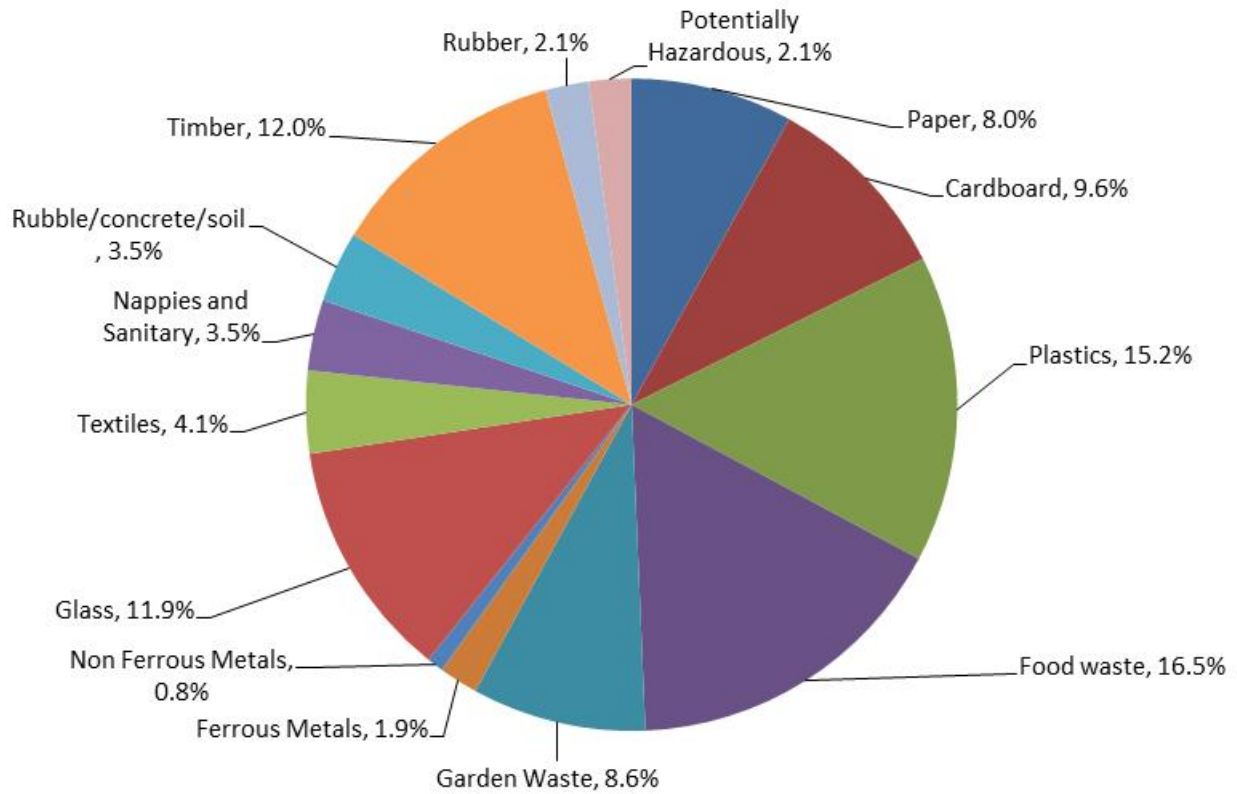


Figure C-2: Richmond RRC Waste Composition

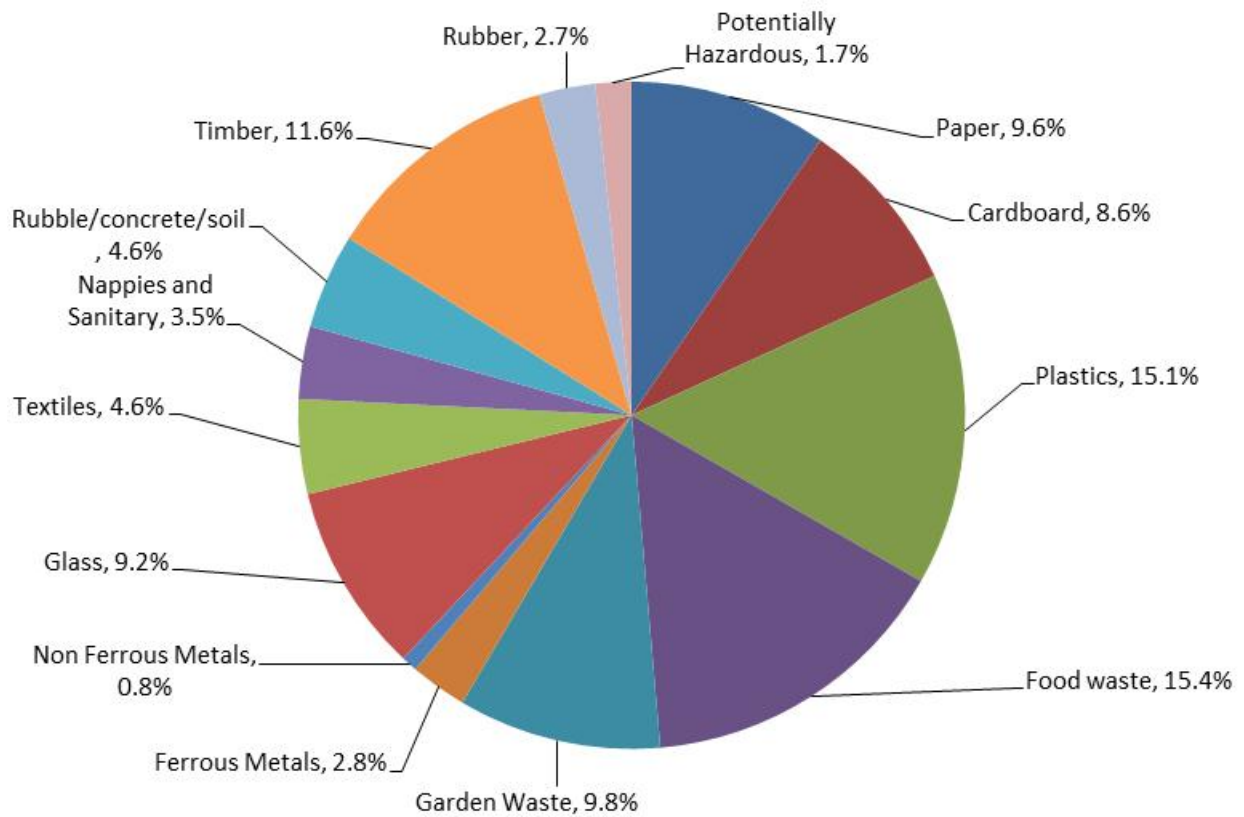


Figure C-3: Tasman District Waste Composition

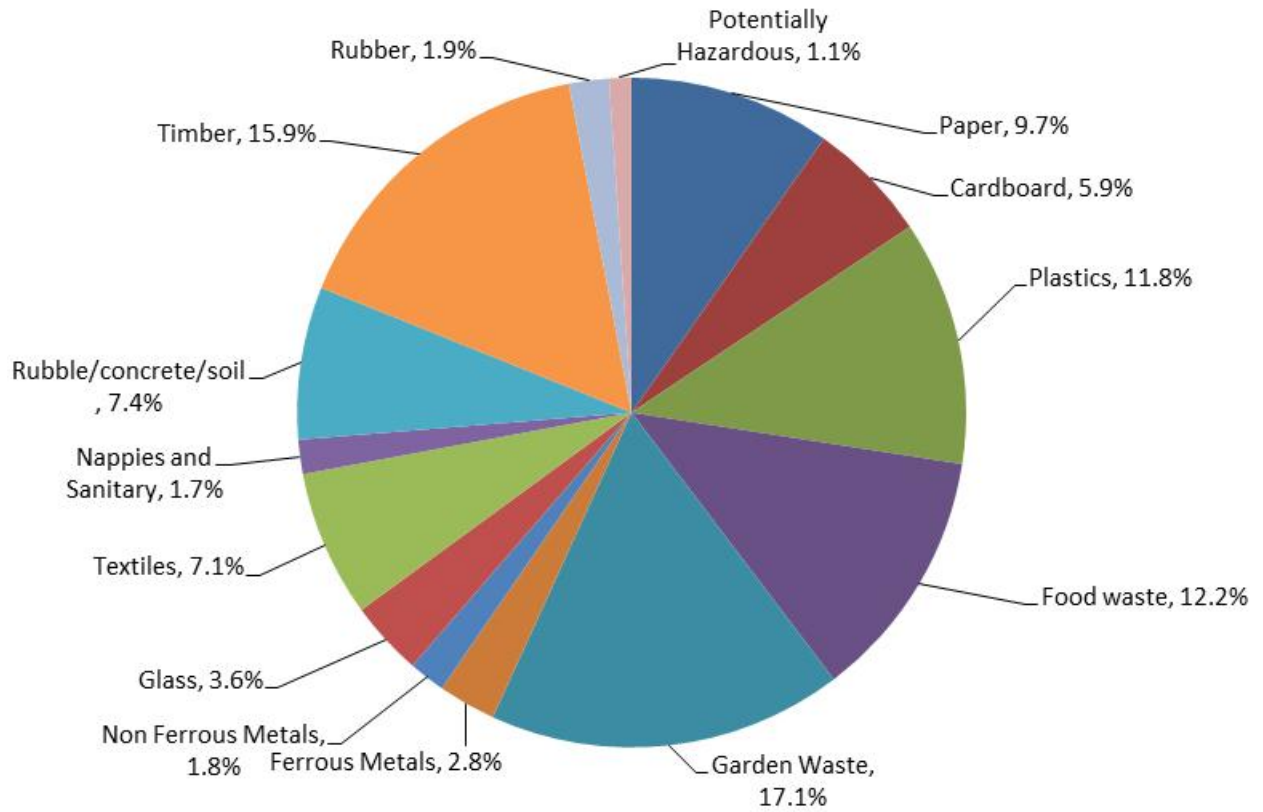


Figure C-4: Nelson City (York Valley Landfill) Waste Composition

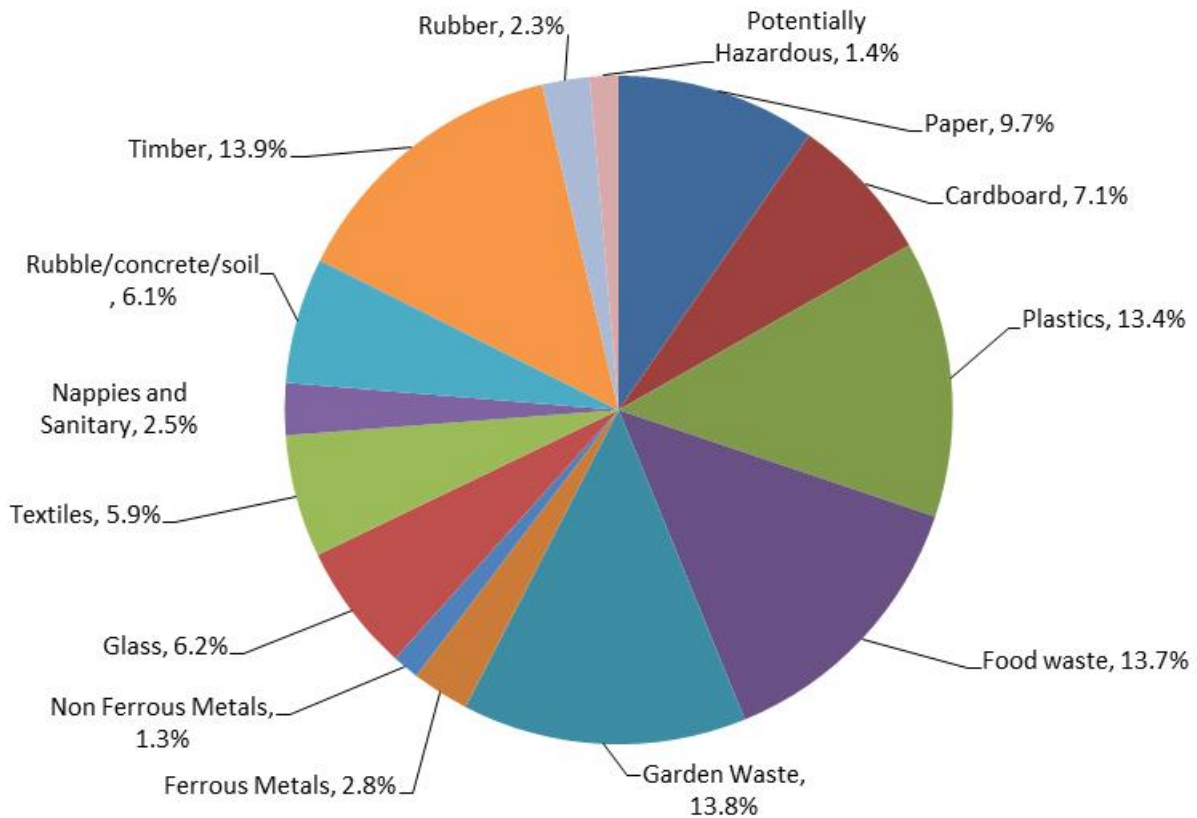


Figure C-5: Nelson - Tasman Waste Composition 2012

Waste Composition by Sub Category

As part of the 2012 survey the waste was categorised into a number of sub-categories, Table C-4 shows the combined waste composition (including sub-categories) for 2012 for each of the sites surveyed, Council areas and the combined region.

Table C-4: 2012 Waste Composition

Category	Sub Category	Tasman District			Nelson City	Nelson - Tasman
		Mariri RRC	Richmond RRC	Mariri – Richmond Combined	York Valley Landfill	
Paper	Newspaper	1.6%	1.4%	1.4%	1.4%	1.4%
	Office Paper	1.0%	1.1%	1.1%	3.0%	2.1%
	Other paper	10.4%	5.5%	7.0%	5.4%	6.1%
Cardboard		6.3%	9.6%	8.6%	5.9%	7.1%
Plastics	Type 1 Plastics	0.6%	0.5%	0.5%	0.4%	0.4%
	Type 2 Plastics	0.3%	0.4%	0.3%	0.3%	0.3%
	Other Plastic	14.2%	14.4%	14.3%	11.2%	12.6%
Food waste		12.8%	16.5%	15.4%	12.2%	13.7%
Garden Waste		12.6%	8.6%	9.8%	17.1%	13.8%
Ferrous Metals	Steel Cans	0.5%	0.5%	0.5%	0.4%	0.4%
	Other Ferrous	4.1%	1.5%	2.3%	2.4%	2.3%
Non Ferrous Metals	Aluminium cans	0.2%	0.2%	0.2%	0.2%	0.2%
	Other Non Ferrous	0.5%	0.7%	0.6%	1.6%	1.1%
Glass		3.2%	11.9%	9.2%	3.6%	6.2%
Textiles		5.7%	4.1%	4.6%	7.1%	5.9%
Nappies and Sanitary		3.5%	3.5%	3.5%	1.7%	2.5%
Rubble/concrete/soil		7.0%	3.5%	4.6%	7.4%	6.1%
Timber		10.8%	12.0%	11.6%	15.9%	13.9%
Rubber		4.0%	2.1%	2.7%	1.9%	2.3%
Potentially Hazardous		0.9%	2.1%	1.7%	1.1%	1.4%



MWH

BUILDING A BETTER WORLD

ABOUT MWH IN NEW ZEALAND

MWH in New Zealand has been providing private and public sector clients with infrastructure and environmental expertise for over 100 years.

Our offices across New Zealand are part of a global operation of 7000 staff in 35 countries giving us an unparalleled ability to combine local knowledge with international expertise.

Around the world our purpose is to work with clients and communities to help build a better world.

In New Zealand our extensive range of services covers the following disciplines:

- Asset Management
- Business Solutions
- Civil and Structural Engineering
- Energy Generation
- Environmental Science and Management
- Geoscience and Geotechnical
- Mechanical, Electrical and Building Services
- Programme Management
- Planning: Statutory and Strategic
- Roads and Highways
- Solid Waste
- Stormwater
- Surveying
- Transport Planning
- Water Resources
- Water Supply
- Wastewater

To find out more about what we do and how we can assist visit www.mwhglobal.co.nz or www.mwhglobal.com

Appendix F Diverted materials facilities

Diverted materials facilities in the Nelson–Tasman Region

Name/Owner	Key service/waste stream
5RSolutions	Plate and laminated glass Double glazing units
Agrecovery	Agricultural chemicals and drums Storage and collection of agricultural/farm plastics
Plasback	Storage and collection of agricultural/farm plastics, nets and bags
BinGo Skip Hire	Greenwaste and hardfill
Bens Oil, ERS, JBL Environmental and Nelson Marlborough Waste	Commercial quantities of oil and chemicals, oil drums ERS only – Workshop waste eg. oil filters, oily rags, coolant, brake fluid etc.
Baby on the Move	Child car seats
Can Plan	Commercial & household collection of waste and recyclables. Household greenwaste collection. Recyclables include paper, cardboard, plastics, tins, cans, glass, plasterboard, hardfill/concrete, metal, topsoil and untreated timber
Cartridge World	Refill cartridges, and recycle plastic casing
Cee Gee's Recycling Depot	Reusable items
Councils resource recovery centres	Appliances, automotive and lead acid batteries, heavy metal batteries, cardboard, reusable timber lengths, greenwaste, glass bottles/jars, plastics (1-7), lightbulbs, reusable machinery/tools, metal, oil drums, paint at some), pallets, rubber, leather, carpet and tyres
Direct Fats & Oils (aka FATMAN)	Collection service for used cooking oils & fats
Richmond and Mariri resource recovery centres (Tasman)	Agrichemical containers (triple rinsed)
Envirowaste	Commercial collections cardboard/paper, plastics (1-7), glass, tins/cans, plasterboard, untreated timber, metal, soft plastics, polystyrene, topsoil, concrete/hardfill and greenwaste.
Fisher and Paykel	Appliances
Oji Fibre solutions	Cardboard/paper, glass, aluminium and plastics
Green Waste To Zero	Plasterboard, greenwaste and top soil
Helping Hands	Commercial recycling service in Golden Bay – paper, cardboard, tins/cans, glass, greenwaste, metal, plasterboard and untreated timber.
Interwaste	Commercial collection of dental amalgam, fluorescent lightbulbs, x-ray and photographic film and fixer fluids

Name/Owner	Key service/waste stream
Hills Cleaning Service, Online Security Services, Waste Management	Security paper destruction and recycling
Koha shed	Reusable items
Nelson Environment Centre - Ecoland	Electronic waste, toner, batteries and fluorescent/low energy bulbs
Nelson Recycling Centre	Reusable items.
Norwest Recycled Timber	Reusable native timber
Motueka Bin Hire	Greenwaste, topsoil, hardfill, metal and untreated timber
Nelmac	Household kerbside recycling. Collection of commercial recyclable materials eg. aluminium and steel cans, paper and cardboard, hard plastics, glass Commercial and residential greenwaste collection
Lazers Edge	Brother printers
Motueka Appliance Service and Repair	Whiteware
Op shops (throughout region)	Reusable items
Resene Colorshop	Commercial and domestic paint and containers
Scrap metal dealers	Drop off and collection of scrap metal.
Smart Environmental	Collection commercial recyclable materials eg. aluminium and steel cans, paper and cardboard, plastics (1-7), glass
Vodafone, Spark, 2Degrees	Mobile phones, batteries and chargers
Warwick Burke	Cardboard
Waste Management	Cardboard/paper, soft plastics, greenwaste, untreated wood waste, glass, concrete/hardfill, metal, soft plastics and topsoil
Wholesale Landscapes	Untreated wood waste, greenwaste, hardfill, concrete, topsoil and pallets (untreated wood)

Appendix G Inventory of the Councils' waste services contracts

Current Service	Tasman District Council	Contractors (Tasman District Council)	Nelson City Council	Contractors (Nelson City Council)
Landfill Disposal	Eves Valley Landfill (managed by Nelson Tasman Regional Landfill Business Unit from 1 July 2017)	Fulton Hogan	York Valley Landfill Gas Recovery System (managed by Nelson Tasman Regional Landfill Business Unit from 1 July 2017)	Landfill operation — Downer Gas recovery system — Pioneer Energy
Waste Transportation	RRCs to York Valley Landfill Greenwaste to Azwood	Fulton Hogan	RTS to York Valley Landfill Greenwaste to Greenwaste Zero	Fulton Hogan
Resource recovery centres (RRCs) & transfer stations (TS) (Waste, greenwaste, reusable and recyclable materials)	Richmond RRC Mariri RRC Takaka RRC Collingwood RRC Murchison RRC	Smart Environmental Smart Environmental Smart Environmental Smart Environmental Fulton Hogan	Pascoe Street TS	TS operation — Fulton Hogan Fee attendant's office — Nelmac Re-use shop — Nelmac who sub-contract to Nelson Environment Centre
Kerbside refuse collection	User charges bags	Smart Environmental	User charges bags	Nelmac (Council owned)
Kerbside recycling collection		Smart Environmental		Nelmac (Council owned)
Recycling at council owned facilities		Smart Environmental		Nelmac (Council owned)
Greenwaste processing	Processing at contractors site in Eves Valley	Azwood	Composting service provider	Greenwaste Zero
Education and promotion of waste minimisation	Delivered in-house through EnviroSchools programme and community events	-	Sustainable Actions Programme for Waste — Schools Website Sustainable Living Programme	Nelson Environment Centre

Appendix H Product Stewardship

Product Stewardship Schemes

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

There are many products that are difficult or hazardous to dispose of, yet the industry which makes them 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 ‘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 useable life. Many electronic goods and their hazardous components end up in landfill and the impact of disposal is not considered in the design of the product.

Product stewardship schemes accredited under the WMA are likely to focus on minimising waste, but they may also reduce other environmental impacts during the product’s life cycle. 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 is likely to reduce both the environmental impact of manufacturing and make recycling easier.

The WMA provides for regulations to be developed in relation to the priority products identified by the Government. The Government has indicated it is working towards a stewardship system, but progress has been slow.

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. The Councils should continue to lobby to see schemes developed, and can play an important part in facilitating the development of some schemes due to their independent third party position in the waste sector.

The involvement of councils is important, particularly where an industry sector is working to develop a voluntary scheme but is concerned about the risks of industry collaboration or about ‘free riders’, which often hinder scheme development. Free riders are industry players who choose not to participate in a voluntary scheme, as they can reap the benefits without supporting scheme costs. If all free riders cannot be brought into a scheme voluntarily, legislation to mandate the scheme will be required.

The Councils can benefit from some schemes, as they may improve the recovery and diversion of products they currently manage and in some cases councils may be directly or indirectly involved in a scheme either on a voluntary or statutory basis. As an example, a number of councils have helped start and/or currently participate and fund several voluntary product stewardship ‘take back’ schemes for hazardous waste products (eg. 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 the Councils and other service providers if the management of the products becomes the responsibility of the producer.